

Mechanical Watches

**An Annotated
Bibliography
of publications since 1800**

by

Richard Watkins

Second Edition

Part 1 - Bibliography

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Other translations, transcripts and books by Richard Watkins:

- Berner, G.A. and E. Audetat: *Pierre Frederic Ingold 1787-1878*, (1962) 2008
- Berthoud, Ferdinand and Jacob Auch: *How to make a verge watch*, (1763 and 1827) 2005 (ISBN 0-9581369-6-3) (with E.J. Tyler)
- Borsendorff, L.: *The history of a watch followed by a conversation on the horology industry between Mr Trottevite and Mr Vabien*, (1869) 2007 (ISBN 978-0-9581369-9-0)
- Buffat, Eugene: *History and design of the Roskopf watch*, (1914) 2007
- Camus, C.E.L. and J.I. Hawkins: *A treatise on the Teeth of Wheels*, (1837) 2007 (corrected version of the Google Book copy)
- Crespe, François: *Essay on repeater watches*, (1804) 2006 (ISBN 978-0-9581369-8-3)
- David, Jacques: *American and swiss watchmaking in 1876, reports to the International Committee of Jura Industries on the manufacture of watches in the United States*, (1877) 2003 (ISBN 0-9581369-2-0)
- Favre-Perret, E.: *Philadelphia Exhibition 1876, report presented to the Federal High Council on the Horology Industry*, (1877) 2004
- Francillon, André: *History of Longines preceded by an essay on the Agassiz comptoir*, (1947) 2005 (ISBN 0-9581369-7-1)
- Graupmann, Emile: *The finishing of the watch case*, (1910) 2004
- Grossmann, Moritz: *Prize essay on the construction of a simple and mechanically perfect watch*, (1880) 2002 (ISBN 0-9581369-0-4)
- Hillmann, Bruno: *The keyless mechanism, a practical treatise on its design and repair*, (ca1920) 2004
- Japy, Frederic: *Patent for 5 years for various horological machines*, (1799) 2006
- Lalande, Jerome: *Jerome Lalande, diary of a trip to England 1763*, (1763) 2002 (ISBN 0-9581369-1-2)
- Marsh, E.A.: *History of Early Watchmaking in America*, (1890) 2006
- Marsh, E.A.: *History*, (1921) 2006
- Osterwald, F.S.: *Description of the mountains and valleys of Neuchatel and Valangin*, (1766) 2008
- Societe Suisse de Chronometrie: *Some notes on Pierre-Frederic Ingold and the work of E. Haudenschild*, (1932), 2004
- Saturday Magazine: *Manufacture of Watches in Switzerland*, (1842) 2008
- Waterbury Watch Company: *Ali-Baba and the Forty Thieves*, (1889) 2005
- Watkins, Richard: *Mainspring Gauges and the Dennison Combined Gauge*, 2009
- Watkins, Richard: *The Repeater*, 2011
- Watkins, Richard: *Watchmaking and the American System of Manufacture*, 2009
- These are available from www.watkinsr.id.au

Articles by Richard Watkins:

- Berthoud, Harrison, and Lalande: A Near Myth*, NAWCC Bulletin, No. 359 (December 2005): pp. 773-743.
- Confabulations - A Humorous Look at Complications*, NAWCC Bulletin, No. 367 (April 2007): pp. 163-172.
- Jacques David—and a Summary of “American and Swiss Watchmaking in 1876” with Emphasis on Interchangeability in Manufacturing*, NAWCC Bulletin, No. 350 (June 2004): pp. 294-302.

The above are also available from www.watkinsr.id.au

- Practical Watch Collecting, a Manual for the Beginner: Part 1*, NAWCC Bulletin, No. 375 (August 2008): pp. 429-447; *Part 2*, NAWCC Bulletin, No. 376 (October 2008): pp. 569-577; *Part 3*, NAWCC Bulletin, No. 377 (December 2008): pp. 679-690; *Part 4*, NAWCC Bulletin, No. 378 (February 2009): pp. 35-44; *Part 5*, NAWCC Bulletin, No. 379 (April 2009): pp. 194-207; *Part 6*, NAWCC Bulletin, No. 380 (June 2009): pp. 313-325; *Part 7*, NAWCC Bulletin, No. 381 (August 2009): pp. 455-463; *Part 8*, NAWCC Bulletin, No. 382 (October 2009): pp. 547-550; *Part 9*, NAWCC Bulletin, No. 383 (December 2009): pp. 665-671; *Part 10*, NAWCC Bulletin, No. 384 (February 2010): pp. 39-48.

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Preface to the First Edition

... *the author's excuse for what is to follow*

“Repairing Old Clocks and Watches”, Anthony Whiten

Perhaps the 18th and 19th century watchmakers with the same surname are my forebears? Or perhaps it was simply chance.

I was born in 1944 in Australia and, as far as I can remember, I displayed no mechanical talent at all. My parents, believing in “education”, educated me, but neglected to inform me that some sort of employment was a normal consequence of growing up. Being unaware of much other than learning, I wandered from school to university, studying mathematics and science; and then in 1963 I fortunately failed my second year at university. Fortunately, because the time spent repeating subjects opened up other opportunities, and I switched to the new-fangled area of computer science. Eight years later I emerged with a BSc in mathematics and PhD in computer science, but still with no realisation that “work” is the normal result of completing schooling; and so I became a university lecturer. I was a fair academic who did only a little useful research, but I was fascinated by the problems of teaching and spent most of my time trying to understand the learning process and better ways of passing on my knowledge. And away from work necessity made me learn how to lay bricks, build fences, repair small engines and do my own electrical house wiring, all of which I did adequately if not quite professionally. So life went on for some years until personal circumstances forced me to retire early and I found myself unemployable and bored.

I don't know what led a “thinker” to buy a silver pocket watch at a market stall, except that it shows a remarkable lack of self-awareness! An unknown, perhaps inherited urge awakened my curiosity and soon made me buy more watches and a few clocks. Unfortunately, those that I could afford did not work, and so I branched out into buying repair books and tools. Looking back on that time, I realise it would have been far cheaper to have paid someone to repair them, but it wouldn't have been as interesting, instructive or enjoyable.

For some strange reason I dislike clocks and I surrounded myself with delicate lathes, tiny screwdrivers and the wisdom of the past. I still hadn't come to grips with the fact that a clumsy academic with astigmatism and poor hand-eye coordination is unlikely to be a successful watch repairer! But even though my practical abilities were limited, I successfully repaired some watches, butchered others, and gained considerable insight into horology in the small. And slowly, subconsciously, I moved from collecting watches and tools to collecting books about them.

At this time I was getting over the initial flush of excitement that leads collectors to swap all their worldly goods for dubious items, and I was finding it difficult to make reasonable choices about what book to buy next. Part of the problem was the lack of coherent, accurate information, so that as my library grew I became increasingly frustrated. Also, faced with a question and a bookcase filled with volumes, it was a daunting and slow task to track down an answer. Indeed, often the answer was never found; either the information was not there or I had missed it. Sometimes it was found unexpectedly in a book with a totally unrelated title.

After spending a whole day trying to find an article about making tin polishing laps, only to eventually discover it in a book on staking tools, I resolved to create a single index to all the books in my library. Not long into the project I discovered my computer data base was both extremely useful and hopelessly flawed. After all, the real problem facing the collector is to evaluate the worth of something *before* it is purchased; and what I actually needed was a data base of what I didn't own.

Unfortunately, being an impractical academic, I didn't fully appreciate the inherent contradiction: I could not assess a book unless I owned it (the local libraries are useless for horology). So I continued buying books blindly so that I could read them, index them and decide if I should buy them! Then it dawned on me that, although my creation had not helped me much, it might be of some value to other people. So I expanded my data base to encompass all printed matter of interest, and added comments. From which point I found myself referring to it weekly and I began to appreciate its value. And I had a wonderful excuse for my obsessive collecting behaviour.

The result is this bibliography listing (mainly) books related to mechanical watches which were published between 1800 and the present. The aim, as I will explain in the introduction, is not merely to *list* books, but to provide *guidance* to people who have not yet read them, to assist their learning experience. Consequently my assessments of contents and the separate indexes (of titles in date order, authors, full titles, title key words and subject) are central to this work.

Preface to the Second Edition

This second edition sees some important changes.

First, the number of items has increased by 600, from 2,223 to 2,823 and the subject index by 9,605, from 26,658 to 36,263 entries, with other indexes increasing accordingly.

Second, the Price Index has been omitted. This is because I have not kept it up-to-date and so it is no longer of any use.

Third, where possible I have included my estimates of quality, grading books from poor to excellent.

And fourth, and most important, the bibliography now includes 137 book reviews by other people, providing much additional information for books I have not personally read.

Why have bibliographies?

The man who prides himself on the fact that he can learn nothing from others has a perfectly just estimate of his own abilities, and he can learn nothing, simply from a deficiency of brains.

“A Practical Treatise on Watch Repairing”, N.B. Sherwood

Purpose

People read non-fiction books to learn. People refer to bibliographies to find answers to questions about books. And the usefulness of bibliographies can be measured by how well they satisfy that need. A trite statements perhaps, but I am not sure many bibliographers have gone on to ask: what questions do people want answered?

The obvious question is, does a book exist? But this is far too superficial. We look for publications for a *reason*, and mere existence is only the necessary, preliminary question. It is far more important to ask: what do we want to learn having located a book? And this question seems to have been largely ignored.

We may have many reasons for wanting know about a book: it is old, it has a wonderful binding, it is very rare, the author has the same name as oneself, and so on. We might even want it for the information it contains. A few of many possible questions are:

- *Editions*. When and by whom was it published? Are there modern reprints?
- *General content*. What is in it? Is it written for beginners or advanced readers? How good is it? Are different editions merely reprints or do they have markedly different content?
- *Detailed content*. Where can I find information about a specific topic? If there are several works, how can I choose between them?
- *Price*. How much might I expect to pay for it? How common is it?

Most bibliographies go little further than indicating the existence of a book and telling us something about its history. And often they do both inadequately, giving limited publishing data and few cross-references. For example, authors and titles are sometimes specified incorrectly; simply reversing the order of multiple authors will hide a book in a totally different part of the bibliography where it may not be found. To locate a publication requires the provision of extensive indexing of authors and titles, a feature which is uncommon.

But even if we are given the tools to find a book we still need to know if it is worth reading or buying; to merely know a book exists gives no idea of its value. For example, it seemed to me worthwhile to add Kemlo's book to my library on the basis of the meagre information I had about it. But after paying too much money I discovered it was trite, and later found out it was largely copied from another book.

This bibliography aims to answer five questions about publications: existence, publishing history, general content, quality and (too selectively) detailed content.

Scope

Because of the size of the task some arbitrary restrictions have been imposed.

First, the subject area is restricted to mechanical watches. This has led me to omit items which deal exclusively with sundials, clocks, electronic watches and time. But if a book has some, albeit quite minor, mechanical watch content I have often included it.

I have never seriously asked myself “what is a watch?”. Is my minute repeater in an oversized pocket watch case a bedside clock, even though I might just be able to carry it on my person? Is an American back-wind clock movement with lantern pinions a watch? The point at which we divide the continuum is arbitrary and I have simply followed my feelings.

Second, the bibliography is restricted to books and pamphlets (a jigsaw puzzle, a pack of cards, a few videos and a dinner set). To attempt to list and index everything published would be impractical. Most importantly I have omitted journals and other periodicals except for some separate offprints. A few journal articles have crept in, some by accident and some deliberately, as a result of being sold and available as separate items.

And third, with a few exceptions, the bibliography is restricted to items printed from 1800 to the present. This is because Baillie's superb book “Clocks and watches, an historical bibliography”, although quite different in purpose, covers most of the earlier books.

Such statements are fanciful ideals and there are several grey areas which have been resolved by arbitrary decisions:

I have deliberately excluded two borderline areas. These are modern mechanical watches with electronic escapements (most notably Swatch and other “collectable” watches) and ornamental turning (despite being relevant to watch cases).

Otherwise everything to do with mechanical watches is regarded as pertinent; history, construction, repair, collecting, decoration, novels; an endless list.

Importantly, many non-horological texts are very definitely relevant. For example, repair involves the use of tools which are often described in general metal-working texts; to omit Holtzappfel would be ridiculous. Similarly, the social and historical circumstances of watchmaking is not ignored, even if the work (as in the case of Dane's book on Stubs) makes but a passing reference to horology.

Many of the myriad pamphlets and catalogues have been overlooked (particularly those produced by

Introduction

museums, auction and material houses, and watch manufacturers). Although some of this material is referenced, mainly if a modern facsimile reprint exists, its volume and generally inconsequential nature makes its inclusion of doubtful value.

I have also omitted many books, such as general antique guides, that mention watches incidentally.

I feel somewhat uneasy about this selection and a few important items may have been omitted inadvertently.

Some non-watch items have crept in, by accident or deliberate choice. Haliburton, for example, appears so that others might not suffer from the ambiguity of the title as I did. Similarly Smit is included because it is not obvious that it contains no watch content. The main problem is with German books which use the ambiguous word "uhr" and so can be about clocks or watches, the distinction being only possible on reading the books.

Other horological books appear which may be devoid of information relevant to watches due to my ignorance; I must admit I haven't personally examined all 2,200 titles, but then I doubt if anyone has.

Although a general bibliography, there is a strong English bias because the information about English items is generally more detailed.

Sources

The information has been extracted from a large number of disparate sources, the primary ones being:

Auctions.

Horological booksellers' catalogues from America, Australia, England and Germany.

Internet bookseller listings.

My own library.

Public library catalogues.

Published bibliographies.

These sources vary significantly in accuracy and detail; one can be reasonably confident of library catalogues, but the others often contain careless and incomplete descriptions. It is quite clear that the compilers of some lists have not actually handled many of the publications and there are many incomplete, dubious and even grossly incorrect entries. Some of these entries appear in several lists, indicating compilers have copied somewhat uncritically. Unfortunately they do not give their sources and it is not possible to authoritatively check them.

A major problem is that a number of entries in Tardy's bibliography do not appear anywhere else and it is likely that these are incorrect. However I have been unable to confirm this and so I have included them in this bibliography.

Being in the same position and having handled only about 30% of the publications, I have used extensive cross checking to try to eliminate errors. I have relied mainly on lists where the compiler must have actually seen the works and filled out details from other sources. Where significant discrepancies occur I have noted the alternative author names, titles and descriptions and their sources; either directly in bibliographic entries or in the indexes.

The bibliography

Generally each item has a single entry for all editions, including translations.

There are a few exceptions, where editions have different titles or authors (Borer or Bowman or Swiss Expert) or when doubt exists about the relationship between two items (Janvier and Magnier). Also there are a small number of entries that are purely cross references.

Compressing everything into a single entry simplifies the bibliography at the cost of losing some information about printing history. Generally the entries show the last known printing and, in parentheses, the first known printing (which may not be the first edition). In some instances further details are given in the review, especially when editions have markedly different content.

Each entry consists of *bibliographic data* followed (as required) by *printing information*, *contents*, a *review* and *remarks*.

Bibliographic data

I have not provided formal bibliographic descriptions. I regret this as I have since come across several books where such precision would have been invaluable; but it was too late to rebuild the data base.

The format of each entry is:

Reference Number:

Used to cross reference index entries to the bibliography.

Author:

Where no author is given other key words are used. Sales catalogues sometimes fail to list a book by author, preferring the publisher or key words. Where an author is known I have always used it and included cross referencing in the bibliography or the indexes.

Titles:

Being primarily an English bibliography the English title is usually given first, even when this is not the original language, followed by titles in other languages.

For clarity, only the first word and some proper names are capitalised.

Subtitles:

Subtitles, perhaps for several languages, are given immediately below the titles. For example, the first edition of this book has the title "Mechanical watches" and the separate subtitle "an annotated bibliography of publications since 1800".

The distinction between title and subtitle is sometimes dubious and I have tended to make the split in a way to keep the title short.

Publishers:

Where known, the publisher of the latest edition or reprint is given with the publishers of earlier editions in parentheses.

Dates:

Where known, the date of the latest edition or reprint is given with the date of the earliest known edition in parentheses. When no date is given *circa* is used, but in some instances the date is regarded as authoritative and *circa* is omitted.

In a few cases, multiple dates may not mean multiple editions. Different sources sometimes give different dates for the one printing. Occasionally, where I am sure, I have used the correct date, but often I have given all dates when they may be referring to multiple printings.

Formats:

Where known, the format of the latest edition or reprint is given with the format of earlier editions in parentheses.

Format information consists of number of pages, illustrations, plates and size (where possible as *height x width*). The binding is not given. Pagination usually only includes the main body of the work but may be misleading; most of the time it includes illustrations but sometimes these are paginated separately. Similarly there are instances where a number of illustrations and plates are given separately but the illustrations are actually contained within the plates.

General subjects covered:

A few key words indicating the content and languages of the work.

Printing information

Printing information is indented to distinguish it from the bibliographic data and contents. This note gives additional information on editions.

Contents

A description of the content. This varies from nothing (if I haven't seen the book or if the content is obvious) to a chapter-by-chapter summary.

Review, remarks and quality

All the above information is just a statement of facts. In contrast, the reviews are *opinions*.

My reviews were written over a period of about eighteen years, during which time, as I indicate in the preface, my aims for this book evolved. Initially they were simply personal notes and then expanded into more thoughtful critiques. But it wasn't until quite late that I stipulated aims and criteria for this book in general and the reviews in particular. Consequently, although I have revised some of the early ones some variations in style will be found.

My primary goal has been to base each assessment on the stated or implied aims of the authors. For example, a picture book should have excellent pictures in it, a student text should cover knowledge and skills in step with the pupil's educational needs and abilities, and an advertisement should arouse the desire to buy. By concentrating on what the author intended I have an impartial basis upon which to examine the book and to justify criticism or praise. Whether a book is hopelessly out-of-date, is limited to some miniscule aspect of horology, or is generally regarded as a great work is simply irrelevant. It is good or bad mainly by how well the authors achieved or did not achieve their aims. It's usefulness is of little consequence. Fortunately most authors stipulate their purpose, but sometimes the aims are not clear and then I have had to deduce them.

My second aim has been to focus on the watch related information and avoid discussing anything to do with time, clocks or other aspects of horology. If a book includes other areas of horology my review should ignore them; and if a reader wants to know about these parts he should ignore my review.

So a review ought to be a rather matter-of-fact analysis; perhaps excepting the cases where I haven't the faintest idea of what the authors wanted to do.

Being human I haven't actually done this! Several books delighted or irritated me so much that, even though I have stayed within my criteria, I have expressed myself in other than neutral terms. It is, in fact, impossible to be neutral, if only because a review is necessarily qualitative; any form of grading must be a matter of opinion, even if expressed with mathematical precision. But anyway, I think it is inevitable, perhaps even desirable, that the reviewer's feeling are exposed.

My biggest problem was with books which bore little relationship to their apparent aims. Almost inevitably an ill-planned or mis-planned book is ill-written; it is extremely difficult to write well if you do not know what you are writing about.

Another problem was with books which I felt were aimless. In particular, I found the plethora of pretty picture books (including many old and very expensive tomes) illustrating cases and dials were increasingly dissatisfying and I do not consider them good unless they contain at least something educational or unusual.

Finally, I am interested in *author responsibility*. I believe everyone who writes on horology (and, of course, most other matters) is a teacher and should be responsible for the effect they have on the education of their readers. Authors have many aims, but a sincere effort to ensure the correctness of their words within those aims ought to be fundamental. Some "technical" books use words and mathematical symbols to dress up meaningless irrationality. Some "history" books mindlessly repeat half-truths. Some "collectors" books contain statements which are simply false. When I am sure that an author has failed in his or her duty to the reader I see no point in being polite.

At the beginning of each review I provide a *grading* which summarises my opinion of the book. The grades I use are *poor*, *mediocre*, *fair*, *good*, *very good* and *excellent*. (There is a single exception, one book which I was forced to describe as *bad*.) Generally these grades indicate my opinion of quality, but occasionally they reflect my opinion of importance; these are generally books which I have graded as excellent because, even though they contain significant faults, they are seminal works.

The grading is useful for another reason. Some times my reviews may give the impression that I do not like a book, because I tend to focus on problems rather than virtues. Consequently I might give the impression that a book is only fair when, actually, I consider it, overall, to be very good. So the reviews must be considered in conjunction with the grade.

In some places I have gone well beyond the functions of a reviewer and added *remarks*.

On a few occasions I have been unable to review a book without discussing my beliefs, usually about education and science. I could not isolate these remarks, they being integral with the review, but I hope the reader has no difficulty in distinguishing them.

A few books have stimulated my interest to the point where I needed to express my ideas on some subject; for example, after reading many accounts of Thomas Earnshaw I could not resist adding my own assessment. Such an observation is incidental, usually contains controversial ideas and is clearly delineated from the review which it follows.

My comments on author responsibility apply equally to reviewers and if reviews or remarks were purely personal opinions they would be pointless. Responsibility requires that a reviewer limits statements to those areas of knowledge where the reviewer has some competence.

It is for this reason, rather than self promotion, that I have included a short autobiography in the preface. Its purpose is to indicate the areas in which I have some knowledge and experience and so can consider myself competent to comment. Although I could never work as a watchmaker, I have turned balance staffs, repaired fusee chains and done enough other tasks to appreciate the trade. Although I have not undertaken mathematical research I have enough knowledge of mathematics and statistics to understand and appreciate many of the more theoretical aspects of horology and manufacture. And I have taught enough students and written copious study guides so I can reasonably comment on other people's approaches to education. What I cannot do, and hopefully have avoided doing, is to discuss areas in which I have no experience; which is why I have avoided clocks and electronic watches, for example.

The indexes

Full title index

The full title index alphabetically lists all titles with initial articles and other “noise” words omitted; there are 3,565 entries. This can be very useful (as I have discovered) in finding books with similar titles and the entries for translations.

Title key word index

There are occasions when only partial information is known. This index cross references *title key words* to the bibliography; there are 7,833 entries. Some words, such as *uhr* or *watch*, are singularly useless and are omitted. Where possible I have taken liberties and not indexed titles literally but indexed indicative key words. Such liberties allow more useful entries.

Author index

The author index cross references *authors* to the bibliography; there are 4,234 entries.

In some instances, where the author is unknown, I use the publisher, editor or some other suitable identifier. One example is *Swiss Watchmakers*, used for the authorless books and pamphlets produced by different organisations within the Swiss ebauche industry.

I have found it useful to extend this index to include some names other than those of the authors. For example, many books refer to a single watchmaker; Breguet, Patek Philippe, etc. These makers’ names are listed in the author index to provide a convenient means of accessing titles concerning that maker.

Publication date index

This index gives the titles in order of the date they were first published with the latest known date in parentheses. Items for which the dates are unknown are collected together at the end of the list.

Subject top level index

To help you find your way around the very large Subject Index, this index lists the top level categories in that index.

Subject index

The subject index is like an ordinary book’s multi-level index except that it indexes many books simultaneously, each entry providing a pointer into the bibliography. There are 36,263 entries. Because it is so large, I have provided a short list of the 481 top level index entries to help you find your way around.

I have included entries in three ways:

- If I have read a book, I have built up my own index entries independently of any index in the book.
- Where I have not read the work I have included general entries based on available information.
- Some books have not been indexed. Some are “indexes” in themselves (such as Pritchard “Swiss timepiece makers 1775-1975”) and a few books cannot be indexed because their content is so specific that the title and review are sufficient.

In addition, the index contains entries under *Reviews*, which refer to specific topics on which I have commented, and *Reviewer*, which lists the names of other people who have provided reviews.

The hardest decisions were how to classify the information and what to include in the index.

Classification is a headache because some index headings contain many entries. I have provided two aids to the user. First, where I feel it is necessary, cross reference entries are included; for example, the entry “Duplex” is simply “See Escapement, duplex”. Second, some index headings are split in two, using the *singular* form for specific information and the *plural* form to indicate more general references. For example, *case* contains entries on watch case construction and repair whereas *cases* references descriptions, types and illustrations.

The major problem with what to include is my inability to provide any indication of the depth and quality of the text in the corresponding book; entries may point to a few lines or an entire book, and the information might be excellent or poor. In consequence, I have indexed books without regard to quality. The user must rely on the bibliography entries and reviews to decide on the appropriateness of the selected works to their needs. In some situations I have deliberately omitted entries. For example, I have tried to index only interesting illustrations; my criteria being that the illustration is good and it displays something more than “just another watch”. Likewise, I have tried to limit the makers entries to those that do not appear in the basic references (such as Loomes) or for which significant information is provided.

Finally, it must be noted that the index was built up over about twenty years, during which time my opinions about what to index and how to categorise it changed. In consequence there are inconsistencies, unwarranted omissions and silly inclusions. However I hope the result will be of some use despite its inadequacies.

Buying books

The accumulative instinct in Sir Thomas seems to have approached, if not even passed, mania
“Collecting, an unruly passion”, W. Muensterberger

As the primary purpose of a bibliography is to tell you about books you haven't read, a few remarks may be useful for unfortunate souls like myself.

First, book prices generally follow a pattern, rising or falling depending on demand and quality. Occasionally sudden changes may occur, as when a new edition appears or multiple copies are sold. But there are exceptions without obvious reasons. For example the “Official catalogue of Swiss watch repair parts” was offered for \$126 in 1996 and \$30 in 1998. Similarly, I bought a copy of Bestfit #111 for \$39 at the same time as a copy sold at auction for \$153.

Second, whether general book dealers undervalue books or horological specialists overprice them is not for me to say, but there is a fairly consistent price difference between them which can be quite large.

Third, auction prices are very strange, probably reflecting the salesmanship of the seller and the irrationality of the bidder rather than the value of the lot. (I was comforted recently when a book sold at auction for about \$5,000 and my copy, bought only a few months earlier, cost me \$350.)

Fourth, second-hand book lists are frequently vague and sometimes misleading. Several times I have bought books listed under their first edition dates only to receive a modern reprint; Wilkinson “The escapement and train of American watches” is a good example of a facsimile which is only distinguishable from the original by its cleanliness and slight difference in size.

The existing situation doesn't surprise me and the absence of adequate bibliographies and coherent price guides make it to be expected. The book collector is at a severe disadvantage when confronted with a book for sale and has no means to determine if it is cheap or expensive. (Equally, book sellers probably find it hard to determine what to ask.) Hopefully this bibliography will help the buyer make sensible decisions, especially if a few guidelines are observed:

- Do you actually intend to *read* the books? Let me be frank (the authors are dead), Piaget and Kemlo are basically rubbish. Indeed, of my 800 or so books there are maybe two dozen I would consider worthy of owning for their content. I justify buying books by saying I need them to write this book, but in reality I am a collector willing to pay out large sums for very little return.
- Be aware of the book's printing history and the relative values of different editions. In some cases the differences in content from one edition to another are so great that they should be regarded as distinct works.
- Compare prices from several sources and don't buy at auction unless you know what you would pay in a bookshop. If buying by mail order or on the internet ask for details. In particular make sure of the edition, condition and completeness (some books appear for sale with parts or supplements missing but this may not be clearly indicated). Searching internet book sites is fun. I search using the keyword “watches” and get such interesting entries as “Angelique had lain naked in Gold Beard's arms, responding to his caresses, yet remaining faithful to Joffrey de Peyrac. Now, as savage Indians gather for war, she is humiliated, spurned by the one man she loves, scorned by those whose life she had once saved, a prey to Jesuit hatred. Her heart torn by conflicting emotions, Angelique watches ...”!
- Avoid “rare” pamphlets! These are often puff, fun and overpriced relative to their usefulness. Although it will be rejected by book dealers and collectors, I have actually found some value in assessing books by their “weight”. This is probably because I am concerned with the content and a book's weight gives some indication of the amount of information it contains (although not of its quality). It is an interesting exercise to compare prices per quarto page; the cost divided by number of pages with some allowance for page size.
- If reading books is a minor consideration, you either want attractive bookshelves (in which case only condition matters) or you are investing (and only good first editions and rare books will grace your walls). In either case you cannot open your books (any sign of use will devalue them) and I don't think this bibliography will be of use to you.

The value of checking before you buy will rapidly become clear. On internet book sites, some listing over a million books, it is tempting to buy the first copy you come across to save searching through the seemingly endless lists. But often several copies will be for sale with prices varying by 100% or more. Likewise, just because something seems ridiculously cheap do not assume it is a reprint; occasionally first editions are sold at reprint prices.

A short list

Finally, a few personal suggestions.

Of the books I have read (admittedly only a fraction of those in the bibliography) some stand out above the rest. Varying from general historical and repair works, to specialised references, to outright oddities, they provide an incomplete, and at times strange, but reasonable coverage of most aspects of horology in the small. These, to my mind, would be amongst the first I would buy if I were to start collecting books from scratch.

Although other people will certainly disagree with some of my choices, the following short list of 78 books may be useful as a guide to the better, primarily English language works.

R61 Andrewes, WJH (ed): “The quest for longitude”, 1998

- R155 Baillie, GH: "Clocks and watches", 1978
R158 Baillie, GH: "Watchmakers and clockmakers of the world volume 1", 1993
R159 Baillie, GH; Ilbert, C; Clutton, Cecil: "Britten's old clocks and watches and their makers", 1986
R183 Barkus, Homer A: "Oiling the watch", 1948
R261 Berner, GA: "Illustrated professional dictionary of horology", 2002
R280 Berthoud, Ferdinand: "Essai sur l'horlogerie", 1978
R461 Bulova School of Watchmaking: "Training units", 2003
R481 Campbell, R: "The London tradesman", 1969
R483 Camus, CEL; Hawkins, JI: "A treatise on the teeth of wheels", 2008
R519 Chamberlain, Paul M: "It's about time", 1978
R541 Chapuis, A; Jaquet, E: "The history of the self-winding watch 1770-1931
R619 Crom, Theodore R: "Early Lancashire horological tools and their makers", 1994
R626 Crossman, Charles S: "A complete history of watch and clock making in America", 2002
R627 Crossman, Charles S: "The complete history of watchmaking in America", ca 1960
R639 Cutmore, M: "The pocket watch handbook", 2002
R641 Cutmore, M: "Watches 1850 to 1980", 2002
R658 Daniels, George: "Watchmaking", 2009
R664 David, Jacques: "American and swiss watchmaking in 1876", 2003
R791 Earnshaw, Thomas: "Longitude", 1986
R841 Ehrhardt, R; Meggers, WF: "American watches beginning to end", 1998
R863 [England]: "Francis Lever, the young mechanic", 1835
R876 Esembl-o-graf; Smith, WO Snr; Smith, WO Jnr: "Esembl-o-graf", 1949
R942 Flores, J: "Perpétuelles a roue de rencontre", 2009
R987 Fried, Henry B: "Bench practices for watch and clockmakers", ca 1994
R994 Fried, Henry B: "The watch repairer's manual", 1999
R1032 Garrard, FJ: "Watch repairing, cleaning and adjusting", 1996
R1089 Glasgow, David: "Watch and clock making", ca 1897
R1117 Gould, RT: "The marine chronometer", 1989
R1131 Gribi, T: "Practical course in adjusting", 1910
R1147 Grossmann, M: "A practical and theoretical treatise on the detached lever escapement", 1981
R1150 Grossmann, M: "Prize essay on the construction of a simple and mechanically perfect watch", 2002
R1202 Hall, Eugene E: "Staff making and pivoting", 1993
R1226 Harrold, Michael C: "American watchmaking", 1984
R1233 Hatton, Thomas: "An introduction to the mechanical part of clock and watch work", 1978
R1292 Higginbotham, CT; Higginbotham, P: "Jeweled bearings for watches", 1979
R1310 Hoke, DR: "The Time museum historical catalogue of american pocket watches", 1991
R1358 Humbert, B: "Modern calendar watches", 2007
R1360 Humbert, B: "The chronograph, its mechanism and repair", 1990
R1418 Jagger, Cedric: "Royal clocks", 1983
R1451 Jendritzki, H: "The swiss watch repairer's manual", 1977
R1519 Kemp, Robert: "The englishman's watch", 1979
R1525 Kendrick & Davis: "Staking tools and how to use them", 2002
R1545 Kleinlein, WJ: "Practical balance and hair-spring work", 1992
R1546 Kleinlein, WJ: "Rules and practice for adjusting watches", 1948
R1626 Landes, David S: "Revolution in time", 2000
R1666 Lecoultre, Francois: "A guide to complicated watches", 1993
R1718 Loomes, Brian: "Watchmakers and clockmakers of the world", 1992
R1719 Loomes, Brian; Baillie, GH: "Watchmakers and clockmakers of the world", 2006
R1728 Lucchina, G; Perkins, A: "The watchmakers' staking tool", 2009
R1771 Marti, L: "A region in time", 2007
R1815 Meis, Reinhard: "Pocket watches; Taschenuhren", 1999
R1871 Moore, Charles: "Timing a century", 1945
R1884 Morpurgo, E: "The origin of the watch", 1954
R1896 Muir, W; Kraus, B: "Marion", 1985
R1995 Oppliger, Simone: "Quand nous étions horlogers", 1980
R2059 Patrizzi, O: "Dictionnaire des horlogers genevois", 1998
R2075 Perkins, A: "The modern watchmakers lathe", 2003
R2158 Price, Ron: "Origins of the Waltham model 57", 2005
R2161 Priestley, Philip: "Watch case makers of England", 1994
R2165 Pritchard, Kathleen: "Swiss timepiece makers 1775-1975", 1997
R2176 Quill, H: "John Harrison the man who found longitude", 1966
R2193 Rees, Abraham: "Clocks, watches and chronometers", 1970
R2313 Saunier, Claudius: "The watchmakers handbook", 1993
R2369 Seiko; Goodall, John: "A journey in time", 2003
R2384 Shenton, Alan: "Pocket watches 19th & 20th century", 1996
R2425 Smith, WO Jnr: "21st century watchmaking", 1996
R2471 Steinberg, J: "Why Switzerland?", 1996

Introduction

- R2510 Sweazy, TB; Sweazy, BG: "Master watchmaking", 1978
- R2542 Tarasov, SV: "Technology of watch production", 1964
- R2544 Tardy: "Dictionnaire des horlogers français", 1971
- R2565 Thiout, Antoine: "Traite de l'horlogerie mécanique et pratique", 1972
- R2570 Thomas, FA: "Home study course", 1938
- R2587 Tolke, HF; King, J: "IWC International Watch Co, Schaffhausen", 1987
- R2694 Waltham Watch Co: "Serial numbers with description", nd
- R2720 Waterbury Watch Co: "Ali-Baba and the forty thieves", 1889
- R2741 Weiss, Leonard: "Watch-making in England 1760-1820", 1982
- R2760 Whitney, ME: "The ship's chronometer", 2005

Acknowledgements

This edition is enhanced by 137 reviews written by different people. This has been made possible in two ways.

First. Fortunat Mueller-Maerki has given me permission to reproduce 42 reviews which he has written in recent years.

Second, the National Association of Watch and Clock Collectors allowed me to use 94 reviews which had been published in *The Bulletin* between 1950 and 2005.

The individual contributors are named at the beginning of their reviews and listed in the subject index under the heading *Reviewers*.

I am indebted to these people for the improvements which their contributions have made to this bibliography.

Bibliography

R1 Abbott, Henry G**A pioneer**

a history of the American Waltham Watch Company of Waltham, Mass
 USA: Adams Brown Co (Chicago: Hazlitt & Walker), 1968 (1905), 19.5 x 13.5 cm, 109 pp, 35 plates.
 Biography, history (English).

The text of this book was originally produced about 1888 as a series of articles for the "American Jeweler" and the revised edition was printed in 1905.

There is a Google book pdf (available in USA only?).

17 chapters. The book begins with a short history of the company followed by biographies, with portraits, of the major managers and tool makers involved with Waltham. It also includes photographs of the development of the factory and ends with a description of the clock room and observatory reproduced from the Scientific American of April 1905.

[facsimile reprint, fair] *The forward says this "work presents nothing that is new or startling, but is simply a collection of facts ...".*

The title is somewhat misleading because it is essentially a biographical work with the history to be gleaned indirectly from it. At times fascinating, but too factual and lacking interpretive commentary. It has been superseded by Moore "Timing a century" and other books.

[Remark] *I wonder if George Hazlitt chose his pen-name so that he would appear at the start of bibliographies.*

R2 Abbott, Henry G**American watchmaker and jeweler**

an encyclopedia for the horologist, jeweler, goldsmith and silversmith
 USA: Arlington Book Co (Chicago: Geo. Hazlitt & Co), 1989 (1883), 22.0 x 15.5 cm, 378 pp, 288 ill, 2 fld plates (354 pp, 288 ill).
 Repair, tools (English).

Tardy indicates 12 editions up to 1908 with at least two modern reprints; one of the 1898 edition, published in 1989, and one of the 1893 edition. Bromley lists the 1898 edition as having 2 folding plates.

There is a Google book pdf of the 1898 edition (available in USA only?).

Alphabetical entries containing descriptions of American tools, descriptions of escapements and some repair suggestions. Also included are short biographies of horologists and other people. There is an index.

[4th edition 1894, good] *The preface states that there is a need for "a book that would furnish some information in regard to tools of American manufacture ...".*

Abbott has achieved this by pillaging sections from Britten "Watch and clockmakers' handbook, dictionary and guide" (with some acknowledgement and a few changes) and adding descriptions of American tools and techniques. Most if not all of the escapement material is from Britten and most if not all of the tool descriptions are Abbott's contribution. At least on this occasion the source is mentioned, unlike in some other books by Hazlitt and Walker.

Like all encyclopaedic works the level of entries is variable. Some are just definitions or far too brief biographies, while others contain useful detail. Overall it is quite a good collection of information, probably most useful for the descriptions of tools. The repair topics only cover a few areas, many relating to basic activities such as hardening and soldering.

R3 Abbott, Henry G**Antique watches**

and how to establish their age

USA: Cooksey Shugart Publications (Chicago: Geo. Hazlitt & Co), ca 1993 (1897), 19.5 x 13.5 cm, 204 pp, 170 ill.
 Identification, makers, biography (English).

Reprinted in 1965 and circa 1993. The 1993 reprint appears to be in both hard back and soft cover. The book begins with a 14-page introduction: English hallmarks, followed by summary of styles of pillars, hands, balance cocks and pendants.

The body of the book consists of a list of over 6,000 names of makers interspersed with portraits and illustrations of watches. Covering watchmakers up to 1850, most entries consist of just name, city and dates, but the more famous have short biographies.

The book concludes with a page-and-a-half appendix of additional names, which only goes as far as "Graupner".

[1st edition, fair] *The summary of styles is good. After providing a table of English hallmarks for the London assay office, Abbott discusses how to date a watch by examining its features. He begins with a chronology of the first use of different features (from 1550 to 1810). Then he examines the different styles of pillars, hands, balance cocks and pendants. This section primarily aids with dating pre 1700 watches. Abbott's approach is far more sensible and more useful than that of Camerer Cuss in "The English watch 1585 - 1970".*

The remainder of the book, the list of makers, has been superseded by Baillie, Loomes, Pritchard and Tardy. However there are some long and reasonably interesting biographies for John Arnold, Berthoud, Caron (Beaumarchais), Earnshaw, John Ellicott, Thomas Grignon, Moritz Grossmann, Ingold, Saunier and Tompion, as well as a few shorter ones. The author shows his personality by including a couple

of avowed clockmakers (such as Chauncey Jerome and Eli Terry) and authors; plate 127 of a clock movement looks distinctly out of place.

This would have been a useful book, but now it is primarily a collector's book rather than a helpful tool.

R4 Abbott, Henry G**History of time measurement**

and of time-measuring instruments

New York: The Calculagraph Co., nd (1913), 38 pp.

History (English).

Reprinted from the Keystone Magazine, March, 1913.

R5 Abbott, Henry G**The art of hard soldering**

Chicago: Geo Hazlitt & Co, 1971 (1895), 16 x 12 cm, 69 pp, 29 ill.

Repair (English).

Lamps and blowpipes; Soldering appliances; Fluxes; Practical work.

R6 Abbott, Henry G**The watch factories of America**

past and present

USA: Adams Brown Co, 1981 (1888), 19.5 x 13.5 cm (8.5 x 6 inch), 145 pp, 50 ill.

History (English).

First published in 1888. There are at least two reprints; a numbered limited edition of 500 copies in boards, and an unnumbered reprint (also marked "limited reprint").

My reprint has poor illustrations and page 80 is blank (a missing illustration?).

There is a Smithsonian Institution pdf of the book (available worldwide?).

27 short chapters: Aaron L. Dennison (6 pages); Luther Goddard, Pitkin bros., The American Horologe Co., the Warren Mfg. Co., N. B. Sherwood, the American Waltham Co. (18 pages); The Nashua Co. (4 pages); Edward Howard, E. Howard Watch and Clock Co. (8 pages); The Newark Co., the Cornell Co. (6 pages); The United States Co. of N.J., the Marion Co. (4 pages); The Elgin National Co. (12 pages); J. C. Adams (2 pages); The Tremont and Melrose Cos. (2 pages); The Mozart Co. of Providence, the New York Co. (4 pages); The Mozart Co. of Ann Arbor, the Rock Island Co., the Freeport Co. (4 pages); The Illinois Co. (4 pages); The Rockford Co. (2 pages); The Adams & Perry Mfg Co., the Lancaster Co., The Keystone Co. (6 pages); The Fitchburg Co, (2 pages); The Auburndale Co. (4 pages); Thje Waterbury Co. (8 pages); The Independent Co., Freedonia Co. (4 pages); Bowman (2 pages); Columbus Co. (4 pages); Aurora Co. (4 pages); Trenton Co. (4 pages); Charles Moseley, P. S. Bartlett (6 pages); Cheshire Co., Manhattan Co. (4 pages); The Self Winding Watch, the United States Co. of Waltham (4 pages); and The Peoria Co., N. Y. Standard, Seth Thomas and Wichita Cos. (5 pages).

[first edition facsimile, very good] *Abbott (together with Crossman "The complete history of watchmaking in America") provides a very good, contemporary account of the American watch industry. However, Crossman is better and to be preferred.*

I am fascinated by the migration of people, machinery and watches from one failed company to the next. One gets the feeling that, outside the few major concerns, the companies played "pass the parcel" with the occasional watch actually being made and sold.

R7 Abbott, Henry G**The watch factories of America**

past and present

USA: , nd (1888), 11 x 8 inch, 44 pp, no ill.

History (English).

A typescript, presumably a reprint of some part of Abbott's book. A photocopy?

R8 Abbott, Henry G**The watch factories of America**

past and present ... and more

USA: Greg Frauenhoff, 2003, 28.0 x 21.5 cm, 64 pp, 40 ill.

History (English).

Facsimiles of the original articles from which the book "The watch factories of America, past and present" was produced, together with some additional facsimile extracts from contemporary journals. The additional material is: Arthur Wadsworth, Trenton, Cheshire Watch Co advertisement, Advertisement for "The watch factories of America, past and present", Otay notes, The wrecks of watch factories in America, Carl Van der Woerd, Portrait of Charles Van der Woerd, A glimpse at the interior of a model factory, and Resume of the Elgin National Watch Co.

[1st edition, fair] *The bulk of this book consists of 17 articles written by Abbott and published in the American Jeweler between 1887 and 1888. These articles were then re-arranged, edited and extended for the book.*

Assuming the articles to be complete, Abbott's book includes a lot more material; Tremont, Melrose, Mozart, Fitchburg, Auburndale, Bowman, Manhattan, Self-winding, US at Waltham, Peoria, NY Standard, Seth Thomas and Wichita not being covered by the articles.

Early American Watchmakers (2 pages, 1888) contains some enjoyable anecdotes and a poetic will.

The Wrecks of Watch Factories in America (2 pages, 1888) is a somewhat cynical listing of companies that failed. The article was "to be continued", but the continuation (if it ever appeared) is not included.

A Glimpse at the Interior of a Model Factory (8 pages, 1889), written by Abbott, is a brief, non-technical description of some of the machines used at Waltham in 1889.

Finally, A Resume of the Elgin National Watch Co. (4 pages, 1889) is a history of the company.

There are some other pieces, including an incomplete biography of Vander Woerd.

Although an interesting collection of contemporary documents, there is not much here that cannot be found elsewhere.

R9 Abbott, Henry G

The watchmakers' and jewelers' practical hand book

A reliable compendium of valuable receipts and suggestions, carefully selected from private formulae and the best authorities

Chicago: Hazlitt & Walker, ca 1903 (ca 1880), (15.0 x 11.5 cm), 118 pp, 154 ill (119 pp, 54 ill).

Repair (English).

Tardy notes 8 editions to 1888, the last of 146 pp, 50 ill, but this is probably wrong. The 1892 printing is the 6th edition and my pagination is from a 1903 Hazlitt & Walker advertisement. One source suggested a foolscap size edition but this seems unlikely unless it is a photocopy. Only the 1892 6th edition has recently appeared for sale and I wonder if earlier editions were figments of Abbott's imagination or had different titles.

Some sources may confuse this book with Hazlitt & Walker "Watchmaker's and jeweler's practical receipt book".

The 6th edition has 6 chapters on drawing (9 pages), materials (18 pages), health (4 pages), filing and graver use (6 pages), tools (46 pages), and techniques (27 pages); with an index.

[6th edition, very good] Abbott notes in the preface that the majority of this work has been compiled from other books (including Saunier, Grossmann, Glasgow and Reid), articles and suggestions of friends. Although the sections on drawing, health and workshop fittings are dated, the rest of the book contains a good collection of repair tips.

R10 Abbott, Henry G

Watches and men

New York: Maiden Lane Historical Society, 1933, 18 pp, frontis.

(English).

An address given at the 22nd anniversary luncheon of the Maiden Lane Historical Society. Abbott was president of the society at that time.

[1st edition, fair] The talk begins with Abbott's memories of companies and people in Maiden Lane about 1870; English and Swiss watch importers, Tiffany, Howard, Ezra Fitch (Waltham) and Charles Rood (New York). After some remarks on stem winding, Abbott discusses the effects of Elgin halving prices in the 1870s, explaining that T. M. Avery reduced prices because "industry should share its surplus earnings with the consumers of its products" and Abbott's own support for this philosophy.

The talk continues with some remarks on watch styles, a personal reminiscence of an employee who made a ring watch, and a description of the effect of the 1873 depression on Maiden Lane. Abbott then explains how James Hamblet was the prime mover in establishing standard time zones in America and that he established a "time service" distributing time signals by telegraph and a time-ball on the Western Union building. He finishes the talk by explaining his involvement with the setting up of the Self Winding Clock Company and its time service.

Other than the discussion of Elgin's pricing and the 1873 depression, which are interesting, the remainder consists of remarks which are of little consequence. The talk is worth reading if you have easy access to it.

R11 Abeler, J

5000 jahre zeitmessung

dargestellt im Wuppertaler Uhrenmuseum an der Privatsammlung der Uhrmacher und Goldschmiedefamilie Abele

Germany: Wuppertaler uhrenmuseum, 1978 (1968), 24 x 17 cm, 123 pp, ill (63 pp, ill).

Collection, catalogue (German).

The title is arbitrarily given as "500 jahre" or "5000 jahre". One source says 128 pp and another 76 pp, but 63 pp is the most popular! This confusion is partly because there are at least two editions (1968 and 1978), a fact booksellers seldom mention.

Catalogue of the Abeler collection in the Wuppertaler Museum; including watches, watch papers, stands and keys.

R12 Abeler, J

Alles tickt

die uhrensammlung des Staatlichen Museums Schwerin

2000, 152 pp, ill.

Exhibition (German).

Details of the clocks and watch exhibits at the museum.

"Good quality illustrations support an informed content."

R13 Abeler, J

Das Wuppertaler uhrenmuseum

die geschichte der uhr

Berlin, New York: de Gruyter, 1971, 4to, 86 pp, 48 ill, 5 col plates.

Collection (German).

Details of the clocks and watches exhibited at the Wuppertaler Uhrenmuseum.
 “Written in an easy and readable style.”

R14 Abeler, J**Die ahnen der uhrmacher und goldschmiede familie Abeler**

Wuppertal: , 1998 (1975), 30 x 21 cm, 3 vols of 600 pp, ill .
 Biography (German).

Published in 1965 (125 pp, ill), 1975 (178 pp, 40 ill) and 1998.

Abbildungen Die Uhrmacher- und Goldschmiedefamilie Abeler Ihre Vorfahren und ihre Verwandten
 Lebensläufe Daten und Fakten besondere Ereignisse Aus dem Inhalt: Gebrüder Grimm Kaiser Karl V.
 Dom Pedro II. Kaiser von Brasilien Carl Fränken

R15 Abeler, J**Die longitudo zur see**

Germany: Wuppertaler uhrenmuseum, 1983, 23.0 x 16.0 cm, 48 pp, 80 b&w ill.
 Catalogue (German).

R16 Abeler, J**In sachen Peter Henlein**

Wuppertal: J Abeler, 1980, 21 x 15 cm, 90 pp, 53 ill.
 History (German).

Concerning Peter Henlein, an open letter to the State of Nurnberg.

R17 Abeler, J**Meister der uhrmacherkunst**

Wuppertal: J Abeler, 2010 (1977), 24 x 17 cm (22 x 15 cm), 656 pp (703 pp, 35 ill).
 Identification, makers (German).

The first edition is a biographic dictionary of about 14,000 makers names and trade marks for German
 clocks and watches.

The second edition of this standard work on German speaking clockmakers (from Germany, Austria,
 Switzerland) contains information on 20,000 clock and watch makers. As well as the biographical data,
 many entries include information about the items made and a few include serial numbers and dates.
 This edition has 6,000 more names listed with revisions and corrections.

*[2nd edition, review by Fortunat Mueller-Maerki] Anybody who is serious about identifying
 or researching a clock or watch maker in the German speaking part of the world (i.e. in Germany,
 Switzerland, Austria, and some formerly German speaking parts of eastern Europe) should be familiar
 with the ‘Abeler’, the standard volume on the subject since 1977. Unfortunately, the book has been out of
 print for over 20 years, resulting in prices on the used book market of several hundred dollars.*

*Jürgen Abeler was a fifth generation clockmaker and throughout his life owned and operated a watch
 and jewelry shop in downtown Wuppertal, Germany. In 1955 his father started collecting antique
 clocks and his collection (in the basement level of his store) soon grew to become a clock museum.
 Researching his treasures in the course of the decades Jürgen Abeler also assembled what eventually
 became possibly the biggest private horological library in Germany. Based on a card file of names of
 horologists originally started in the 1950s from names he encountered in his work, he set out in the
 1960s to publish a comprehensive listing, resulting in the 1977 publication of the 1st edition of “Meister
 der Uhrmacherkunst”, a massive book listing around 14,000 names of Germanic horologists active
 before 1850. Unlike other similar reference books covering other parts of the world that focus strictly on
 biographic information, Abeler’s list also included brief references to actual specific timepieces known
 from publications or museum collections. The book was a hit and sold out within a few years. The book
 asked readers to contribute additional names for future editions.*

*Abeler soon planned a second edition and expanded his card catalog of names not only through reader
 contributions, but also by systematically examining dozens of periodicals devoted to antiquarian
 horology, as well as all catalogs of the relevant auction houses and any published museum and collection
 catalogs he could get his hands on. For over 20 years he employed a part time person to keep updating
 his list. When this reviewer met him some 10 years ago we spoke about the urgency of getting the second
 edition in print, but given the constant backlog of new data the time never seemed right to just get it done.
 Eventually Abeler’s health began to fail and it became apparent that he personally no longer had the
 energy to complete the task, but luckily the German society of horological enthusiasts, the Deutsche
 Gesellschaft für Chronometrie, rose to the challenge. Under the leadership of their President Josef Stadl
 and their librarian Dr. Bernhard Huber they formed a taskforce of volunteers and approached the author
 with a proposition: They would take over the work in progress and the countless loose notes and create
 a print-ready digital manuscript for him for his second edition in exchange for getting the long-term
 intellectual property rights to the content, thereby allowing the DGC to produce third and subsequent
 editions in the future, perpetuating the availability of this research resource. A contract was signed
 between the two parties resulting in the book under review.*

*Thanks to a Herculean effort by the taskforce, the ailing Jürgen Abeler was able to sign-off on the
 manuscript, and could be presented in late 2009 with a preliminary copy of the new edition of the book
 that caps his life’s work. Sadly, Jürgen Abeler died on July 24, 2010, the very week that the book that
 symbolizes his lifelong commitment to systematic horological research started to become available to the
 global community of his fellow collectors.*

The new 2nd edition of "Meister der Uhrmacherkunst" sets a new standard of comprehensiveness for horological reference books in general and specifically for geographic directories. Not only has the number of names grown by 50% to over 20,000 listed individuals, but the number of clocks and watches listed by these makers has grown even more due to meticulous checking of thousands of horological auction catalogs, periodicals and other publications. As before, the directory limits itself geographically to German speaking areas and chronologically to the time up to 1850, thereby excluding industrially produced clocks and watches. (The 2005 book "Lexikon der Deutschen Uhrenindustrie 1850-1980" by Hans-Heinrich Schmid provides an equally universal coverage of the industrial segment.)

It lies in the nature of this kind of reference book that they can never be 'complete'. There were probably well in excess of 100,000 craftsmen who have over the centuries made clocks in Germanic Europe. But any maker whose timekeeper has been described in print, or has been in a major auction anywhere, or whose works are in the major museums, is bound to be featured in this directory.

The book is well produced and easy to use, and commendably provides through abbreviations a way to identify the original source of the information for many of its entries. As with any reference book not written in English there is the added foreign language difficulty for users not understanding German. But compared to the first edition the numerous abbreviations have been much standardized, and the user can soon figure out that 'Arb.' (= Arbeiten) stands for 'Works attributed to this individual', 'Vorn.unbek.' (= Vorname unbekannt) means 'First Name unknown', * = date of birth, † = date of death, ∞ = marriage date, ~ = baptismal date and 'erw.' (= erwähnt) stands for 'mentioned in', etc. As the book includes a long list of all abbreviations used, adding the English and French translations for just that limited vocabulary would have enhanced the usefulness of the book in the non German marketplace significantly, eliminating the need to turn on 'Google translate' on your computer.

The alphabetical name directory takes up nearly 600 pages, a list of 'Monogram punches' used by specific craftsmen is 30 pages long. Furthermore, there are pages listing 'Pictorial marks', and 'Assay office' punches from the Germanic countries. Unfortunately, there is no geographic cross-index by place names; such a feature can hopefully be added in some future electronic edition.

The new Abeler 2nd Edition is clearly a 'must-buy' book for the reference book shelf of any serious horological collector or scholar with international ambitions or with a particular interest in German horology of the pre-industrial era.

The vast majority of collectors outside of continental Europe, however, are likely to need access to this wonderful resource (and similar books covering other parts of the world) only rarely. This leads this reviewer to ponder why this kind of book - in these Internet centric times - is not also simultaneously published in an "Online, Pay-per-use Edition"? I am willing to bet there would be many more potential users willing to buy a half-hour access-pass to this data for 10 or 15 dollars when they happen to urgently need an answer, than there are people willing to pay \$100 for a hardcopy to put on their bookshelf.

Thank you Jürgen Abeler (as well as Bernhard Huber and the whole DGC team) for leaving to the worldwide community of horological researchers such a wonderful research tool and for making provisions that this database of knowledge can grow and be updated in the future.

R18 Abeler, J**Uhren im wandel der zeiten**

Eine ausstellung im deutschen Goldschmiedehaus Hanau vornehmlich aus den beständen des Wuppertaler Uhrenmuseums sammlung Georg Abeler.

Germany: Deutsches Goldschmiedehaus Hanau, 1964, 21 x 18 cm, 77 pp, 84 plates.

Description (German).

Also given as 116 pp.

The Abeler collection.

R19 Abeler, J**Ullstein uhrenbuch**

eine kulturegeschichte der zeitmessung

Frankfurt: Ullstein, 1994 (1975), 24 x 17 cm (8vo), 288 pp, ill, 128 pp plates (324 pp, ill, plates).

History, identification, makers (German).

Ullstein timepiece book, a cultural history of time.

Continental clocks and watches; case designs, dates and short biographies.

R20 Abeler, J**Zeit-zeichen**

die tragbare uhr von Henlein bis heute

Dortmund: Harenberg Kommunikation, 1983, 18 x 12 cm, 212 pp, 200 ill.

Description, history, illustration (German).

Portable timepieces from Henlein to the present.

"Focuses upon examples of ornate pocket watches and watches built into various objects ranging from hand mirrors to pistols."

R21 Abell, G; Leggat, J; Ogden, WG**Bibliography of the art of turning**

and lathe and machine tool history

England: Society of Ornamental Turners, 1987 (1956), (folio), 157 pp, ill (74 pp) (89 pp).

Bibliography, tools (English).

Earlier editions were printed in 1950 (Abell, different title), 1956 (89 pp) and 1970 (74 pp).

Although not directly concerned with watches, knowledge of tools and engine turning are necessary parts of watch work.

R22 Aberhardt, F**Calculs pour horlogers**

1955, 47 pp.

Technical (French).

Used in the Swiss horology schools.

R23 Ackermann, HC**Clock and watch making in Basle****Maitres horlogers dans l'ancien Bale****Uhrmacher im alten Basel**

Basle: Basle Historical Museum, 1986, 18 x 17 cm, 127 pp, 57 ill.

History (English, French, German).

Parallel English, French and German text.

No 10 des écrits du Musée d'Histoire de Bâle.

Published to coincide with the opening of the enlarged clock collection at the Basle Historical Museum. The Introduction gives a brief history of time keeping from primitive times through the introduction of mechanical time pieces and discusses various clockmaking families in Basle such as the Burys, Enderlins and the Meyers as well as individual clockmakers.

Only clocks?

R24 Ackermann, HC**Die uhrensammlung Nathan-Rupp**

Munich: Callwey, 1984, 27 x 20 cm, 334 pp, 500 ill.

Collection, description (German).

Catalogue of clocks and watches (in the Basle Museum) collected by Carl Nathan-Rupp between 1951 and 1976. It includes 17 non-mechanical clocks, 72 large clocks, 131 neck, pocket and form watches, and 22 carriage clocks, from the 16th to the 19th centuries.

R25 Adrien, E**Aux horlogers**

renaissance de l'industrie horlogère en Belgique par la création d'écoles d'apprentissage

Brussels: Alex. Berqueman, 1888, 8vo, 37 pp.

History (French).

The renaissance of the Belgium horological industry by the creation of schools for apprentices.

R26 Aikin, John**A description of the country from thirty to forty miles around Manchester**

New York: Augustus M. Kelley (London: John Stockdale), 1968 (1795), 31.0 x 24.0 cm, ix, (xv), 624, pp, 71 plates (xvi, [8], 624, pp, frontis, title vignette, 61 plates with 69 ill, map (2 fld plates), plan (2 fld plates)). History (English).

The title specifies 73 "plates" which are detailed in a table of plates. There are, in fact, 71 illustrations, including the frontis and vignette, of which 16 are in pairs on 8 plates; hence there are 63 separate plates. The two folding maps, which are the other two "plates", are on 4 large sheets; a 2-sheet folding plan of Manchester and its environs (each sheet has 9 pages in a 3x3 layout) and a 2-sheet street plan of the city (each sheet has 10 pages in a 5x2 layout). The prefatory pages consist of xvi (not all numbered) followed by 8 unnumbered pages (the subscribers list).

The facsimile reprint omits the two 2-sheet plans.

An 8 page introduction followed by 3 parts.

Part 1 has 6 chapters, being general accounts of Lancashire (31 pages), Cheshire (27 pages), Derbyshire (25 pages), the West-Riding of Yorkshire (10 pages), the northern part of Staffordshire (8 pages), and river and canal navigation (41 pages).

Part 2 has 5 chapters giving accounts of particular places in Lancashire (237 pages), Cheshire (91 pages), Derbyshire (39 pages), Staffordshire (26 pages), and the West-Riding of Yorkshire (43 pages).

Part 3 titled "Additions" has 5 sections: Canals (2 pages), Manchester (3 pages), Liverpool (19 pages), Macclesfield (2 pages) and Stockport (1 page); it concludes with a few errata. There is an index.

[1st edition, very good] *The general accounts in the first part all follow the same format, but vary in detail: description of the land, rivers, soil, manures used for cultivation, climate, agricultural products, minerals, and civil and ecclesiastical divisions. There is some general information on production methods (camomile and lead smelting) and a description of caverns in Derbyshire. The account of Lancashire says the climate is "unpleasant" and there is no mention of the Beatles.*

The second part includes one and a half pages on watch and tool making around Prescott (pages 311-12); this is quoted (in full?) in Weiss "Watch-making in England 1760-1820" and has been often mentioned in other books. It is of some interest, but perhaps the most important aspect is its brevity compared to the mentions of spinning and weaving throughout this section. It is clear that watchmaking was a very minor, albeit important, activity in England and of little consequence in the English economy.

In addition to the commonly quoted section, two other entries are interesting. The first (page 183), although not referring to horology, gives an interesting account of the treatment of apprentices. The second is a lengthy biography of Lawrence Earnshaw of Mottram (pages 466-68). Lawrence made clocks and orreries, and died in 1764 when Thomas Earnshaw was about 15. It is interesting that all the

biographies of Thomas Earnshaw that I have read simply quote from his autobiography and I haven't come across a book that refers to this entry by Aikin. I suppose someone has investigated Lawrence, who lived only 3 miles from where Thomas says he was born, but as he is such an obvious candidate to be the father of Thomas I am surprised I haven't come upon a mention of him before this. Maybe I should read some journals?

Although Aikin's book is not particularly relevant to horology, it is a very good account of the region in general and includes much irrelevant but fascinating information on canals, mining, spinning, pottery, cheese and general history; and I now know how camomile was grown. It is well worth reading.

R27 Aked, CK**Complete list of english horological patents up to 1853**

London: Brant Wright, 1975, 8vo, 33 pp.

History (English).

Presumably only a list of titles and authors.

R28 Aked, CK**Horology in provincial rural museums**

London: Antiquarian Horological Society, 1974, 8vo, 46 pp.

Collection (English).

Antiquarian Horological Society Monograph No. 7

"Probably an item of most interest to collectors of Antiquarian Horology Society monographs as the bibliography is probably the only part not out-dated."

R29 Aked, CK**The battle of Abu Klea**

nd, 6 pp.

History (English).

Offprint?

Pamphlet on a watch that had been to war.

R30 Aked, CK**William Derham and the Artificial Clockmaker**

London: Antiquarian Horological Society, 1970, 24.5 x 18.5 cm, 34 pp, 19 ill.

History (English).

Offprint from the journal of the Antiquarian Horological Society, 1970, 362-372, 416-427 and 495-505.

Part 1 discusses Derham's work on the affect of barometric pressure on clocks, with the purpose of showing Derham to be a competent and thoughtful researcher.

Part 2 considers the origin of the anchor escapement for clocks (Hooke or Clement) and then provides a biography of Derham, primarily a history of the churches where he had livings and a discussion of his relationship with the Royal Society.

Part 3 discusses Derham's writings, his collections and death, portraits, his quadrant and his will.

[1st edition, fair] This article discusses Derham without any mention of watches other than an illustration of a watch by Langley Bradley. I found it to be a rather dry article, the most interesting part being the discussion of errors in the illustrations in "The artificial clockmaker".

R31 Aksel'rod, ZM**Chasovye mekhanizmy**

Moscow: Mashgiz, 1947.

Watch making (Russian).

Watch movements.

R32 Albert, JF**Manuel d'horlogerie**

indispensable au praticiens, aux ouvriers, horlogers ainsi qu'aux apprentis

Paris:, 1909 (1900), 8vo, 58 pp, no ill.

Repair (French).

Manual of horology indispensable for practitioners, horologers and apprentices.

Including cylinder, duplex and lever escapements, alarms, etc.

R33 Alexandre**La montre et ses ancêtres**

1935, 8vo, 63 pp, ill.

History (French).

Listed in Tardy.

The watch and its ancestors.

R34 Alexandre, dom Jacques**Traite général des horloges****Ausführliche abhandlung von den uhren überhaupt**

Osnabrück: Kuballe (Paris: H.P. Guerin), 1978 (1734), 20 x 13 cm, 396 pp, 27 fld plates, 4 fld tables.

Bibliography, description, technical (French, German).

Baillie specifies 25 folding plates, 3 folding tables. CP Berger produced two editions of his German translation in 1738 and 1763.

There are at least two modern reprints; a 1978 limited edition reprint of the 1734 French first

edition, and a 1981 reprint of the 1738 German translation by Berger (20 x 14 cm, 424 pp, 27 folding plates).

General treatise on clocks.

Reviewed in Baillie "Clocks and watches: an historical bibliography". He notes that "In describing watches, the author says that pivot holes are blind, so that the end of the pivot bears on the end of the hole and prevents the shoulder of the arbor touching the plate." The book also describes a repeater and has "an excellent dictionary of technical terms with a plate showing each part described ... an admirable bibliography ... with long descriptions of the more important books".

R35 Alft, EC

Elgin, an American history 1835-1985

Elgin USA: EC Alft, 1985, 9 x 5.75 inch, 359 pp, 35 b/w ill, maps.

History (English).

Three printings, presumably all in 1985.

History of Elgin, Illinois including the Elgin Watch Company.

Ten chapters and a postscript: Country town in the west; The dividing line; Watches, milk and butter; The expanding city; Boom and panic; The good years; Whirling twenties; Depression and war; Civic pride; Modern Elgin; and Elgin during the 80s and 90s.

[1st edition, review by Henry B. Fried] Watchmaking was the dominant industry and Elgin National Watch Co. was the major employer during the company's century-long existence in the town of Elgin, located 38 miles west of Chicago. Hezekiah Gifford, the town founder, chose to name the town Elgin after a melodious Scottish psalm. The town was situated on the Fox river and was occasionally harassed by Indians.

In 1867 the town had over 4000 inhabitants. When the first watches were ready for shipment, in that same year, Elgin employed 500 workers. When the Elgin tower clock was toppled, thus signalling the end of the reign of the watch company, the town's population was well over 50,000.

This book basically tells the story of the Elgin community. The story of the watch factory is closely interwoven with the town's history. The financial successes, depressions, foreign competition, and labor problems faced by the factory are told alongside the social, educational, and political successes that occurred in the community. Also told are the war losses, diseases, epidemics, civic and community affairs, and transportation advancements. The author remarks that in the heyday of the trolley, one could travel by trolley from New York to Elgin.

The history of a growing, thriving community; its founders and philanthropists; migrants and emigrants from Europe, Asia and the islands is told. One of the town's people was Gail Borden of condensed milk fame. Borden was drawn to the Elgin area because of the large milk producing potential. He was honored with his name on one Elgin model movement. Crossman lists him as a stockholder, but that fact is omitted in this history, nor is there any mention of his connection with the watch factory.

Some of the personnel involved in the factory are mentioned, but not in the detail that can be found in Abbott or Crossman. However, this book is a good reference for Elgin researchers since it records events from the beginning to the very end of the Elgin watch enterprise. A few pages are devoted to the Illinois Watch Case Company, which for a time was the second largest employer in the city.

For those interested in the history of the Elgin National Watch Company, this book is important. It delves into facets of the factory's history that are not generally found in pure horological accounts.

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R36 Alft, EC; Briska, W

Elgin time

a history of the Elgin National Watch Company 1864-1968

Elgin: Elgin Historical Society, 2003, 28.5 x 22.0 cm, 120 pp, ill.

History (English).

Twelve chapters: Before there were Elgins (4 pages); A watch factory in the West (4 pages); Making watches with machines (11 pages); The great expansion 1880-1889 (6 pages); Factory life (9 pages); Boom and cut backs 1890-1898 (8 pages); The C.H. Hulburd years 1899-1924 (22 pages); Fast times to hard times 1924-1940 (9 pages); War production 1941-1945 (4 pages); Losing ground 1946-1955 (11 pages); Winding down 1956-1968 (4 pages); Aftermath (7 pages).

Followed by notes, appendices and bibliography. The appendices include a reprint of D. Hulburd "The box of wonders in your pocket".

[1st edition, very good] This is a well written, social history of Elgin. Because the Elgin National Watch Company was privately owned and kept its machinery secret for most of its existence, not much can be said about the economic and technical aspects of the company. But what is known makes a very interesting story, and the contrast between the managements of Elgin (especially under the excellent leadership of C.H. Hulburd) and Waltham highlights why Elgin was more successful.

A lot of information in the book comes from an unpublished history of Elgin written by George Hunter. It would be useful if this was printed one day.

Alft and Briska are not horologists, clearly shown by the odd terminology they use. Describing the escapement lever as a "flat shaft", arbors as axles and jewels as "miniature donuts" is a bit jarring and normally would upset me. But I found they do not detract from the book and I was surprisingly accepting of these strange words.

[Remark] The fact that Alft and Briska are not horologists is entirely appropriate. Their lack of knowledge reflects the role of employees at Elgin, as illustrated by two statements in the book (page 32): "I worked for the Elgin company nearly ten years ... and I don't know any more about watch making than millinery"; and "Another employee who had been making canon pinions didn't know where in a watch the part belonged. It is not necessary that she should ... she could not make them any better or any worse if she did." These clearly stress a central feature of watchmaking in America, the use of untrained, unskilled labour. For the authors and employees, watch making is a mystery, knowledge of which is irrelevant.

A third statement in the book (page 46) is also important: "because 'interchangeable' parts often had to be 'fitted' by finishers, they were among the factory's most skilled employees." Indeed, we could reasonably say that finishers were almost the only skilled employees.

In reality, the American system of manufacture grew out of a lack of skilled labour and a plentiful supply of unskilled people. It was simply not possible to use manufacturing processes that depended on skill, and the outsourcing, cottage industries of England and Switzerland could not be imitated because both relied upon a large, trained workforce. The most important aspect of mechanisation was the possibility of having the machines run by the uneducated, cheap labour that was available.

From this point of view, interchangeability is simply a desirable consequence; it is almost inevitable as a result of using machines and it reduces labour further. However, interchangeability was, in important respects, an unattained goal in the watch industry and it is more realistic to talk of similarity.

An interesting perspective on the American factory system appears in US Census Department "Report on the manufactures of the United States at the tenth census June 1 1880", Volume 2.

R37 Allanfranchini, P

Neuchâtel 1642-1942

trois siècles d'iconographie

2005, 427 pp.

History (French).

R38 Alleaume, A

Les brevets d'invention (français)

concernant l'horlogerie (1792-1869)

Paris: Bureau de la Revue Chronométrique, 1873, 8vo, 144 pp.

Technical (French).

Graffigny gives the date 1875.

French patents concerning horology.

R39 Allen, HB

A useful companion for clock and watch making

New York:, 1879.

Repair (English).

Listed in Tardy.

R40 Allix, Charles

Postal bid catalogue

London: Charles Allix & Associates, nd (1994), 25.0 x 17.5 cm, 64 pp, ill.

Bibliography, catalogue (English).

A well illustrated catalogue of 633 lots. Mainly books, but including watch movements, some tools and ephemera.

[catalogue 1 1994, good] Instead of simply selling by catalogue, Charles Allix produced three postal bid catalogues to allow potential buyers to bid on items, rather than the more usual "first come, first served" situation where overseas buyers tend to miss out. Reserve prices are shown and a sensible method of deciding on the high bid was used.

The booklet includes some interesting illustrations, including several watch movements and one of a Waltham production line set up at the 1885 International Exhibition in London.

This style of postage auction has been continued by David Penney. He had produced 5 catalogues to December 2001.

R41 Ambus, F

Technische laufwerke einschlieblich uhren

ein buch für feinwerktechniker

1958, 279 pp, ill.

Technical (German).

"Detailed practical handbook, with example calculations for train work and pitch and much more."

R42 [America]

American non-magnetic watches in the 19th century

USA: Greg Frauenhoff, 2004, 28.0 x 22.0 cm, 24 pp, ill, 2 col plates.

History (English).

A collection of facsimiles of articles, testimonials and advertisements from 1884 to 1893.

[1st edition, fair] An interesting collection of extracts which show some of the methods American companies used to protect watches from magnetic fields; the two main approaches being non-magnetic balance springs and placing the whole movement inside a magnetic shield.

R43 [America]

American watch and patent information guide

with serial numbers and dates

nd, 6.25 x 3.75 inch, 15 pp.

Dating (English).

No author and undated; it may be a reprint.

Booklet containing American company information, including serial numbers, date tables and a list of patents.

R44 [America]

Elgin, Hamilton, Waltham, Illinois

USA: RTG Enterprises, ca 1973 (ca 1950), 11 x 8.5 inch, 63 pp, ill.

Description, identification, repair (English).

May have been printed only once. Also given as 80 pp; the difference may be the omission or inclusion of the Beehler reprint.

A booklet of reprinted information on grade identification and parts for Elgin, Hamilton, Waltham and Illinois watches. It includes a reprint of Beehler "Practical modern watchmaking part II, manipulation of watch hair springs" (which see).

[1st edition, review by Henry B. Fried] This consists of reprints of late catalog pages from the Elgin, Hamilton, Waltham and Illinois catalogs. Hamilton, for example, pictures lists of their domestically made products from their 18-size grade 825 down to their smallest, 22/0 size, grade 911. Parts numbers for ordering are given in separate lists including mainsprings.

Elgin illustrates in line drawings their models from the 18 size 2nd to 4th full-plate lever set down to their baguette 26/0-size. Also separate parts number-lists are included here.

Waltham's part in this reprint combines their productions up to 1948 domestically made watches down to their disastrous and now rare 400 baguette model. The earliest movement shown here is their 18s 1880 model,

The Illinois company is represented by one page produced by the Hamilton Watch Company on hairspring manipulation and colletting, prepared originally by Howard Beehler, then president of the Horological Institute of America and Hamilton's technical department.

The offset material in some figures is not clear although the overall material is useful to those who repair their own watches.

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R45 [America]

Horloge Americana

the American pocket watch, brief chronological history

1969, 10 pp.

History (English).

"Models, watchmakers, serial numbers, Manufacturers, Dates of manufacture".

R46 [America]

How to repair watches and clocks

ca 1960, 21.0 x 13.5 cm, 188 pp, 186 ill, 1 fld plate with 2 ill, index, 7 pp ill.

Repair (English).

There is no author, date or publisher information in the book.

[Remark] This is a facsimile reprint of Bowman & Borer "Modern watch repairing and adjusting" (which see) and suggestive of a pirated edition.

R47 [America]

The watch and clockmakers buyer's guide

USA: , 1983, 28 x 22 cm, 136 pp.

Price guide (English).

R48 American Horologist

A practical course of instruction in the science of horology

or the construction and repair of time measuring instruments

USA: American Horologist, 1946 (1940), 28.0 x 21.5 cm, 314 pp, 35 plates with 370 ill (243 pp, plates).

Repair (English).

Printed typescript.

The American Horologist was the "official national publication of the United Horological Association of America, Inc., and its affiliates" and was edited by O.R. Hagans.

26 Lessons (the last few pages of each being illustrations, assignments and review questions):

Section 1 - Basic mechanics (Lessons 1-6, 76 pp)

Section 2 - Clock repairing (Lessons 7-11, 88 pp)

Section 3 - Watch repairing (Lessons 12-24, 145 pp)

Lesson 25 - Watch making instructions (hairspring manipulation, 6 pp, 17 ill)

Lesson 26 - Illustrations of tools (9 pp, 25 ill)

It appears that lessons 1-6 and 11-26 (243 pp, ill on watch repair) may have been distributed separately.

[1st edition, fair] Learning how to repair watches successfully depends on two things: a high level of manual dexterity and infinite patience. Without the former you will not be able to make and handle the

many very small parts, most of which must be accurate to one hundredth of a millimetre. Without the latter you will not be able to do the almost endless, boring tasks required to achieve the necessary skills. These factors are obvious when reading this course of instructions.

The first section, basic mechanics, teaches necessary techniques and covers: filing; sawing; hardening and tempering steel; filing, grinding and polishing small parts; making and sharpening graters; turning pivots; making screws; barrel arbors; stems; balance staffs; replacing pinions; and jewel setting. None of it actually involves watches or clocks. The student simply files and turns pieces repetitively and to every decreasing sizes and tolerances in order to reach the point when he is competent to work on a real watch. Although a very good introduction to these tasks it suffers from three defects. First, at least some help from a supervisor is probably necessary, if only to avoid unnecessary trial and error, and to provide feedback on progress. Second, understanding the work to be done does require a reasonably good knowledge of watches. Often the student is asked to get a watch and copy a part, so he needs to know what the part is, where it is and how to dismantle the movement to get at it. Indeed a good general understanding of watches, their design and how to disassemble and assemble them is essential. And third, much of the work is, inevitably, repetitive and boring; for example, the necessary, repeated shaping and sharpening of graters, and setting numbers of jewels in brass plates to practice the different tasks and methods.

Although there is no preface to explain the purpose of the course, I presume it represents the practical work which is associated with lessons teaching the descriptive and technical aspects. With such a parallel course of instruction, there is no doubt that the practical lessons and tasks provided in the first section would give the student an excellent grounding in the necessary skills.

The second section, clock repair, covers trains, gear theory, clock repair, the pin-lever escapement and repair tasks. On the whole it is quite good.

The third section, watch repair is poor. It seems the authors had lost interest as they went on, to the extent that the last nine lessons (18 to 26 covering balance spring truing, vibrating, overcoils, balance staff making, balance truing and poising, temperature adjustment, and escapements) are short, superficial and hardly worth reading. Lessons 12 to 15 cover cleaning and some repair tasks, although the reader is often referred to the basic and clock repair sections for specific information. But these are fragmentary and inadequate, mainly because only American full plate and three-quarter plate watches are discussed. As a result, there is no coherent discussion of keyless work and Swiss watch designs, amongst other things. Lesson 16 explains how to draw a lever escapement using unexplained specifications. I have no idea why it is included as it is irrelevant to repair and escapement adjusting can be covered perfectly well without it. Lesson 17 explains the lever escapement but inadequately covers its adjustment.

Overall, the writing is dull and would not inspire the learner. And the content less than adequate. There are much better repair courses and this set should be consigned to history.

**R49 American Jeweler; Shouffelberger, H; Higginbotham, CT
Watchmakers tables 1914**

Chicago: Hazlitt & Walker, 1916 (1914), 19.5 x 13.5 cm, 96 pp, 16 ill (71 pp, 13 ill).
Repair (English).

Produced as a subscription premium for subscribers to the American Jeweler (at the time \$1 per year). The introduction suggests the first edition was published in 1914.

The 1914 edition is "A collection of useful information concerning the teeth of wheels and pinions, the trains of watches and clocks, lengths of pendulums, quick methods of regulation, finding the number of teeth in missing wheels, etc."

The book begins with a 19 page reprint of Shouffelberger "Wheels and pinions and how to determine their exact size". This is followed by Higginbotham "Tables for regulating watches" (6 pages) and then assorted tables for the diameters of wheels and pinions, dial work, lengths of pendulums, dimensions of lathe chucks and inch/millimetre/ligne conversion. The final half of the book (pages 37-71) is "Installing wireless time" and describes how to receive radio time, constructing antennae, using receivers and making test buzzers.

[1st edition?, good] Shouffelberger provides general remarks on wheel and pinion sizes, a mathematical method of determining full diameters for gearing with true epicycloid addenda and 9 tables for different wheel and pinion combinations; a general table, tables of train wheels (of 60, 64, 70, 75 and 80 teeth with pinions of 6, 7, 8 and 10 leaves) and motion work. Other combinations can be calculated from the general table.

Four additional tables for determining full diameters are given later in the book.

Higginbotham describes simple methods to bring a watch roughly to time in a hurry and gives 3 tables for calculating daily variations from shorter measurements.

The table of American lathe chuck dimensions is identical to that in Goodrich "The watchmakers' lathe - its use and abuse".

The final section on wireless time is interesting, irrelevant and totally out-of-date! But the rest of the book is a useful compendium of data.

**R50 American Watch Case Co
History and development of the watch case**

New York: American Watch Case Company, nd, 8vo, 20 pp, ill.
History (English).

Listed in Tardy.

- R51 American Watch Case Co**
The monogram book
 New York: American Watch Case Company, ca 1900, 8 x 5.5 inch, 20 pp, ill.
 Repair (English).
 Guide to monograms and lettering.
- R52 American Watch Tool Co**
Precision machinery
Catalogue of tools
 manufactured by the American Watch Tool Co
 USA: Ken Roberts Publishing, Adams Brown (American Watch Tool Co), 1980 (ca 1890), 14.0 x 21.5 cm, 52 pp, 53 ill.
 Catalogue, tools (English).
 Reprint of the original catalogue with additional material.
 Hoke "The Time museum historical catalogue of american pocket watches" lists "Precision machinery ..." whereas Wild "Wheel and pinion cutting in horology ..." lists "Catalogue of tools" both reprinted by Ken Roberts in 1980. I assume they are the same catalogue with different titles.
 Preface (1 page); American watch tool company (4 pages, reprinted from Sanderson "Waltham industries"); 1 page (no title, reprinted from American Watch Tool Co "Catalogue", 1888); Catalogue (45 pages, with original price list).
[reprint, good] The catalogue provides illustrations and some details of size 3 and 4 lathes; these are larger than the common WW lathe, but built on the same principles.
The introductory text provides a history of the company, including biographies of the main people involved with it. The book is most interesting for the biography of Ambrose Webster.
- R53 Amweg, Gustave**
Les Arts dans le Jura Bernois
 et à Bienne
 1941 (1937), 2 volumes 275 ill, 27 plates and 235 ill, 15 plates.
 History, makers (French).
 Volume 1: architecture, sculpture, painting and engraving.
 Volume 2 has a chapter on horology and dictionary of jurassic horologers (37 page).
- R54 Anderegg, CA**
Tu seras horloger mon fils!
 Switzerland: Claude Anderegg, 2005, 21 cm, 238 pp.
 Biography (French).
 Autobiography of Swiss horological manager and executive Claude Anderegg.
- R55 Andrade, JFC**
Chronométrie encyclopédie scientifique
 Paris: Doin, 1908, 8vo, 370 pp, 193 ill.
 Bibliography, history, technical (French).
 First edition of "Horlogerie et chronométrie"?
 A technical history of horology.
See Tardy for a listing of articles by Andrade.
- R56 Andrade, JFC**
Horlogerie et chronométrie
 Paris: J.B. Bailliere & fils, 1924, 9 x 6 inch, 582 pp, 190 ill.
 Technical, theory (French).
 From the "Encyclopedie de mecanique appliquée".
 Introduction, Mechanical measurement of time, Time and its astronomical control, Escapements, Arithmetic of trains, Motive force, Creation of the compensation balance by Arnold and Earnshaw, Comment on Arnold's mysterious curves compared to the curves of Phillips, The rate of watches in vertical positions, The adjustment of chronometers by compensation, Summary of the problems in the mechanics of adjustment, The perturbation of isochronism by the inertia of the balance spring, The change in ideas about chronometry, Pendulum clocks, and Electromagnetic influences.
Considered by Charles Allix to be an "important standard work, predominantly scientific in approach".
- R57 Andrade, JFC**
Le mouvement
 mesures de l'étendue et mesures du temps
 Paris: Librairie Félix Alcan, 1911, 8vo, vi, 328 pp, 46 ill, 36 pp ads.
 (French).
- R58 Andrade, JFC**
Les organes réglants des chronomètres
 Besançon, Bienne: Magron, 1922, 20 x 13 cm, 146 pp, 24 ill, errata.
 History (French).
 The regulating organs of chronometers.
Said to be a history of horology concentrating on balances and balance springs, but Gould "The marine chronometer" says it contains a mathematical analysis of the use of two or more balance springs with one balance. Presumably the history is introductory to the main subjects of the book.

R59 Andressen, B**Armbanduhren des 20 Jahrhunderts**

Munich: Klinkhardt & Biermann, 1996, 24 x 16 cm, 112 pp, 150 ill.

Description, illustration (German).

Twentieth century wristwatches.

Including the prestige makers Breguet, Cartier, Jaeger-Lecoultre, Patek Philippe, Junghans, Lange & Söhne, together with Georg Jensen, Timex, Swatch and Fossil.

R60 Andrewes, WJH; Atwood, S**The Time museum, an introduction**

Rockford, Ill: The Time Museum, 1983, 26 cm, 32 pp, ill.

Collection (English).

The museum no longer exists.

[1st edition, review by Glenn A. Marsh] The Time Museum, located in Rockford, IL, contains a horological collection illustrating the history of time measurement. The museum has published this 32-page booklet as a guide or introduction to what one will find in the collection, and visitors to the museum will surely want to have a copy, both as a souvenir and for its reference value.

While the booklet's photographs depict only a few dozen of the 3000 items in the collection, the selections are well chosen to illustrate 14 milestone periods in horology. We find excellent color photographs of items ranging down through history from a 16th Century Swiss tower clock to a modern complicated astronomical clock. All items illustrated are strictly museum-quality examples.

But to this reviewer, the text is equally outstanding; it is a clear concise history of timekeeping boiled down to essentials, with the interrelationship of inventions and the significance of major developments or "schools" of clock and watch making nicely delineated. Too often, authors have little to say and they take up much space to reveal that fact; but here we have a well balanced, readable account that is, if anything, too brief.

Students and collectors interested in the history of horology will find this booklet valuable to give perspective to the major developments. The founder and director of The Time Museum, Seth G. Atwood, is to be complimented for commissioning this handsome publication.

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R61 Andrewes, WJH (ed)**The quest for longitude**

the proceedings of the longitude symposium Harvard University 1993

USA: Collection of Historical Scientific Instruments Harvard University, 1998 (1996), 28.5 x 22.5 cm, 437 pp, ill, plates.

History, technical, biography, bibliography (English).

Apparently reprinted in 1998.

In seven sections:

The introduction (30 pages) contains addresses by Andrewes, J.R. Knowles, Alistair Cooke and David Landes.

The context of longitude (36 pages) discusses longitude from the points of view of mathematics, navigation, cartography and history of science.

Early attempts to find longitude (93 pages) covers Navigation instruments, The Jupiter's satellites method, Christian Huygens, The Axe premium and Ward's clock, Cranks and opportunists, and The lunar distance method.

John Harrison (116 pages) has papers on wooden clocks (Andrew King), the three sea clocks H1-H3 (Andrewes), H4 (Randall) and regulator science (Martin Burgess).

Perfecting the marine chronometer (50 pages) examines Berthoud and Le Roy (Cardinal), Thomas Mudge (David Penney) and Arnold and Earnshaw (Jonathan Betts).

The James Arthur Lecture (20 pages) is a talk on 21st century watchmaking by George Daniels.

The appendices (73 pages), include information about the conference, translations of two early documents (Johann Werner and Gemma Frisius), instruments used to find local time at sea, and a bibliography.

[1st edition, excellent] It is very difficult for me to review this book because of my stated aim of restricting my comments to mechanical watches. Although the book can be viewed as primarily a history of the early development of chronometers (one author stated that "this conference celebrates the life and work of John Harrison", but the papers on Harrison occupy less than one third of the book) it is not sensible or realistic to take those parts out of their context. So I will make some comments on the whole book.

The first three sections (introduction, context and early attempts) provide a history of the longitude problem and non-chronometer solutions, but they are pitched at the layman. In some ways this is necessary (most readers, and probably many conference attendees, would be unable to handle the theory and mathematics underlying the astronomical solutions), but at times the papers are undesirably vague; in particular, the total absence of any study of the accuracy of the clocks designed by Huygens and the lack of an examination of the problem of division, which is central to instrument making (but which is discussed in depth in Weiss "Watch-making in England 1760-1820"). However, Chandler's discussion of the mathematical context, Van Helden's explanation of the use of Jupiter's satellites and Howse's description of lunar distances are very good, and Leopold provides a valuable insight into Huygens' understanding of isochronism. It is interesting that Leopold notes that Huygens realised that a condition

for isochronism was that “the returning force is proportional to the distance from the neutral point in 1673, three years before Hooke’s law of elasticity was published as an anagram in 1676. In contrast, the papers by Bruyns (navigation), Trower (cartography) and Mahoney (history of science) are rather superficial; probably fine as talks, but not very interesting when printed.

The four papers on Harrison and his circumstances are generally excellent, in particular the paper by King which gives a real insight into Harrison’s intellectual understanding. However, I was disappointed by the lack of technical detail and what is presented is not well expressed. Andrewes’s discussion of H1, H2 and H3 is fairly obscure and poorly related to the illustrations; H4’s design is ignored. Harrison’s grass-hopper escapement is clearly explained in an illustration to the paper by Burgess, provided you have a magnifying glass at hand to read the print.

From the point of view of watches, the most interesting section is that discussing later developments, where the work of Berthoud, Le Roy, Mudge, Arnold and Earnshaw is considered. Cardinal’s discussion of the dispute between Le Roy and Berthoud has no technical detail or performance data for their watches, which is a shame as elsewhere much of their work is strongly criticised. Penney provides an excellent analysis of the work of Mudge, providing comparative data to show just how superb his designs were. And Betts gives by far the best analysis of the argument between Arnold and Earnshaw that I have read. The James Arthur Lecture is an autobiographical presentation by George Daniels aiming to show the need for fine mechanical watches in the future. In a sense he is right (there will always be enough rich people who want a unique status symbol, but for the masses those days have gone. It is an interesting talk, but quite out of place.

This book is fascinating, readable and highly recommended.

[Remark] When I first read this book I found it too fragmentary, lacking coherence and continuity. This is inevitable when the entirely separate and specific views of different authors are brought together, which focus on specific points without there being an overview of developments. Also, some papers seem to be addressed to peers (understandable for a conference) which creates problems for other readers. For example, the discussion of Harrison’s regulator science by Burgess is obscure unless the reader has the necessary background information.

But when I read it again my opinion of its importance rose considerably, probably because I saw it in the context of other books, such as Gould “The marine chronometer, its history and development” and Landes “Revolution in time”, and now have more appreciation of its general excellence.

Although I feel hesitant, I have decided that this should be one of my “best books”. I think anyone interested in horology will benefit from it. But not by itself; rather in the context of other works.

R62 Andrich, G**Die uhren und ihre konstruktionen**

Hannover: Schäfer (Leipzig: Hachmeister und Thal), 2002 (1921), 17.5 x 12 cm, 140 pp, ill.

Description (German).

“Eigenschaften, behandlung und reparatur kleiner fehler durch den laien. Ein ratgeber für jeden kauer und besitzer alter uhren”.

The nature, handling and repairing small faults for the layman. A guide for all buyers and owners of old timepieces.

R63 Annen, R**Le dessin technique**

pour horlogers et mécaniciens

Switzerland: Magron, 1929, 30 x 21 cm, 128 pp, 150 ill, 33 tables, 1 fld plate.

Technical (French).

One source suggests 2 volumes, the second presumably an atlas, but also two parts in one volume.

Also described as “illustrated by 92 drawings and 19 tables.”

Drawing technique for horologists.

R64 Anquetin, Georges**Eléments usuels et pratiques du réglage des montres**

Paris: Georges Anquetin, 1891, 25.0 x 16.0 cm, 7 pp.

(French).

Reprinted from Revue Chronometrique.

Common methods and practices for adjusting watches.

R65 Anquetin, Modeste**Eléments de repassage en second**

pour conserver les montres et les améliorer ou aide-mémoire de l’élevé horloger

Vente: Modeste Anquetin, ca 1885, 17.0 x 11.0 cm, 43 pp, no ill.

(French).

Elements of finishing for the preservation and improvement of watches, or an aide to memory for the student horologer.

R66 Anquetin, Modeste**L’horlogerie des montres en général**

de ceux qui les font, de ceux qui les vendent, de ceux qui les réparent et de ceux qui les portent

Paris:, 1875, 16mo, 242 pp, 13 ill.

Description (French).

Limited edition.

Watches in general, how they are made, how they are sold, how they are repaired and how they are used.

Described as "entertaining stories about sellers, wearers and repairers of watches".

R67 Antiquarian Horological Society

300 years of fine English clock and watchmaking

Prescot: Antiquarian Horological Society, 1986, 80 pp, b/w ill.

Exhibition (English).

Published by the Northern Section of the Antiquarian Horological Society with each item illustrated. *[Reviewd by Charles Aked] This exhibition, mounted in the Prescot Museum, was conceived by the Northern Section of the AHS, the items being selected from members' collections. It was professionally set up by the Design Department of the National Museum, Merseyside, in conjunction with the Prescot Museum. The catalog of the exhibition has been prepared and funded by the AHS members themselves, aided by a loan from the central AHS Council.*

The most important aspect of the catalog and exhibition is that they both illustrate items collected by many different collectors over the years, not the exotic pieces used to fill many horological books, which are often far beyond the means of the average collector. Furthermore most of the items were on display to the general public for the very first time.

Among the fine provincial longcase clocks, the unusual wooden movement made by Robert Sutton, Barton, circa 1810, deserves mention for the mode of construction based on John Harrison's ideas. There are fine examples by Barker of Wigan, Lister of Halifax, Wyke of Liverpool, Major Scholfield of Salford described in the catalog. Only one of the two fine regulators received mention in the first section, the other made by Joyce of Whitchurch, circa 1850, was relegated to the second section comprising wall-hanging clocks. Among these were two lantern clocks one supposedly very early but much altered, and a number of clocks with unusual features.

The bracket clocks of three hundred years ago include several of early London origin since this was not a type of clock favored in the north until much later. Yet the bracket clock most suitable for the average collector is the example by Barrauds, Cornhill, circa 1820, with seven tunes manually selected, including "Roast Beef" (but no Yorkshire Pudding), both quarter-striking and music played on a nest of thirteen bells.

Four skeleton clocks are included, each of which is interesting in some way, such as the example fitted with a "grasshopper" escapement. Moving on to the chronometer section, a hybrid selection of marine chronometers and pocket chronometers are described cheek by jowl, even including a mantel clock with detent escapement, showing how difficult it is to categorize even straightforward items. Arnold, Earnshaw and Mercer are represented - naturally - and of course most have suffered vicissitudes over the years before coming to rest in a collection, evinced by the recasing of movements, etc., all mentioned in the reasonably detailed descriptions.

Only one turret clock is included, there was no room for more in the exhibition; it is a so-called "chair-frame" clock removed from the "Gladstone" church of St. Thomas, Seaforth.

Forty watches, each separately illustrated and described, as with all the pieces, cover a vast range of interest from the early Tompion of 1695 up to an excellent minute repeater watch of 1913. There are many escapements represented, thus providing a technical and artistic feast for the horological gourmet.

Finally, there is a touch of humor from the county well known for its rain, especially in the cricket season, by showing three sundials. One of these is a very fine folding universal equatorial dial made by J. B. Dancer of Manchester circa 1870.

The soft covers carry colored illustrations of the Lister longcase clock and its movement. The inside rear cover shows the Equation of Time tables pasted inside the door of the Daniel Quare longcase clock exhibited.

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R68 Antiquarian Horological Society

Continental clocks and watches

England: Antiquarian Horological Society, 1989, 74 pp, ill.

Exhibition (English).

Catalogue of an exhibition of around 220 examples of continental clocks and watches by the Northern Section of the AHS.

"An interesting catalogue of an exhibition held at Prescot Museum and organised by the Northern Section of the Antiquarian Horological Society in 1989. All the exhibits are illustrated and described."

R69 Antiquarian Horological Society

Proceedings of the fiftieth anniversary convention

England: Antiquarian Horological Society, 2003, 86 pp, ill.

History (English).

Includes articles on early enamelled French watches, Tompion and Hooke.

R70 Antiquarian Horological Society

The passage of time

England: Antiquarian Horological Society, 1999, 4to, 42 pp, 62 ill.

Exhibition (English).

“Catalogue of exhibition of time keeping of the ages held at the Science Museum. Informative and a good array of exhibits including items lent by George Daniels.”

R71 Antiquarian Horological Society**Your time**

including the contribution of Northwest England to the development of clocks and watches
England: Antiquarian Horological Society, 2008, 27.5 x 21.0 cm, 112 pp, ill, 24 pp ads.
Exhibition (English).

Catalogue for an exhibition of watches and clocks at the Prescott Museum and the Williamson Museum and Art Gallery. In eight sections, each of which has some text by the authors shown (1 page or less) followed by captioned photographs:

Chronometers: 37 pages, 45 items, by Edward Powell. (11 items on 11 pages appear later in the book.)

Watchmaking in Prescott and Southern Lancashire: 6 pages, 4 items, by Alan Smith.

Edward Massey's lever escapement: 20 pages, 24 items, Alan Treherne.

Unfinished or raw movements 'in the grey': 5 pages, 6 items, Alan Treherne.

Rough parts for longcase clock movements: 8 pages, 17 items, Alan Treherne.

Turret clocks: 16 pages, 15 items, Chris McKay.

Longcase clocks: 17 pages, 14 items, Edward Powell.

The Lancashire Watch Company 1890-1910: 7 pages, 13 items, Edward Powell.

With an index and short bibliography.

[1st edition, fair] The important question to ask of any exhibition catalogue is: What will it be worth in the future? That is, is a catalogue just a piece of (hopefully interesting) ephemera or does it have some long-lasting value?

The sections on watches and chronometers are, on the whole, of not much use; the text is too short, and the photographs, with a few exceptions, are more illustrative than instructional. There are interesting bits, but the lack of any clear purpose and the inadequate text detract.

There are two parts worth reading. The summary, with photographs, of the Lancashire Watch Company's products is valuable, and the discussion of Edward Massey and the development of the lever escapement is good. I think these may save the book from being forgotten.

(I cannot comment on the sections related to clocks which may contain useful material.)

R72 Antiquorum**100 years Universal watch**

important watches and wristwatches

Switzerland: Antiquorum, 1994, 4to, 95 pp, 151 plates.

Catalogue, history (English, French, Italian).

A tri-lingual auction catalogue of 151 lots with extensive documentation, including a history of Universal Geneve, models, etc.

See also Universal Geneve "Universal Geneve, 100 years of horological tradition".

R73 Antiquorum**Antiquorum in love**

important horology, jewelry and objects of vertu

Switzerland: Antiquorum, 1997, 27.5 x 19.5 cm, 227 pp, col ill.

Catalogue (English).

Auction catalogue of 195 lots with a "romantic" theme. The items are categorised into: Love between a man and a woman, Love of family and friends, Spiritual love, Love thyself, Erotic love, The symbols of love, and The language of love in gems and jewels. Each section begins with notes on the subject.

There are 41 watches, 11 clocks and a couple of watch keys. The rest of the items are plaques, snuff boxes, cigarette cases and other decorated items.

[1st edition, good] Each watch has brief technical notes. Only 6 movements are shown and all bar one illustration (of a musical watch) are far too small to be useful. Which is not surprising, but it severely limits the value of the catalogue to collectors of cases and automata. There are some short biographies of makers and an illustration of a rather uninteresting Swiss patent.

Although beautifully produced, the books by Carrera are more useful.

R74 Antiquorum**Art of Breguet****L'art de Breguet**

an important collection of 204 watches, clocks and wristwatches

Switzerland: Antiquorum, 1991, 27.5 x 19.5 cm, 479 pp, 171 plates, 31 fld plates, 28 ill.

Biography, description, history (English, French).

There is also an unillustrated auction catalogue in French; a supplement to the main volume?

Auction catalogue of 204 lots containing a short biography of Breguet, descriptions of lots and technical illustrations. Most lots give biographies of the original purchasers. Several lots include technical and general historical information.

See also Patrizzi, Sabrier and Bull "Breguet - meisterwerke klassische uhrmacherkunst".

[1st edition, very good] Although an auction catalogue, this should be regarded as a significant reference work. It has extensive documentation and superb photographs of clocks and watches manufactured by Breguet between 1792 and the present, including biographies and portraits of the original purchasers.

Most watches have only brief notes about the movements although some have explanations for features of

particular note. Some (mainly wrist watches) do not have their movements illustrated, and a 1956 pocket watch looks remarkably like a Hamilton 4992B.

Appended are some diagrams showing technical aspects, but there are no explanations (in particular of the repeater mechanisms) and so they are pretty rather than useful.

R75 Antiquorum**Art of british horology**

Switzerland: Antiquorum, 1995, 27.5 x 19.5 cm, 446 pp, 43 ill, 234 plates (3 fld).

Catalogue, description, illustration (English).

Auction catalogue with detailed descriptions of 263 pocket watches, wristwatches, clocks, chronometers and regulators, giving information about provenances and makers.

Preface by C. Jagger and an 11 page history of British horology followed by descriptions of the lots.

[1st edition, good] The brief history is good and there are many short but useful biographies of makers. The photographs are excellent, but they are often more artistic than informative; larger illustrations of the timepieces and movements would have been possible and helpful. And the descriptions are short, precise and general with almost no information about specific features.

So this catalogue has some value as a reference book if it is purchased for a reasonable amount.

R76 Antiquorum**Art of Cartier**

Geneve: Antiquorum, 1988, 28 x 19 cm, 136 pp, 65 plates.

Catalogue (English, Japanese).

Auction catalogue of 216 items of Cartier jewellery including watches.

R77 Antiquorum**Art of Patek Philippe**

300 legendary watches

Geneve: Antiquorum, 1989, 11 x 8 inch, 284 pp, ill, plates.

Description, illustration (English, Japanese).

Catalogue of the April 1989 auction with extensive documentation of items. The plates have descriptions and price estimates on the pages opposite.

See also "Art of Patek Philippe, calibre 89".

The single watch, calibre 89, is described in its own volume.

R78 Antiquorum**Art of Patek Philippe, calibre 89**

Geneve: Antiquorum, 1989, 27.5 x 19.5 cm, 59 pp, 9 ill, 12 plates.

Description, illustration (English, Japanese).

Catalogue of the April 1989 auction of lot 301, calibre 89, a watch with 33 complications made between 1980 and 1989 (see "The art of Patek Philippe, 300 legendary watches" for the other 300 lots).

[1st edition, fair] The watch is built on four levels. The book illustrates the four levels and then describes the tourbillon escapement, case, dials, equation of time, sidereal time, sunrise and sunset, secular calendar (correct to the year 2699), astronomical calendar, moon phases, date of Easter (to 2017 with a spare cam for 2018 to 2046), split seconds chronograph, grande and petite sonnerie chimes, minute repeater, alarm and thermometer. It concludes with a comparison between the calibre 89 and the Graves and Leroy watches.

A wonderful piece of advertising. Unfortunately it is almost totally devoid of information about the construction of the watch and its technicalities, the text being general and descriptive. The book merely serves to document the existence of this piece.

The watch sold for 4.9 million Swiss Francs.

R79 Antiquorum**Art of Rolex**

Switzerland: Antiquorum, 1992, 28 x 20 cm, 108 pp, 111 ill.

Catalogue, description (English, Italian).

Catalogue for the auction of 111 Rolex watches in Vicenza, with English and Italian text.

R80 Antiquorum**Art of Vacheron Constantin**

Switzerland: Antiquorum, 1994, 11 x 7.75 inch, 274 pp, 101 ill and addendum.

Description, history (English).

One source gives 274 items with 10 lots in a separate soft cover addendum.

Auction catalogue with extensive documentation of 286 items, including a company history and details of the complicated watch presented to King Farouk.

R81 Antiquorum**Important watches, wristwatches and clocks**

Sunday 25 April 1993

Geneva: Antiquorum, 1993, 27.5 x 19.5 cm, 291 pp, ill.

Catalogue (English).

Auction catalogue of 518 lots.

[1st edition, good] Except for one lot, this is an ordinary auction catalogue which includes short histories and biographies of Rolex, Hass & Cie., Franck Muller, Vacheron & Constantin and Universal Geneve.

The exception is lot 168. This is the automatic watch discovered by Léon Leroy and ascribed to Perrelet

(see Chapuis and Jaquet "The history of the self-winding watch 1770-1931" and Flores "Perpetuelles a roue de rencontre ou montres automatiques").

There is also a nice collection of form watches.

R82 Antiquorum

L'art de l'horlogerie en France

du XVI au XX siecle

Switzerland: Antiquorum, 1993, 28.0 x 20.0 cm, 408 pp, plates.

Biography, description, makers (English).

Auction catalogue of 293 items, mainly watches, with extensive documentation including biographies and portraits of makers. Each piece is described and illustrated, often by full page plates with multiple views.

[1st edition, very good] The superb photography (far better than in most books for collectors) and adequate descriptions make this auction catalogue a useful reference work.

In addition there are biographies of important makers. Most importantly, it contains valuable information on the Le Roy, Leroy, and Berthoud dynasties.

R83 Antiquorum

Longines legendary watches

Switzerland: Antiquorum, 1994, 136 pp, 64 plates.

Description, history, identification (English, Italian).

English and Italian text.

Auction catalogue of 195 watches. It includes an 8 page company history and model information.

R84 Antiquorum

Professor Thomas Engel Collection Part I

a tribute to precision and complicated timepieces

Geneva: Antiquorum, 2001, 4to, 156 pp, ill.

Catalogue (English, German).

Sale of 334 lots of pocket and luxury watches; including Arnold, Berthoud, Breguet, Thomas Cummins, Dent, Decharmes, Earnshaw, Gaudron, Gretton, Gubelin, Helwig, Heuer, Jules Juergensen, Lauenders, Leroy, Pellaton, Patek, Albert Potter, Recordon, Saintpere, Terrier, Tompion, Valette, Vulliamy, Windmills, Winnerl, and Zenith.

Includes an essay by Thomas Engel entitled "Why Watches?" and other short articles on the subject. Text in English throughout with the introductory essay bilingual German and English.

I have found no reference to a "Part II" auction.

R85 Antiquorum

The evolution of forms in horology

Geneve: Antiquorum, 2002, 27.0 x 21.0 cm, 553 pp, ill.

Catalogue (English).

Auction catalogue of 618 lots including watchmaking tools and books.

It begins with a 19-page introduction by Catherine Cardinal, titled "The evolution of forms in horology". The catalogue is in six sections: Form, ornamentation and function (20 pages, early watches); Form, ornamentation and decorative language (35 pages, painted enamel cases and form watches); Design (106 pages, Breguet and modern watches); Form, ornamentation and society (106 pages, Chinese and other markets, tools, books and manuscripts); Form and the choice of lifestyle (122 pages, complications, Rolex, Patek Philippe and miniature watches); and Classic watches (120 pages, Rolex, Patek Philippe and other makers). There is an index of makers.

[1st edition, fair] Some of Antiquorum's thematic auction catalogues are more than mere auction catalogues in that they include much useful information which is linked to the theme. And so they are books worth owning. Unfortunately this catalogue, although it does have some information in it, is simply a collection of watches almost unrelated to the theme.

The introduction states "The brilliant and comprehensive introduction which Catherine Cardinal ... has contributed to this catalogue, offers a new and fascinating approach to the history of the evolution of forms in horology." In reality, it is not brilliant and, although "comprehensive", it is far too short to provide any insight into the development of watch designs. Cardinal summarises a number of different styles which developed over the five centuries of watch making. But she does not explain these styles, doing little more than naming them, and provides no illustrations by which the reader can comprehend the progressive changes from one to another. In particular, she refers to the concepts of decorative "language" and decorative "vocabulary", but she does not explain what she means by these terms and, in fact, does not use such language in her article. The word "form" is used so vaguely that it verges on being meaningless, and there is nothing "new" in her presentation of well-established artistic periods.

However, it is ridiculous to think that aesthetic styles can be explained in a few pages, and the reader needs to go to serious books on art to make sense of Cardinal's summary.

Finally, Cardinal spends much time discussing clocks, which are irrelevant, as the catalogue only includes watches. But this is not surprising. Clock cases provide a far greater scope to display different artistic periods, whereas the watch is severely limited by its size and shape.

The catalogue is divided into sections whose titles are taken from the introduction. But the items are described without any reference to the forms and trends outlined by Cardinal. Most obvious are the tools, books and manuscripts in section IV; these have nothing what ever to do with the theme. Similarly, the

large numbers of Rolex and Patek Philippe watches offered for sale have nothing to do with the art deco, international and post-modernism periods they belong to, all being ordinary watches with few relevant design features.

So the catalogue is an ordinary collection of watches for sale roughly arranged so as to pay lip-service to the theme. The photographs are, of course, very good.

R86 Antiquorum

The longitude

at the eve of the third millennium

Switzerland: Antiquorum, 1999, 4to, 175 pp, ill.

Catalogue (English).

Auction of 75 lots being a selection of important marine timekeepers, chronometers, regulators and documents relating to the discovery of longitude.

R87 Antiquorum

The magical art of Cartier

Switzerland: Antiquorum, 1996, 28 x 19 cm, 465 pp, 12 ill, 225 plates.

Catalogue (English).

Auction catalogue with 624 lots of Cartier jewellery (including watches) and a 12 page history of the company.

R88 Antiquorum

The Sandberg watch collection

Switzerland: Antiquorum, 2001, 30.5 x 21.5 cm, 500 pp, plates.

Collection, catalogue (English).

Auction catalogue for the Sandberg collection, containing 423 lots with all shown in colour plates.

Each item has a summary of the case, dial and movement followed by notes, size, condition and cross references to Camerer Cuss "The Sandberg watch collection". Additionally, many entries have brief biographical notes and remarks on style.

[1st edition, good] As noted in the preface, this is an auction catalogue and not a description of the collection; its purpose is "arousing and maintaining high public interest throughout the sale". Consequently it omits much of the detail in TA Camerer Cuss "The Sandberg watch collection". It illustrates a fine collection of erotic and form watches as well as other fascinating pieces.

Actually, the collection has little to do with watches, as indicated by the many lots beginning with "very fine and amusing ...". It is primarily a collection of jewellery "boxes" which happen to contain watches. There are a few watches (by Berthoud, Breguet and others) but in most instances it is the container that matters, not the movement.

In comparison with some other "coffee table" books, which illustrate without providing much understanding, it is excellent. However, despite it being justified, the paucity of information makes it less helpful than it could be.

[Remark] The quality of Antiquorum's thematic catalogues is superb, but I sometimes wonder if their second-hand price, post auction, is justified. There seems to me to be a conflict between producing a sales aid and a more permanent and useful book. A few of the catalogues are valuable in their own right, long after the auction, and others are of less utility. The Sandberg catalogue has the problem of competing with the book on the collection and so has less value, especially as it recognises this and often refers the reader to that book. Which makes me wonder if it was worth producing such an opulent volume.

It would be nice if Antiquorum could use their undoubted expertise and facilities to include more general information so that their beautiful catalogues could also be excellent reference works.

R89 Antiquorum; Sabrier, JC

Important collectors' wristwatches, pocket watches, clocks

and horological tools, Saturday 12 & Sunday 13 May 2007

Geneva: Antiquorum, 2007, 27.0 x 21.0 cm, 651, 9 pp, ill.

Catalogue (English).

Auction catalogue of 691 lots.

It includes: Biography of Leon Hatot and ATO; The history of crucifix form watches; Rolex watches given to World War II POWs; and Details of the Longines Siderograph.

[1st edition, good] This catalogue has some interest for the information listed above. Otherwise it provides standard auction information for the lots.

Lot 693, a clock by Hubert Sarton, has a strange biographical entry written by Jean-Claude Sabrier: "In the late 1770s, he made a trip to Le Locle, where he was able to examine self-winding watches made by Abraham-Louis Perrelet. Afterwards, upon his return to Paris, he filed a document with the Paris Academie des Sciences, dated December 23, 1778."

It is obvious that Sabrier is stating that Sarton is a liar and a cheat for fraudulently copying Perrelet's design and publicising it as his own.

However, as far as I am aware this is a fictional account for which there is simply no evidence (and presumably Sabrier believes this because he is unable to accept a non Swiss being one of the inventors of automatic watches). This view is supported by the fact that I emailed Sabrier three times (twice directly and once indirectly) but I have never received a reply, indicating he has no evidence for his statement.

Although I am aware that Sabrier is not a competent historian (see my reviews of his two mager books on Houriet, Berthoud and Motel) this fabrication of history should be condemned.

R90 Antoine, E**R90 Antoine, E****Besançon fabrique d'ébauches**

Besançon:, 1890, 8vo, 54 pp.
(French).

Listed in Tardy.

Manufacture of ébauches in Besançon.

R91 Antoine, E**De la méthode en réglage**

Genève: Journal Suisse d'Horlogerie, 1902, 24 x 15 cm, 147 pp, 26 ill, 2 plates.

Repair (French).

On the method of adjustment. A study of how to obtain consistent performances from chronometer and lever escapements.

R92 Antoine, E**L'horlogerie a l'exposition universelle de 1889**

Paris:, 1890, 24 pp.

Exhibition (French).

Reprinted from Revue Chronométrique Journal de l'Horlogeries Française.

Horology at the Paris Universal Exhibition 1889.

R93 Antoine, E**Notes sur le réglage**

Paris: Baudoin, 1890, 8vo, 32 pp.

(French).

Notes on adjustment.

R94 Aoki, Tamotsu**Kagaka gijutsu zensho, tokei**

Tokyo: Shiruosha, 1949 (1947), 2 vols.

Technical (Japanese, English?).

Scientific techniques, horology. Volume 1 clocks, volume 2 watches.

R95 Aoki, Tamotsu**Seimitsu kogaku, tokeigaku**

Tokyo: Maruzen Co., 1944 (1939), 368 pp, ill.

Technical (Japanese).

Volume 2 of "Precision engineering". Tardy gives two editions in 1939 and 1944 and Pertuch one edition in 1943.

Science of horology.

Volume 2 of "Kagaka gijutsu zensho, tokei"?

R96 Aoki, Tamotsu**Tokeishi no tameno tokeigaka**

Tokyo: Shiruosha, 1949, 16mo, 113 pp, ill.

(Japanese).

Horology for horologists.

Volume 1 of "Kagaka gijutsu zensho, tokei"?

R97 Arcay, GP**Les huiles en horlogerie, le problème des lubrifiants**

Bienne: E. Magron, 1930, 8vo, 289 pp, 120 ill, 12 plates (9 plates?).

Technical (French).

See Tardy for a list of other publications by Arcay.

Technical study of oils.

R98 Archives de l'horlogerie**Marques de fabrique horlogers**

Switzerland:, ca 1898, 24 x 16 cm, three volumes.

History, identification, makers (French).

Volume 2 is 284 pp, ill.

Includes Swiss laws and statutes for the master, registration of trade marks. Volume II covers 1892 - 1898.

See also Chopard "Répertoire alphabétique des marques de fabrique".

R99 Argus**Livre d'or de l'horlogerie Besançon**

annuaire international 'Argus'

1906, 296 pp, table.

(French).

"Recueil des adresses, des fabriques d'horlogerie, suisses et françaises".

Collection of addresses on Swiss and French horological manufacture.

R100 Arlund, F**Table qui indique les nombres qu'il faut aux roues de rencontre des montres**

Genève: Luc Sestie, 1805, 4to, 23 pp.

Technical (French).

Tables giving the numbers which are necessary for the verge crown wheels of watches.
Pertuch lists "Table ou l'on trouvera les nombres des dents ..." (1793, 11 pp) which I assume is an earlier edition.

R101 Arnold, John; Earnshaw, Thomas

Explanations of timekeepers

constructed by Mr Thomas Earnshaw and the late Mr John Arnold
 London: Commissioners of Longitude, 1806 (1805), 4to, 63 pp, 6 fld plates.
 Description, technical (English).

Reprinted by the BHI in Harrison, Arnold and Earnshaw "Principles and explanations of timekeepers", which see.

Mercer and Andrewes give somewhat inconsistent accounts of this work. The Board had 150 (or 500) copies of each of the specifications printed in 1805. These were destroyed and a further 200 copies were printed including both specifications and, to quote Mercer, "leaving out of Mr Earnshaw's all passages in which any offensive mention is made of Mr Arnold ...".

Mercer also indicates two earlier publications in 1804 titled "Explanation of the escapement ...", but these are presumably the above first printing of 1805.

R102 Art et Métiers

Automates et mécanismes a musique

Paris: Musée Conservatoire National des Arts et Métiers, 1960, 66 pp, ill.
 Catalogue (French).

Automata and musical mechanisms.

Catalogue of the Musée Conservatoire National des Arts et Métiers including diagrams of movements.

R103 Art et Métiers

Catalogue du musée, section B mécanique

Paris: Musée Conservatoire National des Arts et Métiers, 1956, 278 pp, 68 figs.
 Catalogue (French).

This includes wheel cutting and dividing engines.

R104 Art et Métiers

Catalogue du musée, section JB horlogerie

Paris: Musée Conservatoire National des Arts et Métiers, 1949, 22.0 x 15.5 cm, 330 pp, 99 ill, plan of museum.

Collection (French).

See also Tardy who lists earlier catalogues (1876 and 1906).

Catalogue of the Musée Conservatoire National des Arts et Métiers. It is organised by type in the following sections:

Gnomons and meridians (3 pages), Sun dials (41 pages), Sand clocks (3 pages), clepsydras (4 pages), Elements of mechanisms (26 pages, pendulums, balances, balance springs, escapements), Monumental clocks (2 pages), clocks (76 pages), Watches (32 pages), Marine chronometers (25 pages), Clocks with conical pendulums (3 pages), Celestial spheres (11 pages), Planetary clocks (2 pages), Electric clocks (14 pages), Pneumatic clocks (2 pages), and Tools (28 pages).

Many sections have brief notes and references. Although most entries simply list the item, some include details, photographs and diagrams.

[1st edition, mediocre] *There are 4 relevant sections: escapements, watches, marine chronometers and tools.*

The escapements section lists 21 items relevant to watches with only the verge, Swiss lever and Earnshaw's chronometer illustrated.

The watch section has 5 uninteresting photographs and nothing else other than a simple listing of items.

There are a few remarks, but they are of no use unless you are looking at the object.

The section on marine chronometers is more interesting, describing and illustrating a Pierre Le Roy chronometer. It includes a 10 page separate section on Ferdinand Berthoud with photographs and a few diagrams.

The section on tools lists them without useful detail.

The importance of this book lies in documenting the collection and it would have been useful for a visitor to the museum. However, the brief historical notes and the few details do not justify having it these days, especially as there are far better books available. It is a book collector's item.

R105 Art et Métiers

Chefs-d'oeuvre de l'horlogerie, catalogue 184

Paris: Musée Conservatoire National des Arts et Métiers, ca 1949, 8vo, 72 pp, 16 plates, ads.
 Collection, exhibition (French).

Exhibition catalogue of the Musée Conservatoire National des Arts et Métiers on re-opening after World War II.

R106 Art et Métiers

Chefs-d'oeuvre de l'horlogerie, conférences

prononcées au Musée du Conservatoire National des Arts et Métiers
 Paris: Revue Française des Bijoutiers-Horlogers, 1949, 28.0 x 22.0 cm, 386 pp (not all numbered), 241 ill.
 History, technical (French).

A limited edition of 850 copies with 350 numbered on superior paper in a slip case. One source

suggests the numbered copies were hard bound with the remainder in wraps, but another gives a numbered copy in wraps and slip case.

17 lectures given to celebrate the re-establishment of the museum. The lectures are:

Auricoste, J: The origins of the marine chronometer.

Michel, H: Primitive instruments for measuring time.

Roumegoux, M: Marine chronometers and their precision.

Leroy, Leon: The decoration of French clocks.

Tardi, MP: The astronomical definition of time.

Janneau, M: The art of the clock.

Danjon, MA: Astronomical observatory clocks.

Bulla, L: Renaissance watches and horology at Blois.

Mesnager, P: The inventions of Huygens.

Chapuis, A: Horology and diplomacy (also printed in *Revue Francaise*, 1950).

Leroy, Leon: Testing watches at the Besancon observatory.

Rodanet, M: Modern methods of manufacture.

Bertrand, A: Two centuries of the horology of the Lepautes.

Donat, A: The development of the French horological industry.

Lallier, R: Breguet and the art of the watch.

Mesnager, P: Three centuries of the evolution of the astronomical regulator.

Devaux, L: The art of modern horology.

[1st edition, good?] The watch content is of some interest, but did not strike me as important.

R107 Arthur, James

Time and its measurement

Chicago: no publisher, 1909, 25.5 x 17.0 cm, 64 pp, portrait, 47 ill.

History (English).

Reprinted from *Popular Mechanics Magazine*.

Four chapters; Historical outline (shadow and water clocks); Japanese clocks; Modern clocks and watches; Astronomical foundations.

See also Hering "The lure of the clock" and "Key to the watches in the James Arthur collection".

[1st edition, fair] An enjoyable book containing a brief, well written introduction to different methods of representing time and with some discussion of how to measure it.

It is littered with Arthur's personal opinions. For example, he proposes we use Greenwich time everywhere instead of local time (I would have breakfast at 6 pm!) and he suggests watch quality is inversely proportional to its decoration. Perhaps the book is most noteworthy for Arthur's proposal to have all clocks and watches run by radio signals, which he asserts could be done before the year 2000. A prediction that that was sensible and partly correct.

There is no mention of American watch and clock making.

R108 Arts of Asia

The watch market in China

1980, ill.

Description (English).

R109 Ashton, TS

An eighteenth century industrialist

Peter Stubs of Warrington, 1756-1806

Manchester: University of Manchester Press, 1961 (1939), 21.5 x 14.5 cm, 156 pp, 1 ill, 1 map.

History, tools (English).

Reprinted in 1961.

A history of the Stubs family firm of toolmakers from 1756 until about 1810.

Nine chapters: Introduction (8 pages); The workers (14 pages); The workers (contd.) (14 pages); The material (14 pages); The market (20 pages); The inn (15 pages); The carriers (13 pages); The medium of exchange (25 pages); and The file-maker and his family (24 pages).

Followed by Abridged pedigree of the Stubs family (1 page) and index (6 pages).

[1st edition reprint, good] Stubs was a major manufacturer of files and supplier of horological tools, but the book contains very little information on horology or manufacturing (for which see Weiss "Watch-making in England 1760-1820"). However it gives a good insight into working conditions and trading in the late 1700s and early 1800s.

I found Ashton a little dry, and I feel Dane "Peter Stubs and the Lancashire hand tool industry" (which see) is a more readable book. Both are very similar in approach and content, and they complement each other well.

Ashton provides several quotes from Mather, Joseph "The songs of Joseph Mather" (1862, Sheffield: Pawson & Brailsford, 12mo, 120 pp, "to which are added a memoir of Mather and miscellaneous songs relating to Sheffield, with introduction and notes by John Wilson"). Although not strictly relevant, this seems an interesting book.

R110 Asprey

A selection of the world's most complicated watches

London: Asprey & Co, ca 1989.

Catalogue, exhibition, illustration (English).

- Catalogue of an exhibition of twelve watches.
- R111 Asprey**
Clockwork of the heavens
 London: Asprey & Co, 1973, 30 x 21 cm, 92 pp, 53 b/w ill, erratum slip.
 Catalogue, exhibition (English).
 An Exhibition of astronomical clocks watches and allied scientific instruments presented by Asprey & Company with the special help of Harriet Wynter and the collaboration of various museums and private collections.
 Exhibition catalogue of 89 astronomical clocks, watches and instruments with 39 illustrated.
- R112 Association des Directeurs**
Les écoles suisses d'horlogerie
 die schweizerischen uhrmacherschulen
 Zurich: Fritz Lindner, 1948, 4to, 272 pp, ill, 100 pp advertisements.
 History (French).
 The "author" is given variously as Association des Directeurs, Chapuis, Jaquet or Lindner.
 Descriptions of seven schools; Bienne, Chaux-de-Fonds, Geneve, Le Locle, Saint Imier, Le Sentier and Soleure. Includes illustrations of watches.
- R113 ASUAG**
Société Générale de l'Horlogerie Suisse SA
 1931-1956
 Biel: Société générale de l'horlogerie suisse ASUAG, 1956, 147 pp.
 History (French).
 History of ASUAG.
- R114 ASUAG**
The secret of the watch
 Biel: Société générale de l'horlogerie suisse ASUAG, ca 1965, 15.0 x 24.0 cm, 36 pp, ill, 3 plastic overlays.
 Description, watch making (English).
 The manufacture of watches, a collective undertaking (4 pages); 3 three transparent overlays; The ebauche, an almost complete movement (7 pages); The escapement, the metronome of the watch (4 pages); The balance oscillates at 56 miles an hour (4 pages); The hairspring, finer than a hair (4 pages); The jewels and the mainspring (2 pages); Assembling and timing movements (4 pages); Never judge by appearances (2 pages); and Efficiency through specialization (2 pages).
[1st edition, good] The purpose of the book is to explain, in simple terms, how watches are manufactured in Switzerland, the three transparent overlays showing the structure of a watch movement and the sections of the industry that manufacture the corresponding parts. The following sections then describe each of the sections.
An excellent bit of puff, presumably produced as a sales aid and to educate watch buyers.
- R115 Atkins, CD**
Register of apprentices 1631-1931, Clockmakers Company
 London: Clockmakers Company, 1931, 8vo, 339 pp, 19 ill (on one plate?).
 Makers (English).
 "From its incorporation in 1631 to its tercentenary in 1931 compiled from records of the Company".
- R116 Atkins, SE; Overall, WH**
Some account of the Worshipful Company of Clockmakers
 London: privately printed, 1881, 25.5 x 18.0 cm, 346 pp, 3 ill, 8 plates.
 Biography, history (English).
 A detailed history of the Company based extracts from Company documents, with biographies of early makers and working methods.
 An introduction followed by two sections, the company and the trade.
 The first section on the company has 14 chapters: Charters and bye-laws; Arms etc; Court of assistants; Livery; Freemen; Apprentices; Biographical notes; Meeting places; Feasts; Archives; Plate; Funds; Charities; and Gifts to the company.
 The section on trade has 4 chapters: Regulations of workmen; Searches; Patents and inventions; and Imports and exports.
 There is an index.
[1st edition, good] This is a gentlemanly history. I describe it as such because it does little more than provide a compilation of polite facts. Although interesting and undoubtedly useful, the lack of interpretive and personal information makes it rather dry; it fails to provide any feeling for or understanding of historical circumstances except indirectly.
For example, there is a list of charitable donations but only a passing reference to the Clock and Watchmakers' Asylum at Colney Hatch. Although it is nice to know about people's largesse, this section would have been far more interesting if the asylum and its history had been described in some detail. Equally, the biographies provide little more than brief statements of existence.
An important but disappointing book.

R117 Attali, J

Histoire du temps

Paris: Fayard, 1983, 8vo, 333 pp, ill.

History, bibliography (French).

Weight and foliot; The spring and lever; Quartz.

R118 Atwood, G

Investigations, founded on the theory of motion

for determining the times of vibration of watch balances

London: The Royal Society, 1794, 27.0 x 21.5 cm, 50 pp, 2 fld plates.

Theory (English).

Originally published in the "Philosophical Transactions of the Royal Society" (1794, pp 110-168) and the existing copies are probably extracts rather than separate printings.

A mathematical analysis of balances.

[1st edition, good] Atwood begins with a statement deserving repetition: "It is always satisfactory to compare the motion of machines with the general laws of mechanics, whenever friction and other irregular forces are so far diminished as to allow of a reference to theory; especially if inferences, likely to be of practical use, may be derived from such a comparison". Unfortunately some other horological "theoreticians" have ignored this fundamental requirement.

The first 18 pages provide a mathematical analysis of the behaviour of a balance with one spring. The remainder analyses a balance with two springs; this is based on Mudge's escapement which is described in detail.

See also Baillie "Clocks and watches: an historical bibliography".

Part of this work is reproduced in Rees "Clocks, watches and chronometers".

R119 Auberson, JR

Les cotes des montres-bracelets

1992, 21 x 15 cm, 525 pp, b/w plates.

(French).

The values of wrist watches.

Price guide.

R120 Auberson, R

Les cotes de l'horlogerie ancienne

de la renaissance a 1930

Lyon: L'Art du Temps, 1981, 8.5 x 6.25 inch, 264 pp, 550 ill, 20 plates.

Price guide (French).

Limited edition of 500 copies.

"Montres, pendules, horloges, outillage, coqs, clefs, livres, lexique, les échappements, les horlogers célèbres."

Assessments of horology from its beginnings to 1930; watches, clocks, tools, cocks, keys, books, vocabulary, escapements, celebrities. With 1981 valuations.

[1st edition, review by Kathleen Pritchard, mediocre?] This book, written in French, consists largely of price quotes and estimates given by horological dealers in France in 1980. The prices, given in French francs, are in the middle range for each object, and are based only on dealers' estimates, not on auction sales. In each case, the object is assumed to be complete and in good working order, with the exception of one minor repair; for instance, replacing a mainspring. The author cautions that if your watch has a worn or dented case, or a scratched or chipped dial, or if your clock's gilding is faded, you should diminish the value accordingly. He also reminds us that certain objects are valuable largely because of their rarity, and, in any case, any object's value fluctuates with supply and demand.

The first 217 pages consist of photographs, three or four to a page, arranged by watches, watch holders, clocks, sundials, tools, cocks, keys, watch dials, chains and fobs, and watch movements. Descriptions are by visible appearance of the object; the only judgmental descriptions are dates. Most, by far, of the objects are French or Swiss and range in date from 1550 to 1930. The photographs are small and sometimes not very clear, so that one could not always make a definite comparison or identification with one's own piece. There are short, informative introductions to the sections on tools and cocks.

The second part of the book is instructional. but buried within it is a section on the prices of horological books. Again, the great majority of these books are French, with a few English, Spanish, Italian, and Latin.

The author promises to revise the estimates every two years.

The rest of the book is a hodgepodge of information. There is a group of drawings on escapements, reproduced from earlier works (without credit). There are single pages on an assortment of subjects, and a glossary of French horological terms. A section on celebrated horologists is really poor. At first glance, these horologists seem to be divided by countries - German, French, American, and so on, but on turning the page, you find there are also Parisians, Genevois, Lyonnais, etc. Many Americans, even French speaking, may not know that Bizontin means "from Besançon." And while you are searching through these categories for your watchmaker you still may not find him, for there are only a few in each, and some of the most notable have been omitted - Thomas Tompion in England, Adrien Philippe in Switzerland, to name only two of the vast number of unlisted heroes. And there are typos or misspellings among those who are there - Klenischi for Klentschi, for instance.

The value of this book, then, lies with its very large number of illustrations of European horological pieces and the prices for them in France in 1980. If this is where your interest lies, then you will need this book. It will not help you if you are looking for a research tool or other horological information.

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[Remark] *My estimate of the quality of this book (which I haven't read) is based on two things. First, the prices are completely out-of-date and so useless, except, perhaps, for historical comparisons. And second, the review indicates that the text is poor and not worth reading.*

R121 Aubert, D**Horlogers et montres exceptionnels de la Vallée de Joux**

volume II

Switzerland: A. Simonin, 1997, 26 x 24 cm, 215 pp, 250 ill.

Technical, makers, history (French).

Each volume published separately in 1993, 1997 and 2006.

A (social?) history of watchmaking in the Vallée de Joux where complicated ebauches were made by Piguët, Aubert Freres, Lecoultré, etc. for firms such as Jaegar LeCoultre and Patek Philippe.

R122 Aubert, D**La vallée des montres et des horlogers exceptionnels**

volume III

Switzerland: A. Simonin, 2006, 26 x 24 cm, 232 pp, 300 ill.

Technical, makers, history (French).

Each volume published separately in 1993, 1997 and 2006.

A (social?) history of watchmaking in the Vallée de Joux where complicated ebauches were made by Piguët, Aubert Freres, Lecoultré, etc. for firms such as Jaegar LeCoultre and Patek Philippe.

Volume 3 contains: Samuel-Olivier Meylan 1721-1755, premier horloger de la Vallée de Joux; L'horloger Louis Piguët du Bas-du-Chenit dit Berger; Nicole et Capt et ses successeurs, Le Solliat Vallée de Joux - London; Edmond Audemars 1882-1970, pionnier de l'aviation et industriel horloger; and Les horlogers Audemars et le photographe August Reymond.

R123 Aubert, D**Montres et horlogers exceptionnels de la Vallée de Joux**

volume I

Switzerland: A. Simonin, 1993, 26 x 24 cm, 208 pp, 400 ill.

History, makers, technical (French).

Each volume published separately in 1993, 1997 and 2006.

A (social?) history of watchmaking in the Vallée de Joux where complicated ebauches were made by Piguët, Aubert Freres, Lecoultré, etc. for firms such as Jaegar LeCoultre and Patek Philippe.

[Review by Henry B. Fried] *This is a very high quality book whose text matches its very high standards. Daniel Aubert is of the family that sired many of horology's foremost artisan-makers of ultra complicated watches. Claude and Leon Ernest Aubert were foremost among those who lent their special skills in producing some of the most exacting and complicated watches of the nineteenth and twentieth centuries. This book is not about the Auberts alone, but the author gives an equal and unbiased account of the many others whose Vallee Joux products have become as famous as their makers, Audemars, Francois and Charles Ami Lecoultré, Nicole, Rochet freres, Piguët, Golay, Capt, Meylan and others.*

Aside from the many watches and their details, their shops, family, street scenes, workshop personnel are pictured. Raw movements, ebauches and their descriptions are shown, pointing out the subtle differences among makers such as Lecoultré and Jurgensen, Piguët, Aubert and others. The founding of the specialized schools of horology in this area are pictured with the students and their masters.

In discussing the masterpieces from this valley and their makers, many were "ordinary people," making a living to maintain their families. Although many were indeed rivals, yet they often did work together, each contributing his specialty in order to assure a success to each complex project.

So much authentic and important information is contained in this French-language book that those admirers of such watches and those who own Swiss complicated watches, even if deficient in the French language, could be enriched by the visual information and abetted by a small French-English dictionary. This reviewer has made the appeal to Mr. Simonin to create an English text (only) supplement, but no news about this has reached us yet.

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R124 Auch, Jakob**Anleitung zur kenntniss und behandlung der taschenuhren**

für uhrenbesitzer ...

Gotha:, 1808.

Description (German).

Instruction in understanding and handling pocket watches for the watch owner.

Probably the same book as "Taschenbuch für uhrenbesitzer". Both are listed identically in Tardy and Drummond Robertson.

R125 Auch, Jakob**Handbuch für landuhrmacher**

“der leicht fassliche Anleitung, wie man, vom geringsten bis zum schwersten Stück. bis zur Vollkommenheit eine Taschenuhr bauen muss, wie man die Uhr gehörig aus einander nimmt, wieder zusammensetzt, sie gründlich reparirt und abzieht, stellt, regulirt u.s.w.

Weimar: Voigt (Ilmenau: Voigt), 2007 (1827), 17.5 x 11.0 cm, 261 pp, 2 plates (xiv, (2), 288 pp, 3 fld plates).

Repair, watch making (German).

Volume 30 in the series “Neuer schauplatz der künste und handwerke”. Two editions in 1827 and 1858 (edited by Madeler).

The 1827 edition is available as a Google Book PDF file, but without plates!

Reprinted in 2004 and 2007 (2nd edition).

A translation of the first edition into English appears in Berthoud and Auch “How to make a verge watch”.

A handbook for country watchmakers or for apprentices and amateurs.

The first edition describes the design and hand-making of a verge watch movement.

[1st edition, fair] See my review of Berthoud and Auch “How to make a verge watch” which includes a complete translation of the 1st edition of this book.

R126 Auch, Jakob**Taschenbuch für uhrenbesitzer**

oder vollst unter richt, wie man die taschenuhren zu behandeln und was man bei dem ankauf derselben zu beobachten hat.

Gotha: A. Auch, 1808 (1806), 8vo, 460 pp, 8 plates.

(German).

Pocket book for timepiece owners, or complete instructions on how to handle them and what one has to examine on the purchase of the same.

R127 Auch, Jürgen**Handbuch für land-uhmacher, deren hilfgen und lehrlinge**

In vollständiger Bearbeitung herausgegeben von Jürgen Meyer.

Weimar: Bernhard Friedrich Voigt, 1892, 17.5 x 12 cm, viii, 96 pp, 26 ill on 3 fld plates.

Repair (German).

Only a 3rd edition has been noted, but this is clearly different from Jacob Auch “Handbuch für landuhrmacher”.

It includes tools, pendulums, balances, escapements, jewels, pocket watch repair, cylinder watch repair, and repair of watches with keyless winding.

R128 Audemars Piguet**As time goes by**

the art of complex watches

nd, 8.5 x 6 inch, 96 pp, ill.

Catalogue (English, French, German).

“Very interesting document giving simple explanations on various complications.”

R129 Audemars Piguet**Jules Audemars - Equation of Time**

nd, 8.5 x 6 inch, 88 pp. ill.

Catalogue (English, French, German).

“Prestigious small book with many illustrations explaining the equation of time - with a DVD.”

R130 Audemars Piguet**The art of fine watchmaking**

Switzerland: Audemars Piguet, 1988, 8.5 x 6 inch, 61 pp, ill.

Catalogue (English, French, German).

Catalogue of products.

R131 Audemars, L**Historical sketch of Louis Audemars's watch manufactory****Notice historique sur la fabrique d'horlogerie de la maison Louis Audemars**

au Brassus

Lausanne: (Paris), 1876 (1837), 8vo, 14 pp (8 pp) (12 pp).

History (English, French).

Several editions, including 1837, 1862 and 1876.

R132 Augarde, JD; Ronfort, JN**Antide Janvier**

mécanicien-astronome, horloger ordinaire du roi

Paris: Centre de Recherches Historiques, 1998, 29 x 25 cm, 119 pp, 53 ill.

History (French).

Primarily clocks.

R133 Auhl, AM**Gemeinfassliche anleitung zur beurtheilung**

behandlung, regulierung und reparatur aller arten von gewöhnlichen uhren, oder wie thurm, wand und stutzuhren vorzüglich aber taschenuhren.

Vienna:, 1851, 16mo, 100 pp.

Description, repair (German).

Common sense instruction for assessment, handling, regulation and repair of common timepieces including pocket watches.

R134 Auschitzky Coustan, MP**Lip, des heures a conter**

Seyssinet, Libris, 2000, 190 pp, ill.

History (French).

"In 1973, the watch company, in Besançon in the Doubs, inaugurated a form of "self defense" to avoid closing the plant. The unprecedented social conflict is only one episode in the history of the flagship of French watchmaking. This book describes the fate of a strong company led for many years by its founder Fred Lipmann and its anchorage in Franche-Comte.

In addition to the history of the people it covers the history of technique from the first mechanical movements to quartz watches. The author, a recognized specialist, gives us a book illustrated by more than 400 watches which are the most representative of the production of this factory, with their approximate release dates, model numbers, types of movement and an index."

R135 [Australia]**Official record of the Sydney international exhibition 1879**

Sydney: Government Printer, 1881, 24 cm, ccvi, 1154 pp, ill, 3 fld plates.

Exhibition (English).

Class 310 (pages 401-421, 5 ill) describes the exhibits of chronometric apparatus, chronometers, astronomical clocks, watches, chronographs, etc.

It begins with a specification of the criteria for making awards, the scores achieved and the results of watch timing trials at the Sydney observatory. Then there is a 7 page discussion of the exhibit of the American Watch Company (Waltham) which includes details of Charles Vander Woerd's compensation balance, quoting his description. There are only very brief mentions of other exhibits. Finally the awards given are listed; Waltham received 5 first degree awards and Charles Vander Woerd a separate award for his balance.

[1st edition, good] The five judges were clearly overwhelmed by the Waltham exhibit and the quality of the watches. They provided a careful description of manufacturing, noting in particular factory organisation, mainspring length, the safety centre pinion, epicyclic teeth, and balance springs. Then a detailed description of Vander Woerd's compensation balance is given, including an explanation of its action. The report finishes with remarks on a chronograph mechanism and cases.

Vander Woerd's compensation balance is a steel balance with a short outer arc of a second metal in the form of intermeshing teeth; the second metal is not brass but he does not specify what it is. According to Vander Woerd this enables the expansion and contraction of the balance to be controlled so that it more nearly matches the change in the balance spring.

R136 Avery, AG**Clocks and watches**

New York: AG Avery? (New York: Hawthorn Books), 1958, 10 x 7 inch, 18 pp, ill.

(English).

Reprinted from Comstock "Concise Encyclopedia of American Antiques", pages 313-330.

Also given as 30 pp, ill.

Pamphlet on American timepieces.

[Review by Joseph Sternfeld] This is a reprint in booklet form from The Concise Encyclopedia of American Antiques. (New York 1955) The purpose is to render a short account of the development from the beginnings of small shops to important American industry, and to awaken an interest in timepieces for the deeper understanding of the subject. This the booklet is well calculated to do; it embraces a tremendous amount of information.

The first clockmaker in America cannot definitely be identified and what was made by the earliest clockmakers can no longer be found. From old records a few names appear; one of the early ones was a Connecticut man who probably worked about 1638. No clock by him is known but there is mention of his tools which indicate the fact. The oldest American tower clock still to be seen was made in 1726 by Ebenezer Parmele. (Note: According to word which recently came to me, the movement is resting in an attic of the historical society in Guilford, Conn.) As the years of the ending 1600's and early 1700's passed, other names are recorded, but examples of their work can rarely be found, and then only in museums.

From the middle to the end of the 18th century and the beginning of the 19th the makers become better known. These were the apprentices, well taught by their masters, and who then established themselves and made the fine clocks now sought by collectors. Among these are the Willard's and the Terry's and others who invented their own improvements. From the 1840's and 1850's clockmaking became a large industry. The beginnings of American watchmaking, from Luther Goddard who opened a shop in 1809 and may have been the first American to make a complete watch, to the inventor who in 1890 made the watch that made the dollar famous, the story is briefly told.

Some interesting sidelights in the booklet refer to the purposes which motivate and inspire clock collectors; desirability of one style or another; the specialized field of watch collecting. A few important museum collections are given. There are twelve nice plates illustrating many models of clocks, the captions are ample. A few watches and escapements too are shown. A useful glossary ends the account, also a short list of titles for additional reading.

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R137 AWI

Gruen watches, a special collection

USA: American Watchmakers Institute, nd (ca 1986), 21.5 x 13.5 cm, 40 pp, 61 ill.

History, collection, catalogue (English).

The introduction is dated 1986. It may have been reprinted.

The catalogue of a collection of watches donated by R.D. Gruen to the ELM Trust museum of the American Watchmakers Institute. A 5 page history of the Gruen Watch Company followed by illustrations and descriptions of 30 watches dating from 1875 to 1948.

[1st edition?, mediocre] The history is an adequate overview. The photographs are small and of mediocre quality, but provide some idea of the watch types and styles. I found it uninspiring.

See Fuller "The priceless possession of a few" for a much better study.

R138 AWI

Questions and answers

of and for the watchmaking profession

USA: American Watchmakers Institute, 2000 (1970), 29.5 x 27.0 cm (28.0 x 21.5 cm), 248 pp, ill (69 pp, 57 ill).

Repair, technical (English).

Several editions including 1970, 1977 and 2000. The 4th edition of 2000 is loose leaf and sold with or without a binder.

The 3rd edition has 673 sample examination questions and answers about watch repair, including some on specific American calibres.

The 4th edition is enlarged by the addition of 10 articles on aspects of watch repair. It has 674 questions (113 pages) followed by Heat treating carbon steel, Basic turning, Turns for watch and clockmaking, A brief history of watch cleaning, Oiling watch movements, Adjusting the lever escapement, The art of staffing, Replacement of broken balance staffs, Dynamic poise, and Antique watch restoration (hairspring manipulation). These are followed by Abbreviations, Sample formulas, Principle types of balances, Answers, and Index.

[3rd edition, fair] Basically this is a guide for people taking AWI examinations. The questions are organised by type (true/false, multi-choice, simple answers and those requiring a sentence or two). Otherwise they are random. There are no references to appropriate texts.

I expect it is very helpful if the reader is undertaking an AWI examination. But, although interesting in parts, it has little use otherwise (even in my self administered test in front of the TV).

See also Elgin Watchmakers College "Questions and answers on watch and clock making".

[4th edition, good] As in the 3rd edition, the questions are organised by type (true/false, multi-choice, simple answers and those requiring a sentence or two). Otherwise they are random. There are some changes, the most notable being the omission of all questions relating to the Bulova Accutron and other electric watches. Unfortunately no-one checked the typesetting and there are letters instead of fractions in several questions and answers; for example "The total lock should not amount to more than k to a the width of a pallet stones impulse face". Again there are no references to appropriate texts.

Unlike when I read the 3rd edition, this time I tested myself properly. I scored over 80%, so I suppose I would pass an AWI examination. There were a few vague or ambiguous questions and one or two that are wrong. But overall the test is a good assessment of knowledge. I was a bit disappointed that the only escapement covered is the lever escapement, but I expect other escapements are in more advanced studies. Much more important than feeling happy about the result are the areas where I did poorly. Actually there was only one, questions on the adjustment of the lever escapement, where I did pretty badly; really, my knowledge of this is woeful. But what can I do about it? As with the 3rd edition, there is no bibliography and no directions to help me overcome my weakness. And I wonder if someone who is very weak in such an area should be allowed to pass.

At first I found the articles rather strange because they do not provide a coherent coverage of repair. However it seems the choice is deliberate because they focus on areas where the student is most likely to have trouble. These articles are very good and partly make up for the lack of guidance elsewhere, but I still find the lack of a bibliography very frustrating.

R139 AWI

Technical manual

USA: American Watchmakers Institute, 1970, 4to.

Repair (English).

3-ring binder.

A collection of technical bulletins from watch companies including Bulova, Elgin, Benrus, Hamilton, Gruen, Longines, Movado and Waltham. Most of the bulletins are from the 1960s and 1970s.

R140 Ayasse, JJM**Manuel de l'apprenti horloger en province**

Angers: L. Pavie, 1824, 8vo, 372 pp, no ill.

Repair (French).

Manual for the apprentice horloger in the country. "An elementary work designed for the use of amateurs and apprentices who are learning the art".

Gardner "Catalogue of the Torrens collection" indicates this is purely concerned with clocks. However, he suggests it "describes virtually every process necessary in the making of clockwork ... even the making of tools such as files", and so it should be interesting and useful. But how well this can be done without any illustrations must be doubtful, although Crespe managed quite well.

R141 AZ**Hairspringing**

the manipulation of old and new springs by the watch repairer

USA: Arlington Book Co (USA: Adams Brown Co) (Chicago: Hazlitt & Walker), 1995 (nd), 21.0 x 13.5 cm (19.5 x 13.5 cm) (22.0 x 14.0 cm), 45 pp, 14 ill (31 pp, 14 ill).

Repair, tools (English).

First published as "Hairspringing" without the sub-heading "a prize essay". Probably this was printed before the competition and may have been only for the judges. The 1908 edition is most likely the first public distribution and it was reprinted in 1979 (limited edition, Adams Brown) with later reprints.

A prize essay, presumably for the "American Jeweller" contests, in two parts.

The first part explains the process of choosing and fitting a balance spring. The second part, which may be by a different person, covers some of the same material and includes spring selection and vibrating, as well as truing and untangling.

[1908 printing, fair] In the first part the author describes some interesting homemade tools, but also makes some dubious suggestions (like opening curb pins and hoping they become dirty); but to his credit he regards these as "desperate" measures. His description of putting in beat is good and overall the writing is reasonably clear, although he tends to jump around a bit from one subject to another.

The second part, as noted, covers similar material.

Somewhat uninspiring with the feel of a school essay. I think Kleinlein "Practical balance and hair-spring work" is a better book.

[Original printing no date] The text is identical except for the division into paragraphs and all figures are on a single page. There are one or two errors, notably "3 mm or 3.25 inch thick".

R142 Babel, A**La fabrique genevoise**

Neuchâtel: Attinger, 1938, 18.5 x 12.0 cm, 155 pp, table of contents, no ill.

History (French).

Said to be a limited edition of 15 copies, but clearly this refers to 15 special copies ("Il a été tiré de cet ouvrage quinze exemplaires sur papier lafuma numérotés de 1 à 15") and other unnumbered copies were printed.

My unnumbered copy is a rebound soft cover copy with the original front wrapper bound in.

The Geneva Factory. In two parts followed by a bibliography.

Part 1 history: The Factory (6 pages); Origins of the factory, gold and silver smiths (8 pages); The first refugees and the beginning of horology, blossoming and triumph of the factory in the 17th and 18th centuries (24 pages); The Genevan revolution and reunion with France (17 pages); The 19th century (19 pages).

Part 2 the life of the people: The 17th and 18th century artisans (14 pages); Voltaire and the Genevan horologists (19 pages); The cabinetiers of the 19th century (21 pages); The Factory of factories (6 pages).

R143 Babel, A**Les métiers dans l'ancienne Genève**

histoire corporative de l'horlogerie, de l'orfèvrerie et des industries annexes

Geneva: A. Kundig, 1916, 9.5 x 6.5 inch, 606 pp, no ill.

History (French).

Volume 33 of "Mémoires et documents publiés par la société d'histoire et d'archéologie de Genève".

The professions of ancient Geneva, history of the corporations of horology, jewellery and associated industries.

Contains the 1601 and 1755 statutes for the Corporation of Clockmakers of Geneva.

See Baillie "Clocks and watches, an historical bibliography" who refers to it and quotes some extracts.

R144 Bachelin, A**L'horlogerie neuchâteloise**

avec deux héliogravures de Max Girardet

Neuchâtel: Attinger, 1888, 8vo, 224 pp, 2 plates.

History (French).

Leroy "Collection Léon Leroy" gives the author as R. Comtesse.

Neuchâtel horology with two illustrations by Max Girardet.

Published on the occasion of the inauguration of the monument to Daniel Jeanrichard of Locle 15 July 1888.

A history of the Neuchatel industry; origins, development and the life and work of makers.
The plates show the statue of Daniel Jeanrichard and a watch made by him.

R145 Bacon, DH**Watchmaking in Llangollen by Robert Hughes**

a genuine late-nineteenth century Welsh watch manufacturer

London: Antiquarian Horological Society, 2000, 30.5 x 21.5 cm, 111 pp, frontis, 50 ill.

History (English).

Antiquarian Horological Society New Series No 5. Several illustrations have multiple parts.

An account of the factory system of watch manufacture used by Hughes in Wales.

[1st edition, fair] Chapter 1 (28 pages) is called an "introduction", but it contains the core material. Bacon provides a chronological history of how he gathered information about Hughes, providing various interpretations as more data enabled refinement. The salient points are the finishing of rough movements (from Wycherley and others), purchasing watches (from Waltham, Switzerland and elsewhere), estimates of production, and the method of working (the Coventry "halves" method).

Chapter 2 (24 pages) is titled "trading" and provides some information about sales and purchases as distinct from manufacturing, but I am unclear of its purpose as it meanders about without seeming to reach any definite goal, although there are some interesting remarks about watch clubs. Most of it consists of tables and photographs of original documents.

Chapter 3 (29 pages) is called "manufacture" and returns to the theme of estimating production and the sources of rough movements, including Hughes attempting to manufacture movements in Prescott. Again much consists of photographs, this time including some of watch parts and tools.

Chapter 4 (7 pages) examines Hughes finances and chapter 5 (8 pages) covers some miscellaneous items. The one page of conclusions at the end of the book conclude nothing. The book is marred by the poor reproduction of the photographs.

After having worked for many years, the researcher is faced with a problem; does he report the results of his efforts or does he guide the reader through the process of discovery?

The choice depends a lot on how interesting the conclusions are compared to the process of reaching them. Bacon is in the unfortunate position that neither the methods nor the results are startling. Hughes was not a particularly interesting or important character and the information painstakingly gathered about him does not arouse much excitement and is hardly worth reading. But as the conclusions could probably be written in a few pages as a nice journal article, which would have been a better outcome, the result is a rather dull book which adds only a little to my understanding. Not that Hughes should be ignored because he did finish lots of watches. Rather, he should be discussed in an appropriate context; either in a journal or as just a chapter in a book.

[Remark] Somewhere I came across a note indicating that Cutmore is the pseudonym of DH Bacon. I have linked these two "authors" even though I have never found any confirmation of the rumour.

R146 Bacon, GF**Waltham and Watertown**

their representative business men and points of interest

New York: Mercantile Publishing Co, 1893, 10 x 8 inch, 116 pp, ill, plates.

History (English).

Includes portraits, illustrations of buildings, businesses, factories and advertisements.

R147 Baechler, E**La fabrique d'horlogerie de Fontainemelon**

1825-1925, une usine plus que centenaire

Fontaines: Fontainemelon, ca 1961 (1925), 24 x 19 cm, 48 pp, 30 plates.

Description, history (French).

Several printings including 1925, 1938 and circa 1961.

The manufacture of Fontainemelon 1825-1925. With illustrations of ebauches and machinery.

R148 Baeck, P de**Mini watch bible****Mini biblia de relojes**

Belgium: Tectum, 2008, 9 x 7.3 inch, 432 pp, ill.

Illustration (English, Spanish).

"The success of Mini Loft Bible has elicited the birth of a new instalment in this handy Mini-series: Mini Watch Bible, the new substantial reference book about the world's most remarkable time pieces. This highly imaginative work shows you hundreds of photographs of stunning luxury watch designs."

R149 Bailey, Chris**Two hundred years of american clocks and watches**

USA: Prentice-Hall, nd (1975), 28.0 x 22.5 cm, 255 pp, 285 ill.

Description (English).

Probably only printed in 1975. Also produced in a deluxe, numbered, limited edition of 1000 copies with slip case.

In five parts: The heritage, finding the means to keep time (16 pages), The age of handcrafting, 1700-1850 (72 pages), The age of manufacturing, 1800-1970 (88 pages), Watches, 1800-1970 (33 pages), and Clock & watch makers in America (19 pages presented as chronological charts). There is a bibliography and index.

[1st edition, very good] The foreword states that the book is a general history and Bailey has satisfied this aim effectively.

The first section is a general introduction with some history of European developments. The main focus is to explain clock mechanisms and terminology, and to outline the process of clock making.

Section 2 consists of short biographies of clock makers organised by locality and there are a few mentions of watch making. Section 3 consists of brief histories of clock manufacturers.

Section 4, *Watches 1800-1970*, begins with a history of pre 1850 watch making with biographies of makers and a discussion of imports. It then provides short histories of American watch making companies. Dollar watch makers are described separately at the end of the section.

Finally, section 5 lists clock makers organised into three groups; tall, shelf and specialised clocks. There is no mention of watch makers although some may appear coincidentally.

It has been said that the book has only a small amount on watches, but this is misleading. Most certainly the focus is on clocks, but section 4 give a comprehensive overview of American watch making. The style is reminiscent of earlier books and concentrates on people involved, the amount of money invested and the outcome (usually bankruptcy). There is no examination of methods or machinery and the few remarks about machine manufacture are superficial.

Since this book was published there have been two substantial works on American watch making, in particular Harrold "American watchmaking, a technical history" and Hoke "The Time museum historical catalogue of american pocket watches". Consequently it is of less significance than when it was first published.

[Remark] I noted a few errors (for example, concerning the Fitchburg Watch Company and the making of plates and wheels) and there are indications that Bailey does not know much about watches. The bibliography indicates the Bailey read extensively to compile his book and so these may be isolated mistakes.

R150 Bailey, RR

Mr Tick-mouse and his two-minute bedtime stories

Chicago: RR Bailey, Elgin National Watch Company, 1917, 5 x 4 inch.

Prose (children) (English).

Stories for children related to watches.

Elgin ran the Tick-Mouse Club as part of its promotion and advertising. At least 5 Tick-mouse books were written by Bailey:

"Mr Tick-mouse and his two-minute bedtime stories" (1916); 5 stories and 5 stamps.

"More adventures of Mr Tick-mouse" (1917, 18 pp, ill).

"Captain Tick-mouse and his adventures with the torch bearers" (1917, 26 pp, ill).

"Captain Tick-mouse" (1918, 26 pp, ill); a mouse army and children doing their patriotic duties to win the war.

"Captain Tick-mouse and his adventure in search of Father Time" (1921, 30 pp, ill).

R151 Bailey, RR

Romance and history of time

USA: Elgin National Watch Company, ca 1922, 25.5 x 19.0 cm, 2 vols of 63 pp, 15 col plates and 59 pp, 10 col plates.

History, prose (children) (English).

Compiled by the Elgin National Watch Company and distributed free. No publisher given, but probably Elgin. No date except for a copyright notice.

"A series of world-wide adventures on the road from long ago to now".

A prologue followed by 25 stories and a chronology of horological developments.

[1st edition, good] This is identical to "Through the ages with father time" (which see) except for three omissions. Two sections have been left out: "Dance of the Hours" (1 page, 1 ill) and "The pageant of time" (a poem and folding colour plate). And the portrait of B.W. Raymond has been omitted. One illustration (the time ball) is duplicated. Although the illustrations are in colour, they are crude compared with those in the other book.

R152 Bailey, RR

Through the ages with father time

USA: Elgin National Watch Co, 1922, 21.5 x 15.5 cm, 192 pp, 28 b/w ill, 1 fld col plate.

History, prose (children) (English).

No publisher given, but probably Elgin.

"A series of world-wide adventures on the road from long ago to now" illustrated by paintings and a folding panoramic scene.

A prologue followed by 25 stories, "The pageant of time" (a poem and folding colour plate) and a chronology of horological developments.

[1st edition, good] This is a nice example of a fertile imagination. Bailey has produced a "jolly good yarn" consisting of a number of separate short stories which are fanciful romances and which distort history to the point that it is hard to recognise any relationship with reality (I can only presume that he lists the "authorities consulted" at the back of the book to try and give some credence to his incredible statements).

But Bailey's aim is not to tell the history of horology; that is simply the excuse that binds these stories together. Rather, he has produced some nice bedtime tales that won't do much harm, but may not do much

good either. His characters are perfect idealisations (those mystical humans who fortunately do not exist!) who trot along doing wondrous things and who do not let history stand in the way; great fun really. I had assumed this was a book for children; and so it is, or should I say a book to be read to children. But in reality it is a superb bit of advertising for Elgin watches. The first hint of this is in story 20, where Napoleon's watch serves as an excuse to mention Elgin's Corsican Series of watches. In the 22nd story, Benjamin the builder, we are left in no doubt as we are told about B.W. Raymond and the establishment of Elgin, with the clear implication that watchmaking by machinery and interchangeability began in 1864; somehow Dennison and Waltham have magically disappeared! Then in the last story, the watch of the future, a blinding light emanates from the doors into the Elgin factory and Father Time realises that the source of the watch of the future lies here. Sadly Bailey got this totally wrong and he should have gone up the road to Hamilton. Finally, the book closes with two plates, one showing the world's first watch made by Henlein (museums and collectors would kill to know how Bailey found it!) and the other showing an Elgin watch. Admittedly Bailey gets history roughly right in the chronology at the end of the book, but I suspect we are not meant to read it in case we get the "wrong idea" about Elgin. As an example of children's stories and subliminal advertising, this book is very good, and as horology it is very bad.

R153 Baillie, GH**Catalogue of the library**

of the Clockmakers Company in the Guildhall, London

1931.

Collection, bibliography (English).

Mentioned by Britten in "Old clocks and watches and their makers", but I have found no other reference to it.

R154 Baillie, GH**Catalogue of the museum**

of the Worshipful Company of Clockmakers in London in the Guildhall library

London: Clockmakers Company, 1949 (1895), 21 x 14 cm, 137 pp.

Collection (English).

See also Nelthropp "A catalogue chronologically arranged of the collection ...".

R155 Baillie, GH**Clocks and watches**

an historical bibliography

reprint (London: NAG Press), 1978 (1951), 21.5 x 13.5 cm, 414 pp, 120 ill.

Bibliography, description, history, technical (English).

Baillie published a series of articles titled "The history of clocks and watches in their bibliography" in the "Watch and Clockmaker" which presumably formed the basis for this book.

Many writers refer to it as volume 1 and Bromley "The Clockmakers' library" notes that a "second volume, covering publications up to 1899, is in course of publication under the auspices of the Antiquarian Horological Society". Gardner "Catalogue of the Torrens collection" indicates he has read the manuscript which is said to be in the Guildhall. It has not been printed.

A bibliography of publications from 1344 to 1799 in chronological order with author and subject indexes. Most entries give, in addition to basic bibliographic information, details of contents, some extracts and/or illustrations, and Baillie's comments. The book includes material regarding the dispute between Hooke and Huygens on the invention of the balance spring, and details of some uncommon escapements. **[1st edition, excellent]** A superb bibliography. It can be read as a book in its own right because it provides a surprisingly coherent history of early horology based on contemporary accounts. Baillie achieves this by not merely listing the works but by discussing their significance and quoting from them. Baillie's frank criticisms make pleasant reading, but sometimes he fails to provide any evidence to support his opinions. For example, of Cumming he writes "the reasoning throughout is turgid and frequently wrong, and the book is without value" (antiquarian book sellers would disagree!). And he dismisses Hatton, quite unfairly, with the factual but misleading remark "most of the book consists in instruction in arithmetic and geometry". There are also a few errors which make me wonder how good this book is; although some carelessness can be forgiven I have become more uncomfortable over the years. Nonetheless, the writing is authoritative and the result is excellent.

[Remark] On the basis of the first, published volume, I assume the unpublished second volume is probably equally important. I confirmed that the manuscript exists and is in the Guildhall, so I contacted the library with the view of incorporating at least part in this bibliography. However, I received a flat refusal, because the text is still under copyright and the manuscript is too fragile to photocopy. It seems we are to be forever denied of any wisdom that it might contain.

R156 Baillie, GH**Guide to the museum**

of the Clockmakers Company of London

London: Clockmakers Company, 1939, 19 x 11 cm, 73 pp, 15 plates.

Collection, makers (English).

There are 29 ill on the 15 plates.

Not related to the present collection.

See also Nelthropp "A catalogue chronologically arranged of the collection of clocks, watches, chronometers".

R157 Baillie, GH**Watches**

their history, decoration and mechanism

London: NAG Press, 1979 (1929), 26.5 x 19.0 cm, 384 pp and 75 plates.

History, description (English).

Twenty chapters. The first 3 (time and clocks) provide background. Chapters 4-10 give a chronological study of watch development and cases. These are followed by chapters on Chinese and cheap watches (3 pages), watchmaking, 6 chapters on mechanisms and a chronological survey to 1800. There is an annotated bibliography.

[Jubilee facsimile, very good] This is primarily a survey of watches from 1500 to 1725 (nearly two-thirds of the book); there are some remarks about later developments, but they are not particularly significant or useful. Further, it is first and foremost an examination of watch cases.

Such a summary is misleading without explanation.

When this book was written anything after 1800 would not have been regarded as antique, and so not worth inclusion. Also, with the exception of the invention of the balance spring and some complicated watches, the mechanism was an inaccurate, standardised verge. The first 9 chapters reflect this. Except for a useful description of 16th century calibres, the whole focus is on decoration of the case, hands and movement.

This part of the book is excellent because Baillie does not just describe. He provides a reasoned history, basing his opinions on documentation and providing the sources. And he explains trends in design and style. Although research since 1929 has changed some conclusions, it is still a delight to read a book that argues instead of baldly stating dubious ideas as fact (as do many other authors).

The rest of the book is less convincing. I get the feeling that Baillie thought he had neglected the mechanism (he had to, up to this point) and stopping at 1725 meant omitting Breguet! The difficulty is that most developments in mechanism occurred between 1800 and 1900 when watches were mass-produced and largely "uninteresting". This conflict first becomes apparent when discussing balance springs in 1675; he includes Phillips and Guillaume quite out of context.

Baillie briefly covers 1725-1800 cases in order to include engine turning, late form watches and Breguet. Dismissing Chinese, Waterbury and Roskopf watches in 3 pages, he finishes his descriptive text with a chapter headed "history of watchmaking". This says almost nothing about watch making, but gives an overview of guilds, mass-production and American factories. The final chapters provide quite detailed descriptions of escapements (cylinder, virgule, duplex and lever), striking mechanisms, repeaters, chronographs, keyless work, calendars and tourbillons. There are a couple of illustrations of early work, but most of it belongs to the 19th century.

The book concludes with a very useful chronology to 1800. This outlines trends, makers, decoration, dials, hands, pendants and movement design in periods. It is a pity it doesn't continue to 1900.

There is no doubt that Baillie is a superb writer and that this was an excellent book when it was first published; it is certainly a classic work of great importance. But what is its value 70 years later? It is marred (in the 1979 reprint) by inadequate photographs and there are some modern books of high quality competing with it.

R158 Baillie, GH**Watchmakers and clockmakers of the world volume 1**

Essex: N.A.G. Press, 1993 (1929), 22.0 x 14.0 cm (26.0 x 18.5 cm), 388 pp, maps (416 pp).

Dating, makers, bibliography (English).

Three editions in 1929, 1947 and 1951 with later reprintings of the third edition in 1988 and 1993.

A list of over 36,000 names, dates and places for pre 1830 makers, primarily English and European.

See also Loomes "Watchmakers and clockmakers of the world Volume 2" and Loomes & Baillie "Watchmakers and clockmakers of the world, complete 21st century edition".

[3rd edition, excellent] The two volumes by Baillie and Loomes are the basic and indispensable reference for non-American "makers", those people who signed watches and clocks.

If a book is judged by how often it is opened then this is one of the best books I own.

R159 Baillie, GH; Ilbert, C; Clutton, Cecil**Britten's old clocks and watches and their makers**

London: Bloomsbury Books (London: Bloomsbury Books) (London: Methuen) (USA: Bonanza Books) (Boston: Charles River Books) (London: Eyre & Spottiswood), 1986 (1956), 28 x 22 cm (20 x 14 cm), 700 pp, 207 ill, 9 colour and 4 b/w plates.

Collecting, dating, description, history, identification, makers, bibliography (English).

Originally published as "Former clock and watchmakers and their work" in 1894 (often termed the 0th edition), Britten's book has gone through 9 other editions. The editions up to the 6th of 1932 are listed under Britten "Old clocks and watches and their makers". The Antique Collectors' Club produced a revised 3rd edition in 1977, reprinted in 1983, 1988 (?) and 1994; but this should be regarded as a separate edition as it has different text and illustrations.

The text of the later editions owes little to Britten and they must be considered separate works. These are the 7th (1956, reprinted in 1969), 8th (1973, 532 pp, 195 plates, 40 ill, reprinted in 1975 and 1977) and the 9th (1982, reprinted in 1986 and 1989-90), all by Baillie, Ilbert and Clutton.

Nine chapters and appendices. The first six chapters cover the history of horology, treating clocks and watches in separate sub-sections. These are followed by three chapters on clocks; French clocks, national styles (other countries) and striking work. The text occupies 314 pages. The appendices contain notes on famous makers (28 pages of extracts from earlier editions), the list of makers (312 pages), English hallmarks, a glossary and a bibliography.

Some information on the functions of the three authors is given in Clutton "Collector's collection".

[9th edition, excellent] *This is justifiably considered one of the standard works of general history to 1830 and the name of Britten is retained primarily because of the list of makers.*

In many ways the 9th edition is an ordinary book. There is not much text, much of the historical information lacks detail and (in the 1986 reprint) the illustrations are mediocre. Nearly all of Britten's catalogue of "in the ... collection ..." has fortunately been deleted. Without any other features it would be like most other general books, interesting to read once and then to file away.

But it succeeds where others do not because it is not just a history. It is a guide for collectors and dealers. In addition to the famous list of makers it provides concise, clear descriptions of styles including the features of cases and movements in different periods. It is thus one of the very few well-organised and reliable means for identification and dating. In consequence it is a book that is repeatedly referenced.

R160 Baillod, G

Hand tools

Outils de main

Mensch und werkzeug

Switzerland: Bergeon, 1991, 68 pp, 13 plates.

Repair, tools (English, French, German).

Boxed limited edition of 1500 copies produced for the 200th year of Bergeon et Cie.

Presumably multilingual.

17 separate parts of 4 pages (one sheet) each; 2 are general and 15 each describe one tool and its use.

Attractive and well printed, but more puff than a useful work.

R161 Baillod, G

La mesure du temps

Die geschichte der zeitmessung

Lausanne: Mondo, 1979, 25 x 21 cm, 156 pp, 150 ill.

Description, history, technical (French, German).

Separate French and German editions. Photographs by F. Rausser.

History, primarily of watches, with illustrations of technical and decorative features.

R162 Baines, E

History, directory and gazetter

of the county palatine of Lancaster, with a variety of commercial and statistical information

London: John Heywood (London: Fisher & Son) (Liverpool: Wm Wales), 1888 (1821), 4to (8vo), 4 volumes of 624, 680, 760 and 876 pp, plates (2 volumes of 690 and 730 pp, plates) (2 volumes of 660 and 744 pp).

History, makers (English).

Editions in 1821, 1824, 1825, 1836, 1868 (edited by John Harland), 1888.

The 1824 edition (volume 1 only) is available as a Google Book PDF file (very badly scanned).

Volume 1 of the 1824 edition contains: General history of the county of Lancaster (4 chapters, 149 pages); Liverpool (history and other details, 56 pages); Liverpool directory arranged alphabetically, by trades and by streets (253 pages); further information on Liverpool (32 pages); Histories and directories of Ashton-Under-Line, Blackburn, Blackpool, Bolton-Le-Moors, Broughton, Burnley, Bury, Cartmel, Chorley, Clitheroe, Coln, Dalton, Furness, Flyde, Garstang, Halsingden, Hawkshead, and Kirkham.

Information on trades in Prescott, Ormskirk and Warrington are in Volume 2.

[1824] *I have not read this book, but it appears volume 1 of the 1824 edition has no information about watch making.*

The Liverpool directories list: File cutters, Opticians and mathematical instrument makers, Watch case makers, Watch and clock dial enamellers, Watch and clock glass makers, Watch and clock makers, Watch escapement makers, Watch dial makers, Watch gilders, Watch hand makers, Watch jewellers, Watch movement makers, Watch spring, tool and wheel makers, and Wire workers and drawers. Only names are provided.

R163 Baker, PHJ

Early Lancashire watch fusee engines

England: Antiquarian Horological Society, 1994, 24.5 x 17.5 cm, 21 pp, 35 ill.

History, tools (English).

Offprint from the AHS journal.

In two parts. Part 1 explains how fusee engines work and describes 8 of them. Part 2 examines in detail the screw threads and screw heads, and provides specific dimensional information.

In addition, the article examines the dating of these engines.

[1st edition, very good] *This is an excellent piece of detailed research. Baker has meticulously examined extant fusee engines, clearly explaining how they operate, and classifying their features to provide a convincing date order for them.*

Although it cannot be said to be light reading, it is essential for those interested in horological tools and their history.

- R164 Baker, PHJ; Law, RJ**
The english watchmaker's mandrel
 its origins and development
 England: Antiquarian Horological Society, 1999, 25.0 x 17.5 cm, 24 pp, 49 ill.
 History (English).
 Offprint of a two-part article from the AHS journal.
 Detailed descriptions and photographs of 15 English mandrels showing the development of the tool over about 100 years from circa 1765.
[1st edition, good] This booklet provides a careful and interesting study of the English mandrel and how it developed.
- R165 Balavoine, ME**
L'échappement a détente
 Genève: Journal Suisse D'Horlogerie, 1912 (1902), 8vo, 48 pp, 39 ill.
 Description, technical (French).
 Probably 3 editions (1902, 1904 and 1912).
 Unusual chronometer escapements.
- R166 Balduin, G von**
Der uhrmacher unter dem werktisch
 Ulm: Kemper, 1961 (1949), 21 x 15 cm, 64 pp.
 Miscellany (German).
 2nd edition?
 "Gedichte. Herausgegeben von der Neuen Uhrmacher-Zeitung".
 The watchmaker under his workbench. A poetry book.
The cover has an illustration of a watchmaker on his knees under his workbench.
- R167 Balet, Leo**
Fuhrer durch die uhrensammlung
 Stuttgart: , 1913, 8 x 5.5 inch, 108 pp, 84 ill.
 Collection, catalogue, history (German).
 Guide to the Wurttemberg Landes-Gewerbemuseum including clocks and watches from the Junghans collection.
- R168 Balfour, M**
Cult watches, the world's enduring classics
Montres cultes, classiques intemporels
 London, New York: Merrell, 2007, 25 x 25 cm, 192 pp, 350 ill.
 Illustration (English).
 Described as: "A useful new title beautifully illustrating and taking a look at 30 classic watch models and their variants, which have achieved cult status. Probably unique in that the author has validated all the supporting text with the manufacturers of the watches."
"Cult Watches is a lavishly illustrated account of the world's most popular classic timepieces - the top 30 that have achieved cult status, from the Rolex Cosmograph Daytona and Cartier Tank to Ingersoll Mickey Mouse watches and the "quartz revolution" Swatches. Watch-industry expert Michael Balfour introduces the great horological innovators and their legacies, and adds historical asides that enhance our understanding of both their contexts and their enduring attractions. Future contenders for the status of cult watch are not forgotten, with the result that this book features hundreds of watches in words and pictures."
- R169 Balfour, M**
The classic watch
Montres classiques
Die klassische armbanduhr
 the great watches and their makers from the first wristwatch to the present day
 les plus belles montres-bracelets des origines a nos jours
 London: Eagle Editions; Paris: Saint-Andre Des Arts (London: Quantum; Australia: Sandstone; Paris: Bookking International; Stuttgart: Parkland), 2002 (1989), 33.5 x 25.0 cm, 192 pp, ill.
 Collecting, history, makers (English, French, German).
 Printed in 1989, 1996 and 2002. Separate English, French and German editions.
 The bulk of the book is an alphabetical listing of 29 manufacturers of high class wristwatches giving some history of the companies and a few remarks about their products. This is preceded by a terse general history and followed by some notes on American wristwatches and suggestions for collectors.
*[1996 edition, fair] This is not a book about watches. It is a book about fashion accessories, status symbols and elusive pots of gold. The introduction sets the scene by talking about financial gains and good auction catalogues, but without any useful discussion of the pitfalls. This is followed by two half-pages of general history which is glib, erroneous and inadequate; I and Daniel Buck squirm when I read statements like "a mechanical watch (which by definition must have more than 120 parts) ...". More importantly, I am seriously concerned that there is not one reference and no information about movements (and only a single photograph of one).
 In contrast, the body of the book is quite well written and contains reasonable short histories for many of the 29 companies covered. Because of this the book is not worthless and, even though Balfour's*

introductory notes made me doubt the veracity of the rest, I am happy that the histories are sufficiently accurate to provide a useful introduction to the manufacturers.

Finally, the advice on collecting and purchasing is based on the assumption that the buyer is and will remain utterly ignorant and rely on the guidance of the seller. Balfour does indicate the buyer should have a thin veneer of knowledge, and provides a glossary of useful words with simplistic definitions (there is nothing more embarrassing than appearing ignorant), but otherwise he is at the mercy of the seller.

This book is quite good for people buying watches purely for status or pleasure, as all they need to know are which brands to consider and how to tell a quartz watch from a mechanical one. It is also adequate for "collectors" who have no intention of understanding what is being collected and merely want to surround themselves with pretty baubles. But the book fails badly with respect to investors and intelligent collectors.

If I am going to spend money on watches as an investment, surely I need to have a reasonable understanding of mechanisms, gemstones, precious metals, and so on, not to forget a realistic appreciation of values and the effects of inflation? To base a collecting habit on "wow, fantastic" and glossy photographs without knowledge is simply a way to make sellers smile blissfully.

For example Balfour, when mentioning watch care, fails to stress that an investment should never be worn; it should be kept in the dark in a safe place until the owner wishes to realise a profit (or loss). Nor does he discuss the return required to match the gross cost (including storage, insurance, periodic maintenance and the expenses of selling) adjusted for inflation. In fact he, like some other writers, leads the reader to believe that investing in watches requires little knowledge and is a certain way to make money. Nothing could be further from the truth.

In his advice on attending auctions, Balfour mentions dealers and "therefore real bargains are very hard to spot and even more difficult to buy". But this misses the point. What Balfour should have said is, get to know the dealers and then outbid them; if you pay a few dollars more then you will probably have a good buy. (But don't let the dealers know what you are doing; if you do they may decide to run up the bidding and you will pay far too much!)

Good dealers (and good collectors) have a vast amount of experience and knowledge on which to base their decisions. They are successful because they know what is worth buying and what is not. They can spot a bargain and know what is too dear. In contrast, "ordinary" bidders are ignorant and base their decisions on gut feelings and bank balances; and so they frequently miss the real bargains and overbid on fashionable items. A few years ago I made about 4000% profit on a watch a few months after buying it. This only happened because I had enough knowledge to see what other bidders could not see. And there have been many occasions when I have not even bothered bidding for the same reason. The skills I needed were the result of spending years looking at watches and reading books about them. Skills that Balfour does not mention and his readers will never develop.

[**Remark**] I still think the Ulysse Nardin "Planetarium Copernicus" looks like it has a spider crawling over the dial!

R170 Balfour, M

The wristwatch almanac

England: Eric Dobby, 1994, 144 pp, 100 ill.

Collecting, history, makers (English).

A pocket size guide including brief company histories.

"How to start collecting. Over 100 colour close-up photographs, brief histories of famous makers, a glossary of watch terms, and valuations."

R171 Ball, A

Bringing the work on 1675-1680

England: A Ball, 1999, 100 pp, 22 ill.

History (English).

Limited edition of 50 copies.

A review of the early development of the balance spring and the roles played by Huygens, Hooke and Tompion. The bulk of the book consists of extracts from Hooke's diary and other contemporary references, including sketches.

Seven sections: Hooke's patent application (2 pages); Hooke's diary and other contemporary references (48 pages covering 1672 to 1680); William Derham's account 1696 (4 pages); The watches (6 pages); The balance spring (6 pages); Some surviving watches (7 pages); and Carrying the work on (2 pages).

[**1st edition, very good**] The purpose of this book is to examine the history of the balance spring. Ball is very particular: "Only contemporary evidence is considered. Post or undatable claims, writings and drawings, together with speculative politics, are ignored".

The first 3 sections consist of quotations from contemporary documents which are presented chronologically and without comment. The 4th section has descriptions of the likely forms of balance springs, although none now exist.

Section 5 contains Ball's interpretation of the evidence. It is a clear, precise and convincing argument supporting Huygens' claim to have invented the balance spring.

Section 6 illustrates some surviving (later) watches, but it is marred by the illustrations being only fair. Although the presentation of the documentary evidence is a bit tedious, it is essential. For example, Hooke's circa 1666 patent concerns "a spring of mettall, wood, quill, bone, glase or any other fit matter". This is obviously one of those patents which are taken out to cover every eventuality, when the "inventor"

has no idea what he is patenting. Likewise, some later references to springs are so vague as to be almost meaningless. Certainly the impression is that Hooke really had no idea what he was doing. In contrast to Huygens' patent was very precise and clear.

- R172 Ball, DK**
The time of my life
 Worcester UK: Square One Publications, 1995, 157 pp, ill.
 Biography, history (English).
 The autobiography of a watchmaker.
- R173 Ball, M**
Masters of the Clockmakers Company
 and their apprentices 1632-1850
 England: M Ball, 1983, 160 pp.
 Makers (English).
 A limited edition of probably less than 100 copies.
 Two lists and explanatory text.
"Published privately, and unofficially, this book caused some mayhem, and very few copies are extant." I do not know why this comment was made.
- R174 Ballweg, M**
Bruckmann's uhren-lexikon
 Munich: Bruckmann, 1980 (1975), 25 x 18 cm, 304 pp, ill (232 pp, ill, 90 plates).
 Dictionary (German).
 More than 1,350 entries covering horological invention, history, technology, production, types, styles, makers, restoration, trade and collections.
- R175 Balvay, LC**
Evolution de l'horlogerie
 du cadran solaire à l'horloge atomique
 Paris: Gauthier-Villars, 1968, 20.5 x 24 cm, 127 pp, 62 ill, 25 plates.
 History (French).
 Evolution of horology from the sun dial to the atomic clock.
- R176 Bamert; Seiler; Huber; Roth; Steinmann**
L'homme et le travail dans l'industrie suisse
 pour une politique sociale dans l'industrie, réalisations et suggestions
 1943, 196 pp.
 History (French).
- R177 Bancel, ML von**
Die Dubarry und ihr uhrmacher 1743-1793
 Leipzig: Noebe, 1944, 20.0 x 13.5 cm, 63 pp.
 History (German).
- R178 Baptiste, G**
De tijdmeting in belgische verzamelingen
 Brussels: Generale Bankmaatschappij, 1984, 322 pp, ill.
 Exhibition (Dutch).
 A catalogue of an exhibition held in Brussels in 1984 describing and illustrating 448 astrolabes, sundials, pocket watches and clocks in Belgian collections.
- R179 Barber, A; Railton, J**
Coventry watchmakers heritage trail
 Coventry: Coventry Watch Museum Project, 2003, 51 pp, ill.
 History (English).
"Intended to be used to guide a walker through the watchmaking areas of Spon End and Chapelfields but is most informative for those who cannot visit Coventry and collect Coventry made watches."
- R180 Barberito, M; Martini, A**
Roma, misura del tempo, storie di orologi
 Rome: Technimedia, 1994, 32.5 x 24 cm, 330 pp, ill.
 History (Italian).
- R181 Barfuss, FW; Gelcich, E; Schreiber, E**
Geschichte der uhrmacherkunst
 von den ältesten zeiten bis aus unsere tage
 Weimar: B. F. Voigt, nd (1837), 9 x 5.5 inch, 2 vols (386 pp, 83 ill, 13 plates) (336 pp, ill) (208 pp, atlas of 11 plates).
 History (German).
 Originally written by Barfuss, it was produced in six editions, in 1837, 1850, 1856, 1887, 1892 and 1895; the later ones edited by Schreiber and Gelcich.
 There is a modern reprint of the 1892 edition.
 History of horology from the earliest times to the present day.

R182 Barker, TC; Harris, JR**A merseyside town in the industrial revolution**

St. Helens 1750-1900

London: Frank Cass (Liverpool: Liverpool University Press), 1959 (1954), 22.0 x 14.0 cm, 508 pp, 10 plates, 4 maps (2 fld).

History (English).

In four sections: Development in the canal age, The age of Peter Greenall 1830-1845, The middle years 1845-1870, and Industrial progress and the rise of respectability 1870-1900.

[1st edition corrected, fair] St Helens developed on the basis of coal, mined initially for salt manufacture and domestic use in Liverpool. Later copper, glass and alkali (for soap) were produced. The town was on the edge of the watch and tool making area centred on Prescott (about 3 miles away) and there were some metal workers around St Helens.

Because watchmaking was dominated by the other, coal based industries it is only briefly mentioned; there are a few notes on the pre 1820 industry (pages 126-128), a bare mention on page 287 and some more information relating to the 1860-85 period (pages 370-373). This last is the most interesting, outlining the decline of Lancashire movement making and quoting evidence presented to an inquiry into the truck system in 1871 by Wycherley and others. Indeed, it would seem that "Evidence to the Select Committee to inquire into the truck system", 1871 may contain some useful information.

However, although the history of St Helens is interesting, there is not enough about watchmaking to stimulate the horologist.

R183 Barkus, Homer A**Oiling the watch**

San Diego: Barkus Horological Laboratories, 1948, 18.5 x 13.0 cm, 49 pp, 31 ill.

Repair (English).

"A comprehensive treatise on the practical oiling of the watch, together with information on various oilers".

The first part, 36 pages, discusses watch oiling. The second part, 13 pages, discusses watch oilers and bench oil cups. Both parts are in a question and answer format.

[1st edition, excellent] The first part begins with an explanation of capillary attraction and how oil is retained on pivots. It then gives specific instructions for lubricating each part of a watch and the problems caused when too much or too little oil is applied.

The second part describes various types of oiler and how to make them, the use of bench oil cups, and the use and disadvantages of fountain oilers.

This is a excellent, clear booklet which is a precise and practical guide to the lubrication of watches.

R184 Barkus, Homer A**Proper use of the watchmaker's graver**

USA: Arlington Book Co (USA: Barkus Horological Laboratories), 1992 (1947), 21.0 x 13.5 cm (18.0 x 12.5 cm), 45 pp, 22 ill, 12 ill, loose price list (39 pp, 17 ill, 13 ill).

Miscellany, repair, tools (English).

There are 2 editions, both dated 1947. The modern reprint is of the shorter, 39 page, edition.

The first 23 pages of this pamphlet contains questions and answers on the use of hand held gravers and slide rest cutters. The remainder contains testimonials and exhortations to buy Barkus gravers, followed by descriptions of products and prices.

The second printing has 26 pages of questions and answers. The remainder contains testimonials and exhortations to buy Barkus gravers, followed by descriptions of products and prices.

[reprint, good] There are many opinions on graver use, and to some extent methods undoubtedly depend on what each person finds best. Barkus presents specific techniques, his personal preferences. The descriptions and plates showing how to hold and use gravers are clear, as is the section on sharpening even if it is a bit too focused on Barkus carboloy tools. The advice is sound and well worth reading.

The shorter section on slide rest cutters is interesting but less useful.

[Editions] The original printing dated 1947 has 39 pages and is the one reprinted.

The second printing is the 45 page edition dated 1947, which has much lower prices, one changed illustration, and contains two additional sections on the Barkus carboloy staff remover (3 pp, 5 ill) and his lever escapement model (3 pp, 1 ill). Otherwise the text is the same except for typesetting. There is a separate price list "effective July 1, 1947" showing the old prices and the new, reduced prices.

R185 Barkus, Sarah; Barkus, Homer A**Know the escapement**

San Diego: Barkus Horological Laboratories, 1950 (1943), 19.5 x 13.5 cm, 200 pp, ill (150 pp, 34 plates, 22 ill, 5 tables) (133 pp, 32 plates, 12 ill, 6 tables, frontis) (93 pp, ill).

Description, repair (English).

There are 6 printings in 1943, 1945 (2nd edition), 1946, 1947, 1948 (3rd edition) and 1950.

The 2nd edition begins with a photograph of the authors and a biography of Homer Barkus (who was crippled as a child). After an 11 page introduction the first part of the book consists of 111 questions and answers divided into 14 chapters or lessons. These, with accompanying diagrams and photographs of an escapement model, explain the terminology, set-up and testing of a Swiss lever escapement.

Following this main part are chapter 15 which decries the method of banking to drop, chapter 16 giving an overview of the testing procedure, and then several illustrative examples. The book concludes with a

description of the Barkus watchmaker's bench, some general remarks to watch jobbers, a 2 page poem and an index.

The 3rd edition omits the biography and has a new 45-page introduction. There are then 21 chapters with 121 questions and answers, including chapters on banking to drop, pallet stone angles, long forks and narrow roller jewels. The book concludes with several illustrative examples, a description of the Barkus watchmaker's bench and an index; the general remarks to watch jobbers and poem are omitted. There are other small changes.

[2nd edition 1946, good] *The book begins by defining terminology and then lists 16 tests which are needed to check a lever escapement; apparently these tests can be performed in precisely 73 seconds! The following chapters discuss each test in turn by question and answer. There is much repetition and the approach is one of rote learning. The only aim is to describe the tests and there are no explanations of the escapement or how to adjust it in practice; it is assumed the reader is a reasonably competent watch jobber. However, the simple approach and excellent photographs make it a clear, effective explanation of escapement testing.*

About half way through Barkus includes some remarks on measurement, but these are ideas and do not explain the practical problem of determining the small distances (such as one-sixth of a pallet stone width). Also, I have never understood the use of angles in many books. For example, Barkus says the drop lock should be 1.5 degrees, but he fails to explain where this is measured from or how it is measured in practice. A few authors mention using microscopes with graduated micrometre slides, but I doubt if they are common amongst jobbers.

The general remarks to watch jobbers include several pages on fault finding with some interesting examples.

The book annoyed me because of its style and repetitiveness. But the contents is good if you want to blindly follow rules or have learnt the principles elsewhere.

[3rd edition 1948] *The main body of the book, describing the tests, is basically the same as the previous edition. The major change is in the introduction. After a short note on what can and cannot be determined by the following tests, Barkus specifies an overall goal and gives a detailed explanation of the necessity for performing the greater angular and drop lock safety tests to check and adjust an escapement. There is also an additional diagram explaining the measurement of angles (although still not telling us how it can be done in practice) and a few other changes to clarify the tests.*

R186 Barkus, Sarah; Barkus, Homer A

Swiss lever escapement model

USA: Barkus Horological Laboratories, ca 1950, 31.0 x 16.0 x 6.5 cm, plastic, aluminium and brass model, 1 pp instructions, box.

Repair, technical (English).

Large, working model of an American style Swiss lever escapement consisting of the escape wheel, lever and balance roller. The positions of the escape wheel, pallets, banking pins, guard pin and roller can be adjusted and the lever can be bent. The instructions outline initial setting up after purchase.

Designed as a teaching tool for use with the book "Know the escapement".

[1st edition, very good] *Although not a book this model deserves to be included here. It is a very useful aid to understanding the construction and adjustment of lever escapements.*

Unfortunately it is a bit difficult to use. The components are held in slots in the base and precise movements are very difficult with the thumb screws provided.

R187 Barnett, JE

Time's pendulum

the quest to capture time from sundials to atomic clocks

New York: Plenum Press, 1998, 8vo, 340 pp, ill.

History (English).

"Beginning with a historical look at clocks to tell the time of day, Barnett discusses the impact of such inventions as the church bell, the pendulum, and the wristwatch on human culture, and explains how they've gradually transformed our perception not only of the world, but of time itself."

"A triumph of interdisciplinary scholarship. Time's Pendulum is a lively, fascinating history of 4,000 years of timekeeping. A perfect balance of science, history, and sociology, Time's Pendulum traces the important developments in humankind's epic quest to measure the hours, days, and years with accuracy, and how our concept of time has changed with each new technological breakthrough. Written in an easy-to-follow chronological format and illustrated with entertaining anecdotes, author Jo Ellen Barnett's history of timekeeping covers everything from the earliest sundials and water clocks, to the pendulum and the more recent advances of battery-powered, quartz-regulated wrist watches and the powerful radioactive clock, which loses only a few billionths of a second per day, making it nearly ten billion times more accurate than the pendulum clock. A tour of the discoveries and the inventors who endeavored to chart and understand time, Time's Pendulum also explains how each new advance gradually transformed our perception of the world."

R188 Barnett, M

Gruen watch model identification guide

volume 1

USA: Second Hand Press, 2010, 28 cm, 96 pp, col ill.

Identification (English).

[1st edition, review by Fortunat Mueller-Maerki] Clock collectors are, mainly thanks to Tran Duy Ly, in the fortunate position that whatever brand strikes their fancy, they have available brand specific, published model identification guides. Over the years a significant number of historic brand catalogs have also been republished in facsimile editions. Watch collectors face a more difficult task when trying to name and date their discoveries. Yes, there is Cocksey Shugarts' 'Bible', the yearly "Complete Price Guide to Watches", but its focus is on price and value of the pieces, rather than on naming or dating a model, and many of the listings don't list model names or numbers. Yes, there are published books on some of the big brands, but in most cases they are either technical histories of the movements, or fancy coffee table books with glossy pictures but few hard facts such as production years or lists of model names.

Collectors of Gruen American-made watches face a particularly difficult situation. I have been able to identify only four previous publications dedicated to that brand:

The first is a small pamphlet by Robert Dietrich Gruen of 20 some pages, "A brief history of the Gruen Watch Company", last reprinted in 1991.

The second and broadest publication is "The priceless possession of a few - a brief history of the Gruen Watch Company", Supplement No. 10 to NAWCC Bulletin, by Eugene T. Fuller, 63 pages, written in 1974. The third is a 40 page exhibit catalog: "Gruen watches, a special collection", published in a small print run 1986 by the AWI.

The fourth title, and the only one possibly useful as a reference tool is Roy Erhardt's "Gruen master book and price guide", one of his brand specific, spiral bound price guides, published in the early 1990s. It uses as its basic classification structure grainy, postage-stamp-sized images photocopied from a master record book of the Gruen company, without providing model names for most of the watches – and in spite of its shortcomings is virtually impossible to find in the used book marketplace.

Mike Barnett, a NAWCC member and Gruen aficionado has decided to do something to remedy that shortage of available data. He has just researched, produced and published the book under review.

Based on illustrations found in published historic advertisements he has identified nearly 350 different models of Gruen wristwatches which were launched between 1912 and 1951, and digitally reassembled those images (the majority of them in color) into Volume 1 of the "Gruen Watch Model Identification Guide". Presenting over 79 pages of images, with short text captions providing more complete data than previously published on these watches (limited to launch year, model name, movement info where available, historic retail price), the resulting publication is pleasant and easy to use. Two indexes (chronologically by launch date, and alphabetically by model name) complete the publication. As an amusing added feature not seen in previous guides the author has also computed the equivalent value of the original sale price in present-day dollars.

This publication does not try to be a scholarly history of the Gruen enterprise, nor a description and critical evaluation of their unique movements and designs. This reviewer would sure love to also see such a broader publication one day as well, but this book serves a different purpose, and does very well what it seeks to do: Provide a complete, concise and practical aid to Gruen collectors to date and name their wristwatches.

Mike Barnett and other enthusiasts engaged in similar ventures deserve the appreciation and gratitude of the global community of collectors. Digital processing and print-on-demand technologies have made their tasks only slightly easier in recent years than they used to be. Compiling these kinds of comprehensive listings is still a thankless and tedious labor of love consuming countless hours.

It is the nature of this kind of publication that it can never be complete. The moment the book is sent to the printer additional source material will begin to surface. Hopefully at some time in the future Mike Barnett will find the time and enthusiasm to once again selflessly share his new discoveries with the community of Gruen collectors in a 'Volume 2'. This author deserves praise for educating his fellow horologists and sharing his knowledge, and for not shying away from the task of getting this data published. I wish there were more like him.

R189 Barny, Mr

Story of time

USA: Mr Barny, 1961, 65 pp, ill.

Catalogue (English).

Mr Barny is the trade name of Bernard Goldstein.

Illustrations of timepieces (mainly of pocket watch faces) on right hand pages with brief descriptions on the left hand pages. With a price list.

The author says: "This book has been prepared to meet the growing need of knowledge and evaluation of timepieces. It has always been the author's thought that description alone is not enough. My hobby of photography plus the old Chinese proverb that one picture is better than 10,000 words has herein been brought to use."

Presumably a sale catalogue. The descriptions are simple, without dates or details.

R190 Baronian School

School of watchmaking curriculum manual

Philadelphia: Baronian School, nd, 11.5 x 9 inch, 50 pp, ill.

Repair (English).

- R191 Barracca, J; Negretti, G; Nencini, F**
Cartier timepieces
Le temps du Cartier
 Milan: Fondation Cartier and Wrist International, 1993 (1989), 32 x 24 cm, 327 pp, 350 colour and 420 b/w ill, slip case.
 Description (English, French, Italian).
 Limited edition. First published in Italian?
 Timepieces from the archives of the House of Cartier, the Cartier museum and collections.
 The beautiful period 1873-1920, The time of elegance 1910-1920, The wild twenties 1920-1925, Masterpieces of the Art-Deco 1925-1929, Style directions for a new epoch 1929-1945, Like the Phoenix rising from the ashes 1945-1972, A myth develops 1972-1989.
 The second edition adds Tradition and innovation 1989-1993.
- R192 Barracca, J; Negretti, G; Nencini, F**
Ore d'oro, volume 2
Armbanduhren
 die schönsten sammlerstücke
 Munich: Wilhelm Heyne, 1988, 30 x 22 cm, 292 pp, 500 ill, price guide (200 pp, ill, price guide).
 Description (Italian, German).
 Separate language editions.
 See also Negretti and Nencini "Ore d'oro; wrist watches, investment and passion".
- R193 Barrat, Charles**
Rapport sur l'apprentissage
 dans l'industrie de l'horlogerie
 Paris:, 1911, 8vo, 290 pp.
 History (French).
 Listed in Tardy.
 Report on apprenticeship in the horology industry.
- R194 Barraud and Lunds**
Illustrated price list
 England: David Penney (England: Barraud and Lunds), 1997 (ca 1885), 20 x 14 cm, 34 pp, 60 ill.
 Catalogue (English).
 The reprint is a limited edition, of 500 copies, of a circa 1885 catalogue.
 Sale catalogue with a brief history of the company. It includes early ladies wristwatches as well as pocket watches and bracket clocks.
- R195 Barraud, Enid**
Barraud - the story of a family
 London: Research Publishing Co, 1968 (1967), 4to, 190 pp, 21 plates (or 12 plates?).
 History (English).
 History of the Barraud family in England and America.
I have been told that this book covers the non-horological branches of the Barraud family and it is not relevant to this bibliography. However one seller states "The watches and chronometers are legendary - and illustrations are included." I am not sure if this is deliberately misleading advertising or if the book is indeed relevant.
- R196 Barraud, Philip**
A new book of single cyphers
 comprising six hundred invented and engraved by Philip Barraud
 London:, 1805 (1782), 20 x 15 cm, 105 pp, ill.
 Description (English).
 Designs for engraving on watch cases. "5 preliminary plates including the title, 100 numbered engraved plates, each with six examples of intertwined or overlapping letters (these are properly monograms not cyphers)".
This book is not written by Paul Philip Barraud the watchmaker, but by his uncle Philip Barraud. It is described in Jagger "Paul Philip Barraud, 1750-1929" with one illustration and a trade card reproduced.
- R197 Barrelet, JM; Ramseyer, J**
La Chaux-de-Fonds
 ou le défi d'une cite horlogère 1848-1914
 La Chaux De Fonds: Edition D'en Haut, 1990, 214 pp.
 History (French).
 La Chaux-de-Fonds or the challenge of a horological city.
- R198 Barrere, J**
Traite élémentaire d'horlogerie
 a l'usage des horlogers rhabilleurs
 Dijon: Darantiere, 1892, 8vo, 71 pp.
 Repair (French).
 Extract from the Bulletin de l'Union Horlogere de France.
 Elementary treatise of horology for the use of repairers.

R199 Barrow, C

The pocket watch

restoration, maintenance and repair

London: NAG Press, 2009, 22.0 x 14.5 cm, 190 pp, 92 col ill, 5 fig.

Repair (English).

Introduction (2 pages) followed by 16 sections:

How a pocket watch works (4 pages); Tools (2 pages); Preparation (2 pages); Where to get watches (1 page); The keyless going barrel lever (23 pages); The going barrel cylinder (21 pages); The English fusee full-plate lever (29 pages); The English three-quarter plate centre seconds chronograph (23 pages); The English three-quarter plate and other movements (1 page); The English fusee verge (33 pages); Problems that can affect most watches (19 pages); Tool maintenance (1 page); Watch dating (2 pages); Watch signatures (1 page); Selling pocket watches (2 pages); Conclusion (1 page).

There are three appendixes: Sources of information on the internet (1 page); Further reading (2 pages); and Some useful terms (5 pages).

There is a 2 page index.

[1st edition, bad] *The dust jacket states: "This practical guide is the outcome of many years' hands-on experience and is the sort of book the author would have liked to have been able to access at the time he started, some twenty years ago, to clean and repair pocket watches. Using as examples six of the most typical types of watch from a period spanning the late 18th century to the early 20th century, he takes the intelligent enthusiast through the cleaning and repair process, step by careful step, using photographs of excellent clarity, and in lucid language, characterized by his own friendly and helpful tone. He aims to equip the reader with a sound basic knowledge not just of the process but also all the tools and materials as well as their sources."*

The introduction goes a little further. Barrow states the book "is written for those who have some basic knowledge of how a pocket watch works and want to extend this to include maintenance and repair." And he goes on to say "the aim is not to return any watch to 'perfect' condition, but to let it work reasonably well given its age."

Given this context we can ignore the first 4 sections and the glossary. "How it works" is unnecessary, vague, assumes the reader already knows the basic terminology, and tries and fails to explain without a single illustration. "Tools" provides a list of tools without explanation. It includes glue (but not what type) and the Jacot tool, but there is no mention of the lathe. "Preparation" describes setting up a work area, mentioning oil and screwdrivers but not much else. "Where to obtain watches is trite and of no use, because the reader will have already started collecting watches in order to be interested in their maintenance. And "Some useful terms", which lists 22 of them, is, like all glossaries, useless; if the reader didn't know these words the rest of the book would be unintelligible.

The bulk of the book, 130 pages, consists of the 5 sections on different types of watches. Each section explains how to disassemble, clean and assemble that type of watch and concludes with notes on regulation and "Things that might stop a watch from working". Each section repeats the same instructions word-for-word and they only differ when something specific to that particular type of watch is considered. In fact the book could have been shortened by 60 pages or more if this unnecessary repetition was removed. The disassembly and assembly instructions are OK, but the cleaning instructions are simply bad and unacceptable. Plates are cleaned by rubbing them with "metal polish". These are liquids or pastes that contain fine abrasives that will remove some or all of the gilding, and they leave behind powder that can only be removed by washing (not mentioned). As cap jewels are not removed it is easy to picture the ghastly mess that would result! Wheels and pinions are cleaned by peg wood and a toothbrush without any cleaning fluid. Pivots are cleaned "by holding a piece of peg wood so that the pivot sinks into the blunt end and rotate it a few times". As peg wood is very hard this will almost certainly result in some bent and broken pivots, especially the long seconds hand pivot, which is why pith wood is so useful. Broken mainsprings are mentioned but replacing mainsprings is not considered until page 161. In contrast, bushing worn pivot holes is described repeatedly. This is not only patently silly, but the instructions are such that it is almost certain that the wheel would no longer be upright. The short bit on regulation (identical in every section) just explains what a regulator is. Finally, the list of things that might stop a watch varies a little from one section to another. It includes a few repair tips, mainly for very unlikely situations such as distorted plates and incorrect guard pins.

Because I think this book should never have been published, and definitely should not be read by beginners, I must detail some of its other faults.

"The keyless going barrel lever" explains how to remove a dial by turning the dial screws the wrong way (they should be turned clockwise) and there is no explanation of keyless work even though this can vary significantly from one watch to another. This section ends with "Fly-back chronograph" which Barrow mentions because "it is basically a variation of the standard keyless going barrel". He neglects to point out that working on a chronograph is utterly beyond the abilities of his readers.

"The going barrel cylinder" is basically a repeat of the previous section. Barrow avoids discussing the hanging barrel by not disassembling it and leaving it attached to the barrel bridge.

"The English full-plate lever" is more of the same with the addition of a fusee. However, the instructions for letting down the mainspring are awkward and dangerous. Here and elsewhere the terminology is strange. Pinions have vanes not leaves, and there is a "set-up paw", presumably a click or pawl. Also, the reader is told to "burnish the top and bottom pivot with a Jacot tool". As the tool has not been described,

its use has not been explained, and burnishing is beyond the beginner; this advice is bad.
 “The English three-quarter plate centre seconds chronograph” is covered reasonably well (allowing for the above), but some of the instructions are obscure.
 “The English three-quarter plate and other movements” is one page which says they are the same as other watches.
 “The English fusee verge” is more of the same. It suggests removing the contrate wheel without separating the plates, which is totally unintelligible, and topping the crown wheel! The chapter ends with three unrelated sections. First, case cleaning and repair (more metal polish), then negative set sleeves, even though American watches are not mentioned, and finally replacing crystals, which is actually OK.
 The last major section is “Problems that can affect most watches” which describes repair procedures. This includes closing and rebushing pivot holes (poor), replacing jewels (poor), straightening pivots (OK), fixing broken pivots (bad), replacing mainsprings (without any mention of choosing the right size), repairing fuseses and chains (over simplified), and replacing friction balance staffs including more use of the Jacot tool (bad). Some other repair tips are OK, but they are buried under the rest.
 The general impression I get is that Barrow is self taught and probably hasn’t read any of the good repair books listed at the end. He certainly does not know how to clean and repair pocket watches.
[Remark] I studied mathematics and computer science at university and obtained a PhD. Is this relevant? No.
 First, that was about 40 years ago and I have forgotten nearly everything I learnt. Second, and most important, nothing I studied was relevant to horology. Indeed, I rarely call myself “Dr. Watkins” because the title is usually irrelevant and misleading, implying some expertise which I don’t have. The only time my qualifications have been useful was when I was stopped for speeding. The nice policeman looked at my driver’s license and assumed “Dr. Watkins” meant I was on my way to a medical emergency, and he let me go.
 But what about stating I am a member of the NAWCC or, in Barrow’s case, a member of the BHS? Surely that is relevant and should be stated?
 The problem with such “qualifications” is that they are meaningless. Anyone can become a member of the NAWCC or the BHI without having to show any knowledge of or experience in horology. So being a member means the person is interested in the subject, but they may be completely ignorant.
 Barrow is described as “A member of the British Horological Society ... For the past twenty years or so, he has been cleaning and repairing pocket watches, to the extent of running a successful, small web-based business as a profitable sideline over the past three years. He is fascinated by the intricate and often beautiful mechanisms of the evolving pocket watch, from the 18th century verge to the precision lever movements of the early 20th century. He sees it as his mission to rescue these lovely things from the scrap heap and to restore them to working order for the enjoyment of others.” I cannot reconcile his book with this biography.

R200 Bartu, F**Nicolas G. Hayek im Gespräch mit Friedemann Bartu**

Zurich: Verlag Neue Zürcher Zeitung, 2005, 22 x 15 cm, 182 pp, ill.

Biography (German).

Ansichten eines Vollblut-Unternehmers.

Nicolas Hayek in conversation with Friedemann Bartu.

Biography of Nicolas Hayek?

R201 Basanta Campos, JL**Bibliografía relojera Espanola 1265-1972**

Spain: Caja de Ahorros Provincial de Pontevedra, 1975, 17 x 12 cm, 132 pp, ill.

Makers, bibliography (Spanish).

Limited edition of 600 copies.

Bibliography of Spanish horology books.

Apparently an edition of “Relojeros de Espana, diccionario bio-bibliografico”.

R202 Basanta Campos, JL**Relojeros de Espana, diccionario bio-bibliografico**

Spain: Museo de Pontevedra, 1995 (1972), 18 x 12 cm, 261 pp (151 pp, few ill).

Makers (Spanish).

Printed in 1972, 1975 and 1995, the latter a limited edition of 500 copies.

Spanish and Portuguese makers and books.

R203 Basha, Z**Jaeger-LeCoultre: a guide for collectors**

USA: Zaf Basha, 2008, 31 x 23 cm, 204 pp, ill.

Collecting, dating, history, illustration (English).

Eleven sections: Watch valley (history and background); Early rectangular watches; Calendars; Chronographs; Military watches; The Memovax; Wind indicators; Chronometers; Notable US market watches; Information on calibers; and Approximate manufacturing dates.

It covers over 140 vintage wristwatch models in exhaustive detail including their movement calibers, case references, production figures and repair notes. The book is organized by type and models.

- R204 Basserman-Jordan, E**
Alte uhren und ihre meister
 reprint (Leipzig: Wilhelm Diebner), nd (1926), 28 x 21 cm (29 x 23 cm), 179 pp, 164 ill, 8 plates.
 Makers (German).
 Old clocks and their makers. A collection of articles.
- R205 Basserman-Jordan, E**
Die geschichte der zeitmessung und der uhren
 Berlin: Walter De Gruyter (Frankfurt:), 1925 (1905), 4to, 112 pp, 14 fld plates (69 pp, ill).
 History (German).
 Published in 1905, 1920 and 1925.
 History of time and timepieces.
I assume this book is a later edition of "Geschichte der raderuhr; unter besonderer berücksichtigung der uhren des Beyerischen National Museums".
- R206 Basserman-Jordan, E**
Katalog einer uhrensammlung aus Suddeutschem privatbesitz
 vorwiegend taschenuhren und halsuhren des XVI-XIX jahrhunderts
 Munich: H Helbing, ca 1922 (1917), 29 x 23 cm, 53 pp, 22 plates with 100 ill.
 Collection, catalogue (German).
 Tardy gives 3 editions.
 Auction catalogue for the sale of a private collection of pocket watches and neck watches from the 16th to the 19th century.
- R207 Basserman-Jordan, E**
Uhren, ein handbuch für sammler und liebhaber
 Berlin: Richard Carl Schmidt, 1922 (1914), 22 x 15 cm, 188 pp, 135 ill (174 pp, 120 ill, index, 18 pp ads) (156 pp, 110 ill).
 Collecting, history, illustration (German).
 Produced in at least 3 editions (1914, 1920 and 1922) and the title has been given as "Uhren, bibliothek für kunst und antiquitäten sammler".
 Timepieces, a handbook for collectors and amateurs.
See also Bertele & Basserman-Jordan "The book of old clocks and watches" for the later editions extensively revised by Bertele.
- R208 Bastius, F**
Manual del relojero
 Paris:, 1911 (1864), 8vo.
 Repair (Spanish).
 Robertson "The evolution of clockwork" says this is part of the Encyclopedia Hispano-Americana.
- R209 Battison, E**
The Auburndale watch company
 first american attempt toward the dollar watch
 Washington DC: Smithsonian Institute, 1959, 28.0 x 21.5 cm, 20 pp, 23 ill.
 History (English).
 Offprint from the US National Museum Bulletin No. 218, pp 49-68.
 The history of the Auburndale Watch Company including details of the Hopkins rotary watch and Auburndale timers.
[1st edition, very good] Battison begins with details of Hopkins' patents, the development of the rotary watch and the formation of the Auburndale Watch Company. He then examines the faults of the watch and the switch to manufacturing timers, thermometers and counters before the eventual failure of the venture.
A well-written history with very good illustrations. It provides some details of the novel designs of lever escapement used by Auburndale for the rotary watch and the timers.
For me, one of the most interesting parts of the story is the use by Hopkins of a chronometer escapement, but unfortunately this is not examined by Battison and no light is thrown on it. The use of a chronometer escapement in the original patent model of 1875 may have been merely a matter of convenience, the model being constructed from watch parts. However, Hopkins went on to patent attachments to prevent overbanking and tripping, indicating the escapement was actually a considered choice. Unless he was devoid of common sense (and did not consider the expense and difficulty of making the escapement) this suggests that Hopkins was developing a high class watch. Perhaps his model was never intended for a dollar watch and was purloined?
Certainly there is no suggestion that any other form of escapement had been considered and Battison suggests that the switch to a lever escapement must have occurred just before manufacturing began in 1877; and the watch failed because the company did not get the new escapement working properly.
- R210 Baudon, A; Baudon, E; Roblot**
Nouvelle notice sur la collection de cadrans de montres
 appartenant a M. Roblot
 Paris: Rapide, 1904, 8vo, 134 pp, ill.
 Collection (French).
 Undated, but given as 1904.

New notice of the collection of watch dials belonging to Roblot. In four parts: dials of the French republic (1789-1804), dials of the Empire (1804-1814), dials of the restoration and the 1830 revolution, and Masonic dials.

This is probably volume 3 of Roblot "Collection de cadrans de montres, exposition universelle 1900", which see.

R211 Bauer, F**Das tickende teufelshertz**

eine erzählung für jungen und mädel um Peter Henlein, den erfinder der taschenuhr
Stuttgart: Gundert (New York: Crofts), 1945 (1936), 17 x 13 cm, 118 pp, 36 woodcuts.
Prose (children) (German).

Several printings in 1936, 1938, 1941, 1945.

"The ticking of the devil's heart, a tale for boys and girls of Peter Henlein, the inventor of the pocket watch".

The American edition has notes, exercises (?) and vocabulary by C & L Sturing. Some of the vocabulary is in English.

R212 Bauer, F**Taschen und armbanduhren**

erzeugung und sondermaschinen für den werkzeugbau der gebrüder Thiel GmbH Ruhla
Leipzig: Arnd, 1938, 8vo, 55 pp, 16 ill, 76 plates.
Tools (German).

Pocket and wrist watches, production and special machines for the work tools of Thiel Brothers GmbH Ruhla.

R213 Baumann, F**Société général de l'horlogerie suisse SA**

ASUAG, 1931-1956, historique publie a l'occasion de son vingt-cinquième anniversaire
Bienne: Société générale de l'horlogerie suisse ASUAG, 1956, 25.0 x 18.0 cm, 147 pp, ill, tables, fld plates, maps.

History (French).

History of ASUAG published for its 25th anniversary.

R214 Baume, A**A hundred years of time**

London and La Chaux-de-Fonds: Baume and Co., 1949, 18 cm, 28 pp, ill.
History (English).

History of Baume and Co.

R215 Baumer, JU**Le rhabillage des montres**

Genève: Journal Suisse d'Horlogerie, 1912 (1894), 24 x 16 cm, 31 pp, 3 ill.
Repair (French).

The repair of cylinder watches.

R216 Baumgartner, F**Memoirs of a watch case engraver**

the autobiography of Fritz A. Baumgartner (1866-1943)

USA: Brian Pittman, 2007, 297 pp, ill.

Biography (English).

In three parts: Autobiography, translated from German and with family photographs (87 pages); Reproductions of surviving sketchbooks and worksheets of Baumgartner (137 pages); Reproduction of family photographs (52 pages).

[1st edition, review by Fortunat Mueller-Maerki, fair?] The text portion of this book was written down as a manuscript from 1941 to 1942 by Fritz Baumgartner and translated from German to English in 2007 by his great-grandson Brian Pittman. This story recounts the hardships and successes in the life of one individual during the late 19th and early 20th centuries. Central to his autobiography are the Swiss immigrant experience and a struggling watch case industry confronting the Industrial Revolution. Upon immigrating to the United States in 1904, Fritz was one of 27 employees at the fledgling Star Watch Case Company, where he remained for over 25 years as an engraver and designer of watchcases. When the factory moved from Elgin, Illinois to Ludington, Michigan, Fritz remained with the Engraving Department until his retirement in 1931. Much of his work seems to have involved special order, one of a kind designs of engraved gold pocket watches, an item that was still fashionable among the affluent in the 1920s, but which disappeared during the depression.

This narrative (including the reproductions of a score of surviving pertinent family photographs) takes up 87 pages. It focuses on family history and offers glimpses into the socio-economic environment of a highly skilled manual laborer in the horological industry of that time. In the opinion of this reviewer the text however is quite tedious to read: For one thing Fritz was certainly a better engraver than a writer (and in declining health by the time he penned his memoirs), and the quality of the translation is somewhat disappointing. The descendant who painstakingly undertook the huge task to first transcribe the hard to decipher handwriting, and then translated the resulting text from colloquial, allemanic German into English admits to not knowing German and using primarily online translation software to make sense of the text. It is also obvious that the translator is neither familiar with the late 19th century environment

in Switzerland covered in the first half of the text, nor with the watch case industry. Based on my own knowledge of both subject matters and the language of the original I was able to spot at least one serious error on most pages: All too often, whenever the published text seemed strange, I was able to guess the intended meaning only by reverse translating, by searching for a German word that had an alternative meaning from the one chosen by the translator and his software. There are numerous instances where one or two misinterpreted letters from the manuscript led to an English word that makes little sense in the context. In the view of this reviewer translation software can give you a rough outline of the story, but the details and nuances really get lost. It is a pity the translator was not able to get anybody interested in the project who knew more on the subjects and languages involved.

For the horologist the meat of the book is after the narrative, in the middle part, where 137 pages are devoted to full page reproductions of the surviving sketchbooks and worksheets of Fritz Baumgartner. Much of this kind of original sources of horological history have not survived given their ephemeral nature. There you find images of literally hundreds of drawn designs by Fritz Baumgartner's hand for pocket watch cases, monograms etc. There is everything from vague sketches to fully executed drawings to make master pantograph plates. There are geometric patterns, decorative ornaments and representational drawings of locomotives, wildlife, portraits and figures, and much more. Mr. Pittman deserves the gratitude of the horological community for having published this rare material. Unfortunately that vast trove of information is completely unstructured and unlabeled. We don't know when or why Fritz created which drawing, which were ever used, etc. That section of the book contains much "raw material" for research on watch case iconography, but the book contains no research findings on the subject of watch cases or their engraving.

The third part of the book (52 pages) probably is of little interest to anybody but members of the Baumgartner clan. It reproduces about 100 old family photographs from the estate of Fritz Baumgartner, many of them unlabeled or unidentified.

I applaud the translator for making the huge effort to make this material available to a readership beyond the family, but fear that both, the morsels of horological history within the text and the visual information from the central part of the book, are unlikely to be consulted or used widely by horologists because they are presented in such an unfinished, unstructured and "user-un-friendly" way.

R217 Beau, J**Instructions pour servir a l'emploi du compas de proportion**

pour les engrenages

Lyon:, 1883, 8vo, 32 pp.

Repair (French).

Listed in Tardy.

Instructions for the use of the sector for gearing.

R218 Beausoleil, O**Horlogerie, description - réparations**

Paris: Editions Techniques Oscar Beausoleil, ca 1951, 64 pp, ill.

Repair (French).

R219 Becker, KE; Kuffner, H**Uhren, Battenberg antiquitäten-kataloge**

Munich: Battenberg, 1991 (1978), 26 x 22 cm, 184 pp, 290 ill.

Catalogue, description, history (German).

Several editions including 1978 (1st edition, 184 pp, 290 ill), 1988 (4th edition, 187 pp, ill), 1990 (5th edition, 87 pp, ill) and 1991 (6th edition).

Auction (?) catalogues with a glossary and historical overview.

The 1978 edition is described as "Excellent survey of mainly continental examples - clocks, watches, watch stands, picture clocks etc."

R220 Beckett, Sir Edmund**A rudimentary treatise on clock and watchmaking**

London: John Weale, 1868 (1850), 17.5 x 11.0 cm, 279 pp, ill.

History, description (English).

The 1850 edition is available as a Google Book PDF file.

The early editions of what became "A rudimentary treatise on clocks, watches and bells".

[1st edition, fair?] Described as a "legendary book by a real eccentric!"

Besides brief notes on wheels and pinions there are only 24 pages on watches, confirming my feeling that Beckett just wasn't interested in watches and put the section in for completeness; it may be a very interesting clock book, but the watch content is unremarkable.

Clearly the author thought Dent was the best thing before sliced bread and it is hardly surprising that he got the contract for the Westminster clock.

See also Encyclopedia Britannica "Clock and watch work from the eighth edition of the Encyclopedia Britannica".

R221 Beckett, Sir Edmund**A rudimentary treatise on clocks, watches and bells**

England: EP Publishing (London: Crosby Lockwood), 1975 (1868), 17.5 x 11.0 cm, 400 pp, 81 ill, fld frontis, 52 pp ads.

History, description (English).

There are at least 8 editions to 1903 with a modern reprint of the 8th.

There are Google book pdfs of the 1874, 1903 and 1908 editions (available in USA only?).

An introductory section (17 pages on time, sun dials, the dipteroscope, water and sand clocks) is followed by 4 sections:

Clocks, 255 pages.

Teeth of wheels, 17 pages.

Watches and chronometers, 45 pages.

Bells, 57 pages.

There is a short index.

The section on watches includes 11 pages on compensation balances and 12 pages on escapements.

[7th edition, 1883, fair?] *The purpose of the book is spelled out in the preface. Beckett aims to teach "the principles of horology, and so much practical knowledge as may be useful to both clockmakers and to amateurs who wish to make, or direct the making of, their own clocks of superior character." In contrast, Beckett has "never heard of any amateur taking up watchmaking" and so that part of the book is much shorter because there is no need to cover it in detail. (Although an alternative explanation is that Beckett may not have known much about watches.)*

The largely descriptive discussion of the teeth of wheels is solely concerned with clock wheels, although the explanation of epicycloid teeth is relevant to watches. It is adequate.

The section on watches begins with a 15 page description relying upon the previous explanation of clocks and it concentrates on the differences: the barrel, fusee, balance spring and regulator.

This is followed by the description of compensation balances, with the focus on middle temperature error and the balances of Eiffe, Dent, Loseby and Kullberg. The explanations of middle temperature error and the balances is good. Then Beckett describes some escapements: Verge, lever, cylinder, duplex, chronometer and lever chronometer. This part is adequate.

Finally, the section concludes with some notes on tourbillons (what they are), remontoires (of no value), repeaters (what they are), keyless watches (describing a bad design used by Dent and mentioning 2 others), self-winding watches (they used to exist), pedometers, stop watches (a rather strange and garbled explanation), dials, watch cases, and American watch factories (a superficial and inadequate remark). This part is a collection of rather poor bits.

The book is regarded as an important, which it may be for the sections on clocks and bells. But, although at times interesting, the section on watches is merely a descriptive overview providing contemporary comments on defects in English watch design, the author's opinions and too many references to Dent. I doubt if Beckett had his heart in it when he wrote this section and I presume he added it unwillingly for completeness. So it may be a very good clock book, but the watch content is unremarkable.

Beware of copies without the frontis of the Westminster clock.

R222 Beckman, ED

Cincinatti silversmiths, jewelers, watch and clockmakers

USA: B.B. & Co, 1975, 8vo, 167 pp.

Makers (English).

A study of makers to 1850 and a list of prominent makers from 1851 until 1900.

R223 Beckmann, J

A history of inventions, discoveries and origins

Beytrage zur geschichte der erfindungen

London: Henry Bohn (London: Whittaker) (Leipzig), 1846 (1785), 18.0 x 11.5 cm, 4 vols 548, 530, 567 and 540 pp (2 volumes 518, frontis and 548 pp, frontis) (2 vols 404 and 401 pp).

History (English, German).

Ambiguously described in the bibliographies I have seen. The book was originally published in German in five volumes between 1783 and 1805. The English translation (by William Johnston and later revised and enlarged by W. Francis and J.W. Griffith) was first printed in 1797 with later editions in 1814, 1817 (4 vols) and 1846.

The 1817 edition (volume 1 only) is available as a Google Book PDF file.

The 4th edition has many short chapters on wide-ranging topics including clepsydrae, clocks and watches (the transcript of a paper by Hamberger, in vol 1, pp 340-355) and gilding. The 4th English edition (and earlier printings?) has an additional chapter on clocks and watches (vol 1, pp 355-373) by Daines Barrington and others. There are no illustrations.

[4th edition, mediocre] *Hamberger's essay, written in 1758, discusses where and when clocks developed by examining extracts from early documents. It ends with two very interesting paragraphs on the origin of watches quoting a poem of Gaspar Visconti as proof they developed in the 15th century (see also Morpurgo "The origin of the watch").*

The additional chapter begins with an essay by Barrington (circa 1779) examining early English clocks and watches and using the Robert Bruce watch to argue an earlier date. This is followed by a rebuttal (reproduced from the Gentleman's Magazine, September 1785, page 688) and a brief history of later developments, primarily chronometers.

The many fascinating, but totally irrelevant, topics make the book very interesting, but the watch content is largely mediocre.

R224 Beehler, HL**Practical modern watchmaking part I**

circular pallet detached lever escapement

USA: Horological Institute of America, ca 1942 (1941), 28.0 x 21.5 cm, 12 pp, 29 ill.

Repair (English).

In 1938 the Horological Institute of America decided to institute a new education program, but the war intervened. Beehler, president of the HIA, produced two booklets under the title "Practical modern watchmaking" which were reprints of articles he wrote for the Jewelers Circular. These were:

Part 1: Circular pallet detached lever escapement.

Part 2: Manipulation of watch hairsprings.

They were originally printed as separate booklets and then reprinted by the Horological Institute of America in a single booklet (undated but circa 1942).

Part 1 does not appear to have been reprinted.

A detailed description of the lever escapement including action, drawing the escapement and functions: Pallet action (2 pages); Escapement drawing (4 pages); Function of the escapement (6 pages, oscillations of the balance wheel, banking to drop, lock, jewel pin shake, unequal locks, impulse, draft, tests, safety action, and jewel pin freedom).

[1st edition?, good] A clear summary of the escapement with a very good explanation of escapement action. This booklet is worth reading if you have it.

R225 Beehler, HL**Practical modern watchmaking part II**

manipulation of watch hair springs

USA: RTG Enterprises (USA: Scanlon American Reprints) (USA: Horological Institute of America), nd (1942), 28.0 x 21.5 cm (28.0 x 21.5 cm), 22 pp, 74 ill (23 pp, 74 ill).

Repair (English).

In 1938 the Horological Institute of America decided to institute a new education program, but the war intervened. Beehler, president of the HIA, produced two booklets under the title "Practical modern watchmaking" which were reprints of articles he wrote for the Jewelers Circular. These were:

Part 1: Circular pallet detached lever escapement.

Part 2: Manipulation of watch hairsprings.

They were originally printed as separate booklets and then reprinted by the Horological Institute of America in a single booklet (undated but circa 1942).

There are two reprints of Part 2. One is an undated, authorless, spiral bound photocopy of the text without the title page or the last page (an advertisement for the HIA). The other is included in America "Elgin, Hamilton, Waltham, Illinois".

Five sections: Balance spring colletting and colletting errors (3 pages); Truing in the round (2 1/2 pages); Overcoiling principles, forming and errors (5 1/2 pages); Isochronal adjusting (4 pages); and Poise and positional adjustment (4 1/2 pages).

[1st edition, good] A clear description of colletting, overcoiling and adjusting balance springs, with detailed instructions for balance spring manipulation and error correction.

As with Part I, this booklet is worth reading if you have it.

R226 Beehler, HL; Lilley, EF**A practical treatise on escapement matching**

Massachusetts: New England Jewelers Horological Institute, ca 1940, 23.0 x 15.0 cm, 67 pp, 26 ill.

Repair (English).

Undated.

A 30 page introduction (covering cleaning, setting jewels in bezels, mainspring measurement and pivot shakes) followed by an examination of the lever escapement. Written for students at the New England Jewelers Horological Institute.

[1st edition, fair] The first part contains some good advice on cleaning and jewel bezel making.

The remainder reviews "escapement matching", which in this book means setting up the escapement by adjusting banking, pallets, roller jewel and guard pin. It is mainly general advice, with some practical discussion of balance truing and poisoning.

Although interesting, the information can be more easily obtained from other books.

R227 Beeson, CFC**Clockmaking in Oxfordshire 1400-1850**

London: Antiquarian Horological Society monograph 2, 1989 (1962), 8vo, 212 pp, 34 plates, fld map (160 pp, 4 ill, 48 ill on 25 plates, fld map).

Makers (English).

The first edition is a limited edition of 150 copies.

A separate 32 page supplement (Part 3) was printed in 1967 and new editions later.

Part 1; Historical: guilds and crafts, turret clocks, sundials and sand-glasses.

Part 2; Biographical: Topographical list, bibliography and supplementary index.

- Part 3 (the supplement): Turret clocks, biographical dictionary, supplementary list of illustrations and supplementary topographical list.
Although primarily clocks, it includes some watch makers.
- R228 Begin**
Breitling Navytimer book
50th Navytimer anniversary
Japan: Begin Magazine, 2002, 29 x 21 cm, 111 pp, col ill.
Illustration (Japanese).
Apparently the "titles" are in English.
- R229 Begin**
The encyclopedia of wrist watches
Japan: Begin Magazine, nd, 28 x 21 cm, 225 pp, ill.
Illustration (Japanese).
Apparently the "titles" are in English.
A listing of wristwatches made in past 100 years. "The complete guide to the best brands of wrist watches and their movements".
- R230 Beguin, P**
Methods of regulation
Les modes de régulation
how to select the most adequate method of regulation
comment sélectionner le mode de régulation adéquat
La Chaux-de-Fonds: Portescap, 1977, 21.0 x 13.0 cm, 75 pp, 19 ill, 6 loose charts.
Technical (English, French).
The book examines different forms of time regulators that can be used with instruments. It has seven sections: Introduction, Platform escapements, The principles of regulation applied to electric motors, Procedure for selecting the most suitable execution, Symbols and units, Examples of calculations, and Vocabulary.
[1st edition] This book contains nothing relevant to watches. It is included because of its ambiguous title which might mislead buyers, as it did me.
- R231 Beguin, P**
Technologie horlogère élémentaire
Le Locle: Gasser, 1962 (1953), 21 x 15 cm, 230 pp, ill (227 pp, 148 ill).
Repair, technical (French).
Instruction manual of work methods for horologists.
- R232 Beguin, P**
The secrets of self winding watches
Switzerland: Swiss Watch and Jewelry Journal, ca 1968, 26.5 x 20.5 cm, 25 pp, 24 ill.
Technical (English).
Undated. Reprinted from three articles in the Swiss Watch and Jewelry Journal 1967-8.
Three parts: How to avoid excessive tension in the mainspring (mainspring slipping devices, 6 pages); The oscillating weight bearings (7 pages); and The transmission system between the oscillating weight and the mainspring (10 pages).
With an additional 2 page note on Winding in one direction only.
[1st edition, very good] A clear and detailed technical examination of self-winding mechanism designs, with a comparison of the methods and their problems.
- R233 Beguin, R**
Restauration des horloges, montres et pendules
Uhren kennen, restaurieren, pflegen
Fribourg: Office du Livre, Berlin: Rembrandt Verlag, 1979, 21 x 21 cm, 130 pp, 80 ill, 18 figs.
Repair (French, German).
Ratschläge und informationen für sammler und restauratoren. Behandelt grossuhren, taschenuhren und sonnenuhren.
- R234 Beillard, A**
La montre depuis son origine jusqu'a nos jours
sa forme, son mécanisme, ses curiosités, sa fabrication, sa réparation
Paris: Journal L'Horloger, 1908, 151 pp, ill.
History, illustration (French).
Probably only one printing, but one source gives the date as 1907.
The watch from its origins to the present, its form, mechanism, curiosities, manufacture and repair.
- R235 Beillard, A**
Notes sur l'horlogerie française a l'exposition universelle de 1889
sur les récompenses et le jury de la classe 26
Chartres: Durand, 1889, 21.5 x 13.5 cm, 32 pp.
History (French).
Notes on French horology at the 1889 Paris Universal Exhibition.

R236 Beillard, A**Reserches sur l'horlogerie, ses inventions et ses célébrités**

Notice historique et biographique d'après les divers documents de la collection de l'école d'Horlogerie d'Anet.

Paris: Bernard, ca 1908 (1895), 4to (8vo), 207 pp, ill.

Biography, makers, technical (French).

The first edition is undated but given as 1895.

Researches in horology, its inventions and celebrities; historical and biographical notes based on documents in the collection of the horological school of Anet. Many important makers are included: Berthoud, A & L Breguet, Borrel, Garnier, Harrison, Japy, Janvier, J & P Leroy, Lepaute, Philippe, Pierret, Redier, Rodanet, Sandoz, Schwilgue, Sully, Verite and Winnerl.

R237 Beitzl, L**Alarm am arm**

Vienna: Leonhard Beitzl, 2009, 30 cm, 676 pp, ill.

Identification, illustration, history, technical (German).

[1st edition, review by Fortunat Mueller-Maerki] Portable timepieces with alarm functions predate the invention of the wrist watch since alarms were already one of the sought after complications in pocket watches. It is therefore not surprising that alarms were added to wrist watches soon after their invention. This book gives the honor of being the first to an Eterna wristwatch with alarm exhibited at the Swiss National Exhibition in Bern in 1914. Alarm wristwatches had their biggest boom years in the 1950s, launched by the 'Cricket' model by Vulcain of La Chaux-de-Fonds.

These are just two nuggets of information from the book under review, which undoubtedly is the most comprehensive documentation ever assembled or wristwatch alarms. The author is an Austrian collector enamored with that niche of horology, who has assembled a collection of over 900 different models of wrist watches with alarms. The core of this book is the alphabetic (by brand name) section of 474 pages describing these 900+ watches. Each one is shown in natural size (or bigger) from the dial side, and for a substantial number of them there are additional images of the movement, case back and/or side views. The amount of descriptive text for each model varies from one line to a few paragraphs, and always includes dimensions, plus whatever data the author was able to find in the course of his decades of research. In some cases, this includes technical details, patent numbers or specific descriptions of the alarm component in the movements. In order to break the monotony of these listings the author occasionally includes reproductions of various related ephemera items (such as advertisements, patents or instruction manuals).

A general historic overview of the subject (22 pages), and a short article on pocket watches with alarm function (12 pages) precede the brand documentation. Following the documentation is a 95-page section devoted to a facsimile reprint of a series of nine articles by Bernard Humbert, which were originally published between 1958 and 1963 in "Schweizerische Uhrmacher Zeitung" (the German language edition of the Swiss Watchmakers Journal). Each article deals with a specific caliber (3 Vulcain, and one each by Schild, Roamer, Langendorf, LeCoultre, Pierce and Cyma), which include clear movement schematics and detailed disassembly and servicing instructions. An 8-page table with the technical data of the 76 known calibers of wristwatch alarms, and a 41 page index conclude the book.

This is clearly a reference book, and not a book for reading, or even for casual browsing. Given that this is a reference book the language barrier for the wristwatch-alarm aficionado who does not read German is relatively unimportant. The illustrations, the caliber drawings, the dimensions, the production numbers etc, which form the core of this publication are comprehensible without knowing the language.

At a USA delivered price of above \$300, this book is obviously not a casual purchase for any collector. But for the dedicated wrist watch alarm freak it is a "must-buy", as there simply is no other publication available in any language providing the same amount of detailed information on the subject.

R238 Belda Glez, PG**Manual de relojería**

Madrid: Paraninfo, 1954, 22.5 x 16 cm, 146 pp, tables.

Technical (Spanish).

R239 Belin, P**Horology on the half shell**

Washington: Highland House, 1978, 28.5 x 23.0 cm, (ix) 60 pp, 4 ill, 1 table, 31 plates, frontis, loose errata sheet.

Collection (English).

15 short chapters describing and illustrating about 19 watches from Belin's collection.

[1st edition, mediocre] The book has 4 "long" chapters.

Chapter 1, "First and last", begins with a stackfreed watch circa 1535. This is the only watch in the book for which the movement is adequately illustrated and discussed. As a result, Belin starts the book by displaying his ignorance, confusing the stackfreed with the "regulator", the foliot. This is compounded by his failure to understand the second I to XII chapter ring which is for setting the alarm and not, as he suggests, an unusual version of the 13 to 24 chapter ring found on many early watches. Finally, Belin's explanation of the stackfreed and fusee are adequate but show a lack of understanding. The chapter ends with some remarks on perpetual calendars and the problem of leap years in order to include an Audemars Piguet grand complication.

Chapter 5 illustrates 8 enamel and agate cases without mentioning the movements; which is a pity as one dial is shown which suggests an interesting mechanism.

Chapter 14 illustrates two marine chronometers and provides a very short biography of John Harrison (apparently compulsory for books like this one). This is followed by an explanation of ships' bells and the origin of the term "dog watch". These are the most interesting parts of the book, but unfortunately they are irrelevant!

And Chapter 15 explains how the author changed his name (it was too Germanic), lost a watch and then found it again.

The remaining chapters each comment on one watch. Of note are Chapter 3 (which discusses a skull watch but fails to comment on the fact that it has 2 contrate wheels), Chapter 4 (which illustrates a 1610 crystal watch which is said to have a "hairspring escapement", and which causes Belin to develop his own idiosyncratic version of the Nuremberg egg myth), and Chapter 6 (which provides a short biography of Breguet, also apparently compulsory for books like this one). Otherwise they contain nothing of interest to anyone other than the author.

This is an occasionally interesting, very self-centred book about very rare watches. It has little merit.

There is also a Sotheby's 1979 sale catalogue for the collection (which see).

R240 Bell, CJ

Collector's encyclopedia of pendant and pocket watches

1500-1950, identification and values

USA: Collector Books, 2007 (2004), 11 x 8.5 inch, 365 pp, ill (368 pp, ill).

Price guide, identification (English).

A "comprehensive collector's encyclopedia on pendant and pocket watches ... divided into centuries. Each century explores what was happening in the world and how these events and fashions influenced watch making. It includes information on makers, their marks, and serial numbers for the American watch movements."

Primarily photographs and prices from auctions and dealers with a serial number section and reproductions of catalogues.

The variety of publication dates suggest that it is the same book with different price guide inserts.

R241 Bellchambers, JK

Devonshire clockmakers

England: S A Kellow (England: J.K.Bellchambers), 1986 (1962), 8vo, 80 pp, ill (41 pp, 12 b/w plates).

Makers (English).

Introduction to clockmaking; Clockmakers in Exeter, Barnstable, Bideford, Crediton, Plymouth and Totnes; Adrian's clock (a musical clock; and Devonshire clockmakers by towns.

Includes information on Thomas Mudge.

R242 Bellchambers, JK

Somerset clockmakers

London: Antiquarian Horological Society, 1986 (1968), 8vo, 79 pp, ill, 20 plates, frontis, fld map.

Makers (English).

AHS Monograph 4

R243 Belmont, HL

L'échappement a cylindre 1720-1950

Besançon: Technicmedia, 1984 (1969), 27.5 x 19.5 cm, 328 pp, 240 ill.

Biography, history, tools (French).

The 1984 edition notes the "printing of this first edition constituting the original edition is strictly limited to two thousand copies, including three hundred numbered copies".

Said to have 240 illustrations, but they are unnumbered and I haven't counted them.

The cylinder escapement (1720-1950) in the Haut-Doubs, centre of the world in the 19th century.

Nine chapters (the first unnumbered) followed by biographies, bibliography and glossary. No index.

The chapters are: History of production in the Haut-Doubs (26 pages); History (10 pages); Evolution (16 pages); Manual fabrication (22 pages with extensive quotes from Saunier); Production in the Haut-Doubs (100 pages); Mechanic-toolmakers before industrialisation (12 pages); Industrial production about 1920 (12 pages); Tools used by repairers (24 pages); and Anecdotes (26 pages).

[1984 edition, very good] *This is a very interesting book that should be translated into English.*

The book is primarily a survey of the tools used to make cylinder escapements. It is centred on the Haut-Doubs region of France where Belmont met escapement makers and photographed them and their tools between 1967 and 1973.

After a too brief history and survey of early manufacturing methods, chapter 4 (the bulk of the book) is a detailed study of the processes and tools for making escape wheels, cylinders and balances using hand tools. Although the methods are outlined and the tools shown in captioned photographs, it is descriptive and does not provide guidance for escapement makers.

The other, short chapters provide an overview, also with the focus on tools. The biographies are of tool and escapement makers, primarily late 1800's to the present.

Some photographs are only fair which makes understanding the tools difficult at times.

Belmont is a little like Crom. However he is concerned with discussing tools in the context of their use, whereas Crom considers their design and evolution. Both write for collectors in that neither give the detail needed by tool users.

R244 Belmont, HL

R244 Belmont, HL

La montre, méthodes, outillages de fabrication

du XVI-XIX siècle, de la naissance de la montre à la période proto-industrielle

France: Cetre, 1993 (1991), 27 x 24 cm, 200 pp, 126 ill.

History, tools, watch making (French).

Limited edition of 1500 copies with the first 500 numbered.

The watch, methods and manufacturing tools of the 16th to 19th centuries.

The birth of the watch in the pre-industrial period. Tools for watchmaking and their use.

R245 Belyaev, VN

Ankernyi spusk

Moscow: Mashgiz, 1951.

Watch making (Russian).

The lever escapement.

R246 Benitez, MG

A practical course in watch, clock and jewelry repairing

New York: Standard Watchmakers Institute, 1929, 25.5 x 18.0 cm, 59 pp, 9 fld plates with 375 ill.

Repair (English).

In a 3-ring binder.

14 chapters: Disassembly, Cleaning, Setting roller and plate jewels, The lathe and balance staffs, Staking tools, Repairs (balances, jewel settings, mainsprings, replacing broken teeth), The lever escapement, Balance springs, The cylinder escapement, trains, cases and canon pinions, Wheels and repairs, Hands and watch examination, Clock repair, and Jewelry repair.

There are 51 pages on watches, 5 pages on clocks and 2 pages on jewelry. The first plate (not numbered) shows tools. Plates 1-6 and 8 cover watches, and plate 7 covers clocks and jewelry.

*[1st edition, mediocre] The book provides very terse, cookery-book recipes for a reasonable range of tasks. What to do is stated without any explanation of why. Often individual parts are mentioned and illustrated, but there is no indication of their purpose and their relationship to the rest of the movement. Consequently the beginner probably can't find them! Most of the book makes sense to someone who already understands watch repair, but it is hopelessly inadequate for the beginner. There are few details; in particular, the sections on escapements are superficial and completely inadequate.**In the introduction Benitez states that "repairing and adjusting watches and clocks ... is very interesting, pleasant and easy". But to produce a repair manual in 50 pages is ridiculous. If this is just a guide for use in class, to be backed up by extensive practical work and lectures then it might be reasonable, but read by itself it is merely a bit of mediocre ephemera. All the material in it is much better described in other, readily available books.*

R247 Benitez, MG

Questions and answers

for the student watchmaker

New York: Magonbe Globe, 1947 (nd), 22.0 x 14.5 cm, 134 pp, 234 ill.

Repair (English).

151 questions and answers for the student. The questions range from how to remove a watch from its case to middle temperature adjustment.

*[1947, good?] The answers are, in line with the preface, introductory and rather general. The majority relate to American watches with some discussion of cylinder escapements.**Benitez was the Director of the Standard Watchmakers Institute and this book feels like a student text for use in the classroom and preparing for examinations. It is well organised and clearly written with some useful material.*

R248 Benjamin Allen & Co

Tool and material catalogue

reprint (Chicago: Benjamin Allen), ca 1997 (1898), 4to, 104 pp, ill (640 pp, ill).

Catalogue, description, tools (English).

Reprints exist of catalogues for 1900 (published circa 1997) and 1917 (104 pp, ill, published in 1968).

Catalogues of American and Swiss watch cases, movements, tools, etc.

R249 Bennet, J

On a new metallic alloy for the pivot holes of watches

London:, 1830, 8vo, 16 pp.

Technical (English).

After an introduction explaining the disadvantages of brass, jewel and steel holes, Bennet discusses the alloys with which he had experimented.

[1st edition, good] The alloy is discussed in the Philosophical Magazine, 1831, page 71. A two page summary appears in translation in Brown "Die neuesten erfindungen und verbesserungen in der uhrmacherkunst". Details of the alloy are given in Booth "New and complete clock and watchmakers' manual".

R250 Bennett, Sir John

The depression of the watch and clock manufacture

with its remedy

London: Bean & Webley, 1886, 8vo, 8 pp.

- History (English).
- R251 Benson, JW**
Illustrated pamphlet of watches and clocks
 containing a history of chronometry
 ca 1920 (ca 1864), 8vo, 64 pp, ill.
 Catalogue (English).
 See Tardy and Robertson "The evolution of clockwork" who lists the 10th edition. Allix "Postal bid catalogue 1" lists a 63rd edition catalogue.
Presumably an advertising pamphlet.
- R252 Benson, JW**
Time and time-tellers
 USA: Kessinger (London: Robert Hardwicke), 2007 (1875), 19.5 x 13.5 cm, 144 pp, ill (189 pp, 69 ill).
 History (English).
 Published from 1875 to 1902. The modern reprint is of the 1902 edition.
 The copy I own has list of illustrations but no table of contents; as there are only four main chapters there may not have been one.
 There is a Google book pdf of the 1875 edition (available in USA only?).
 In five sections: Time and time tellers (71 pages); Modern watches (32 pages); House clocks (23 pages); Turret clocks (57 pages); and A few dates and details for almanac readers (6 pages).
[1st edition, good] The book begins with a poetic discussion of the nature of time as a prelude to describing the divisions of time and the history of calendars.
This is followed a general history, beginning with sun dials and then covering clepsydra, sand glasses, candles, the origin of the clock and its early history, and the origin of the watch.
This 34 page introduction is followed by illustrations of 19 watches and the descriptions of them, and some unillustrated clocks, together with some anecdotes. The section concludes with discussions of Facio and Huggerford, compensation pendulums, Harrison, and compensation balances.
The second section, "Modern watches", begins with a romantic view of watch ownership. This is followed by an explanation of the mechanism including escapements (verge, cylinder, duplex, lever and chronometer), compensation balances and, surprisingly, the specifications of an oven to test temperature adjustment. Then there are remarks on dials, jewels, frames (plates and cocks), cases, and the trades involved in watch and case making. The section concludes with explanations of complicated watches (chronographs, repeater, clock watch, perpetual calendar and chronometer), keyless watches, and instructions for managing a watch. Other than escapements and balances, which are adequately explained, the rest is purely a descriptive overview, probably based on the watches that Benson sold at the time. (In contrast, the following sections on clocks go into more detail, providing diagrams and explanations of clock mechanisms; about one third of the book is on turret clocks with pictures of several made by Benson.)
Overall the book is a quite good introduction without anything outstanding and, of course, now superseded by better, more recent books. It is probably most noted for the cover illustration which was the NAWCC logo.
Benson was a clock maker who was granted a (perhaps dubious) royal appointment in 1879 (see Jagger; "Royal Clocks").
See Britten "Old clocks and watches and their makers" for a further comment.
[Remark] This book contains a wonderful bit of nonsense when Benson quotes Berthoud writing "stack-freed, that is, a kind of curve, by means of which the great spring of the barrel acted on a straight spring, which opposed itself to its action ...". A similar but even worse definition appears in Partington "The clock and watch-makers' complete guide"!
- R253 Bentley, WJ**
Looking for clocks and watches
 London: Corgi Mini Book, 1973, 5.5 x 4 inch, 94 pp, ill.
 Collecting (English).
 Why horology? How the works work. A guide to technology. Sounds of music. Ticks of a watch. Clocks for the carriage trade. Caring for grandfather (the clock, not the man). Tips for your notebook.
- R254 Benton, H**
Clock and watch repairing for amateurs
 England: TEE Publishing (London: W Foulsham & Co) (USA: W Foulsham & Co), 1994 (ca 1928), 16.5 x 11.0 cm, 61 pp, 19 ill.
 Repair (English).
 No. 10 in the Foulsham's "Do it yourself" series. Printed in America and undated. One source gives 1928 but it may have been reprinted.
 It has been reprinted in 1994.
 "The amateur's guide to professional workmanship".
 Eleven chapters: Preliminary remarks, How a clock works, How the hands move, The pendulum, The escapement, When there is neither pendulum nor weight, The striking mechanism, When a clock refuses to go, Setting a pendulum clock in beat, Repairing and cleaning a watch, and The repairer's kit.
[1st edition, mediocre] See Eglin "Clock and watch repairing for amateurs" for my review.
This book is a different (first?) edition of Eglin, omitting two chapters (Alarm clocks and Electric clocks) and the plates. My copy of Benton cost 2/6 and my copy of Eglin cost 3/6, so I regard Eglin as the second

edition.

Two or three paragraphs are altered, there is a different figure, and a warning in Eglin (on the dangers of trying to fix watches) does not appear here.

I am not sure if Benton and Eglin were only distributed in America and England respectively or if they are different editions; neither is dated. But it doesn't matter as the book is superficial, trivial and uninteresting.

R255 Berg, JH

Pierre the young watchmaker

USA: Bobbs-Merrill, 1961, 8.5 x 5.5 inch, 191 pp.

Prose (children) (English).

[Review by Henry B. Fried] This is a story-book for young teenagers and pre-teen boys and girls. It is interestingly told. The quick reading story relates the burning ambition of young Pierre, age thirteen, who can't wait to get into the horological school in La Chaux-de-Fonds to continue the many-generation tradition of watchmaking. How his poor academic studies kept him from the school's entrance examination and eventual realization of that ambition is a matter of reading on.

Pierre's adventures with his watchmaker-farmer family is simply and very interestingly told, capturing the flavor of Swiss family life.

Pierre, after lagging in his studies is sent to Lucerne to an uncle to learn the hotel business but returns later to make up his studies to qualify him to take the entrance exams to the watchmaking school. The story tells how the sly old grandpere aids Pierre with his ambitions. Incidental visits to town, market day, farm chores, harvesting, a visit to the watch factory, all make up absorbing side trips in the narration.

The author gratefully acknowledges the assistance of friends Peter Hugentobler and Paul Tschudin of the Watchmakers of Switzerland for "authentic background assistance." However, if they read the historical parts of the book in which Pierre quotes the history of watchmaking, their ears probably are still burning. Miss Berg often confuses mainspring with hairspring. Another: "Robert Hooke lived around the time that old watch was made, and until this time, clocks had to have some kind of pendulum to make them go. That's why there couldn't be any pocket watches. Then good old Robert invented a piece that used a big bristle for a hairspring - just like a tiny pendulum."

Then there is the story of Daniel Jean Richard told over again with some variations. Thomas Mudge comes in for some libel of his youth as: "Poor little Tommy / Poor Tommy Mudge / Ought to have a helper / To give his brain a nudge." This latter is a poem Pierre reads to give him courage so that he could overcome academic deficiencies to rise to great heights. He does so by reconstructing (all in his thirteenth year) a fusee verge with a hog's (stolen) bristle. Natch, he's the town hero for making the exact duplicate of Louis XIV's watch.

For kids it's good reading, a nice gift book.

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R256 Bergeon

Tools for watch manufacturing and repairing

Outils pour la fabrication horlogère

Werkzeuge für uhrenfabriken

Herramientas para la fabricación y compostura de relojes

Le Locle: Bergeon & Cie, nd, 29.0 x 20.5 cm, 2 vols about 1000 pp, ill (3 vols).

Catalogue, tools (English, German, French, Spanish).

Parallel French, German, English and Spanish text.

The full Bergeon catalogue, which is produced periodically.

[circa 1987 edition, good] I once had an incomprehensible thing, so I gave it away. Some time later I came across it in a catalogue and realised I had got rid of something useful! Which is why I have collected some tool catalogues; they often contain illustrations of (and sometimes even instructions for) strange tools that are not described in books.

The Bergeon catalogue is one of the most comprehensive and contains some tools I didn't know existed. It has an added use in that there are instructions for use of a few of the more complex tools.

R257 Berger; Guye, S

L'enseignement professionnel dans l'industrie horlogère

Switzerland: Chambre suisse d'horlogerie, 1955, 22 x 15 cm, 119 pp, 73 ill.

Education (French).

Professional education in the horology industry. A number of articles by different authors on the Swiss horology industry and schools.

R258 Bernard, Samuel

Time and life

New York: Vantage Press, 1972, 21.0 x 14.0 cm, 237 pp, 134 b/w ill.

Description (English).

15 chapters some with different titles in the table of contents and the chapter headings. They are: World's first sundial (4 pages); Famous sundials and flower clocks (or Flower clocks and sundials) (12 pages); "I watch the sky" and sun and star time (9 pages); Blacksmith makes the first watch (13 pages); Ants in the pants of Panama engineers (or Ants and grasshoppers at Panama canal make Hamilton watches go haywire) (4 pages); The lure of the clock (or Universal calendar and the lure of the clock)

(6 pages); Continued affection (or Continued love) (23 pages); Pageant of time telling (21 pages); Clock faces (16 pages); Behind the scenes (17 pages); Outstanding clocks in New York (or Some outstanding clocks of New York Town) (23 pages); Timepieces around the world (or Interesting clocks in many places around the world (32 pages); Dean Lord's efficiency steps (or Efficiency key thoughts) (8 pages); Can a word make hell break loose? (3 pages); Most important time-man in the world (or "TJW" president, International Business Machines Corporation) (7 pages).

Followed by 15 pages of illustrations and a 10 page bibliography.

[1st edition, poor] *The bookseller's description of this book was: "A labor of love by a life-long student and teacher of horology, the art and science of watch making." So I bought it. Which was stupid, considering this bibliography lists virtually all relevant English language books and the absence of Bernard's book should have sounded an alarm.*

The first two chapters are vague and descriptive. Pendulums and Henlein are mentioned in the chapter on flower clocks, but erroneously; I can accept Henlein inventing the mainspring (which he didn't), but not "an English physicist and a Dutch astronomer dispute the credit for making the first pendulum" and "a clock with a pendulum, or falling weights in it ...". Then there is an interesting biography of Benjamin Bannaker (of almanac fame), followed unexpectedly by a description of a French clock!

Chapter 4, "Blacksmith makes the first watch", begins with one pages on the Henlein myth, with him inventing the mainspring in a Monastery in 1504. Then we wander back in time to cave dwellers and a history of horology in 3 pages, including some nonsense about self-winding watches, Sully discovering magnetism and over two pages in which Bernard explains how some people thought horology was the study of whores; which should have been the best bit, but the writing is tedious. Anyway, it is why he coined the word "timeology" and was called "the founder of Timeology" as though he created horology single-handed!

I could continue. The chapters wander about, full of uninteresting personal anecdotes and mythical, fictionalised history; with endless, boring repetition, including a strange obsession with China. In amongst it all there are more statements confirming Bernard's ignorance or willingness to distort the truth to suit his own vague purposes: Hamilton invented stem winding; an ordinary calendar watch described as a perpetual calendar; chronographs are used to determine "relative position, both horizontal and vertical, of points on the earth's surface; Terry whittled gears with a jack knife; the story of American clockmakers sending shiploads of clocks to England to have them confiscated is perverted to shiploads of Waltham watches; Besancon has the world's greatest watch inventors; George Graham made the most accurate clock ever; and a photograph of an ordinary marine chronometer described as the RCA ammonia and radio waves clock. It seems Bernard has ignored the quote he placed at the head of chapter 12: "False facts are highly injurious to the progress of science".

Well, the bookseller was wrong, probably deliberately. This is a boring autobiographical book by a person of no consequence, and containing exactly nothing about the art and science of watchmaking. I will probably send it off to be pulped.

R259 Berner, GA

Calculs d'engrenages a l'usage des rhabilleurs

nd, 45 pp, 11 ill.

Repair (French).

Listed in Tardy.

Calculation of trains for the use of repairers.

R260 Berner, GA

Classification des calibres des montres 1889-1930

Bienne: Charles Rohr, 1931, 26.0 x 19.0 cm, 4 pp and 8 plates.

Description, identification, technical (French).

A four page introduction followed by 8 plates showing 176 types of Swiss watch calibre from 1889-1930.

The illustrations are silhouettes of the top plate layout.

[1st edition, fair] *The purpose of this booklet is to discuss problems with the legal protection of watch designs.*

In order to clarify the issues, Berner proposes a method of classifying calibres on the basis of the number of separate components, cocks and bridges, making up the top plate and which mobiles are held under these components. Class 1 has a single plate (full plate) with only a separate balance cock. Class 2 has two components, a plate and an escape wheel cock for example. There are 5 classes, the maximum number of cocks possible for the five mobiles and they are sub-divided according the different arrangement of the mobiles. In total, Berner suggests 176 different designs in 18 groups.

See also Tardy "Dictionnaire des horlogers Français" which contains (mediocre) photographs of ebauches from 1800 to 1889.

R261 Berner, GA

Illustrated professional dictionary of horology

French - German - English - Spanish

Bienne: Société du Journal La Suisse Horlogère (New York: Dutton) (La Chaux-de-Fonds: Chambre suisse de l'Horlogerie), 2002 (1961), 21.0 x 15.5 cm, CD ROM (912 pp, ill, 95 pp indexes).

Dictionary, terminology, tools (English, French, German, Spanish).

The first edition is dated from the foreword. Reprinted in 1977 and 1988 with a supplement produced in 1996.

The 2002 one-volume edition includes both parts merged together and is available as a CD ROM. Multilingual dictionary of terminology; parts, materials, tools, etc.

[1st edition, excellent] *The dictionary is ordered by the French words with cross-reference indexes for the other three languages. All 4,103 entries have parallel text in each language and some are illustrated. As a lot entries (such as "montre") have many subsidiary parts, many more than 4,000 terms are described. An extremely valuable book for the linguistically challenged reader and one I refer to frequently.*

My main use of this dictionary has been for translating French and German into English. Although invaluable, there are some important oversights; in particular, many archaic German words are missing, and often they are also omitted from Mauch "Horological dictionary".

[CD ROM] *The multi-platform (Windows and Macintosh) CD provides all the material in the main volume and supplement. It is a data base that can be searched in any of the 4 languages and the results displayed in the chosen language. However, at any stage the user can switch languages; for example, searching for the German word "hemmung" and view the results in English.*

Perhaps it is a symptom of my age, but I found using the printed version easier, despite the advantages of being able to directly search for words in any language. One thing I do miss is an index in each language so that words can be browsed.

[CD ROM, review by Fortunat Mueller-Maerki] *For decades horologists the world over have acknowledged the 1961 publication by G.A. Berner, former Director of the Watchmaking College in Biel, Switzerland as the worlds finest multilingual dictionary specialized in horological terminology. Its unique four-column layout for the first time allowed studying the detailed definition of a specialized horological word side-by-side in French, German, English and Spanish. In addition an explanatory illustration was included wherever this was appropriate to better explain a concept or an item. Even the first volume was a massive undertaking with thousands of entries, reduced to a manageable size handbook by using special, bible-style thin paper.*

By the 1990s technological advances had created the necessity to produce a Supplement which added over 1000 additional terms, and which was published in 1995. Now the horologist trying to decipher a foreign language text had to consult two books if they were unsure of the meaning of a term. Both volumes were out of print by 2002.

The world of international horology is indebted to the publishers for now avoiding the temptation of the easy solution (i.e. just reprinting the two books) but doing it "right", i.e. not only merging the two separate volumes into one alphabetical listing, but at the same time also making an interactive computer based version available. (One can buy only the book, only the CD-ROM, or both). The current edition creates a linguistic resource for the international horologist that has never existed before: The dictionary defines about 5700 key horological terms in four languages and contains nearly 1000 illustrations.

This reviewer - in spite of being a book lover - found the interactive electronic version to offer a major improvement in ease of use and speed of finding stuff. The computer version installs easily from the CD to any PC (Windows or MAC, needs about 50 Meg of hard-disk space to run without the CD present).

Wisely the editors have decided to retain much of the functionality of the paper edition; one may e.g. easily toggle between the definitions in the four languages. However the main limitation of the book format is gone" Size limitations on paper had dictated one listing of all the definitions, they appeared in French alphabetical order and numbered, with three separate indexes for the terms in the three other languages needed to find the number for the multilingual listing of the term in the main section. That limitation is of course gone in the interactive version; any language may now be the primary language.

The functionality and layout on the screen takes a bit of getting used to, but not more than most new software applications: After choosing a primary language, a separate small window is used to launch a search, e.g. for terms containing the word "gear". The results are then displayed in a separate window, nine terms were found: 1) gear, 2) sliding gear, 3) throw into gear (engage), 4) throw out of gear (disengage), 5) gear train etc.. By clicking on any of the 9 terms found one opens the definition window, which defines the term. The definition and explanation for "gear" is 666 words long and refers to 9 illustrations (showing parts and types of gears), which one may pop up in a side window. Toggling between languages one may read not only the term, but also the definition in English, French, Spanish or German.

Admittedly this is a somewhat pricey publication, and it will therefore not be considered by the casual horologist who has the need to translate a specialized timekeeping term once or twice a year. However for a professional in horological research, horological science or horological writing on an international scale this is an invaluable and indispensable tool.

R262 Berner, GA

Les mécanismes et organes moteurs de la montre

Bienne: Magron, 1922 (1914), 22 x 15 cm, 219 pp, 86 ill (124 pp, 86 ill).

Theory, technical (French).

3 printings in 1914, 1922 and 1931.

The mechanisms and motor organs of the watch.

R263 Berner, GA

Practical notes for the watchmaker

Notes pratiques pour l'horloger

Praktische notizen für uhrmacher

Switzerland: Charles Rohr Editions Horlogères, 1955 (nd), 21.5 x 15.5 cm, 267 pp, 76 ill, 23 pp ads (219 pp, 75 ill).

Technical (English, French, German).

At least three printings, nd, 1948 and 1955. Later editions published with French/English and French/German parallel text, but the first edition may have been only French.

Five sections: The spring and its barrel (39 pages); The gears (88 pages); Escapements (22 pages); Regulating and repairing (67 pages); Memoranda for the adjuster (17 pages).

There is an appendix (24 pages) describing the Glucydur balance, Dumont tools, the Super Shock-Resist shock absorber, the Favorite electric motor, the Vibrograph rate recorder, the Incabloc anti-shock bearing, Seitz jewellery tools, and the Bovet mono-split second chronograph.

Opposite pages are in different languages (French/English or French/German) and the actual text is only about half the above with a total of about 130 pages.

[2nd edition, 1948, good] *This is a very strange book. The preface states the “object of these practical notes is to give to the practical watchmaker ... with numerous examples ... certain theoretical rules directly useful, especially to the repairer”. In part it does this, but much of the book contains general principles and background remarks which, although very interesting, are of little practical value.*

The book begins by considering mainsprings and gears. These two parts concentrate on how to calculate the size and characteristics of missing parts, including wheels for various trains, keyless work and motion work. Theory is avoided; formulae and tabular calculation methods are given without much explanation or derivation, but their application in practice is copiously demonstrated. Both parts are excellent, clear and very useful. Included in the section on mainsprings is a study of testing springs on a dynamometer with a discussion of quality and shape. This part, although of no practical value, is fascinating and it is the only intelligent study of mainsprings I have seen.

The section on gears is followed by brief notes on jewels and pivots, lubrication, hand adjustment and click-work.

The third part describes the action of lever and cylinder escapements and summarises in tables the “safety” (locking and drop) values for different movement sizes and qualities. This is simply a factual summary without explanation.

The final and most extensive section examines adjusting. This provides details of Swiss testing procedures, an argument for eliminating regulators, tables of balance and balance spring combinations, a long and largely irrelevant explanation of atmospheric pressure, and a rather vague discussion of the use of timing machines for adjustment. The material is interesting but of little use.

The work concludes with a lengthy appendix extolling the virtues of certain products; perhaps more correctly described as testimonials.

R264 Berner, GA

**Tables and practical guide for determining dimensions of wheels and pinions
Barème et guide pratique pour les taillages en horlogerie et pendulerie**

Bienne: Charles Rohr (Besançon:), ca 1953 (1924), 21.5 x 15.0 cm, 89 pp (75 pp).

Repair, technical (English, French, German).

The second edition is given as undated but 1953 (a reprint?)

Text in French, English, and German.

Tables and practical guide for determining dimensions of wheels and pinions.

R265 Berner, GA

The characteristics of the mainspring

may be compromised if its dimensions are not correct

Geneva: Swiss Watch & Jewelry Journal, 1955 (nd), 22 pp, tables.

Technical (English).

The importance of choosing the correct mainspring.

The title is often given as “Characteristics of the mainspring” without the subtitle, which is misleading.

R266 Berner, GA; Audetat, E

Pierre-Frederic Ingold, 1787-1878

Australia: Richard Watkins (Zurich: Verein für Wirtschaftshistorische Studien), 2008 (1962), 24.0 x 17.0 cm, 12 pp, no ill (27 pp, 13 ill).

History (German, English).

In “Schweizer pioniere der wirtschaft und technik”, volume 13, 1962.

The English translation by Richard Watkins is a PDF file which has the full text without illustrations.

The volume contains 3 articles:

P.F. Ingold, ingenious inventor of horology machinery (27 pages by G.A. Berner and E. Audetat).

Adolf Guyer-Zeller, creator of the Jungfraubahn (30 pages by Alfred Dubendorfer).

Rudolf Zurlinden, founder of the Jura cement factory, Aarau-Wildegg and the cement cartels (26 pages by Hans Rudolf Schmid).

The book concludes with a 3 page bibliography for all 3 articles.

[1st edition, good] *This is a more extensive biography of Ingold than Societe Suisse de Chronometrie “Quelques notes sur Pierre Frederic Ingold”, providing a bit more information about his attempts to set up watchmaking factories in France, England and America. It includes quotes from Jurgensen “De emploi des machines en horlogerie, specialement dans la fabrication de la montre de poche de leur principal inventeur Frederic Ingold”.*

[Remark] *Near the beginning of this essay it is said that Ingold “belongs in the category of really great people. In one century only two or three the like are born.” I find it hard to accept this, except as a “feel*

good" statement. Nothing in this biography nor in "Quelques notes sur Pierre Frederic Ingold" suggests that Ingold had any impact at all on the development of watch manufacture. The article "Pierre Frederic Ingold and the British Watch and Clock Making Company" by R.F. and R.W. Carrington (*Antiquarian Horology*, Spring 1978) is a more comprehensive and better study of Ingold (although it omits the anecdote about omelettes!) but even it does little to enhance Ingold's reputation.

The heart of the matter is the development of semi-automatic and automatic machinery, which was central to the work at Waltham and the later progress in Switzerland. But Ingold's tools are firmly rooted in hand work, albeit moving in the direction of standardisation and interchangeability. Even the complex plate lathe illustrated by Carrington is no more than a sophisticated hand tool. Indeed, the main impact of Ingold was his fraise whose sole function was to correct the shape of hand-made or poorly cut wheel teeth and which was completely irrelevant to machine manufactured watches from 1850 onwards. It is not unfair to suggest that Ingold's work headed in the wrong direction and, although he may have stimulated others, his own work is unimportant.

To say "one man stands out, who took crucial steps to bring technology to watch production: Pierre Frederic Ingold" is to unfairly ignore Jacques David (and his mentor Chatelain) and the mechanics at Waltham; they had far greater impact on the development of watch technology. Likewise, Jurgensen's suggestion in 1877 that "manufacture by machines has reached a degree of completeness that could hardly be exceeded" is crass and obviously wrong.

Ingold may have been an outstanding designer who failed to reach his potential because of unfortunate circumstances, but some more significant evidence is required to justify this view. Without it he has no place in mainstream history.

R267 Berner, GH**La montre-bracelet, autrefois aujourd'hui**

Biel., 1945.

(French).

The wristwatch, formerly and today.

Mentioned in Kahlert, but otherwise unknown.

R268 Berner, MGF**L'échappement duplex**

Genève., 1912, 8vo, 20 pp, 2 ill.

Technical (French).

Some sources give the author as GA Berner; the "M" may be for Monsieur.

R269 Berner, Paul**Cours d'horlogerie, théorie des échappements**

La Chaux-de-Fonds: E. Sauser, 1922 (1908), 4to, 44 pp, ill (98 pp, ill).

Technical (French).

The first edition published for Ecoles d'Horlogerie et de Mécanique de La Chaux-de-Fonds Cours d'Horlogerie, and the second edition for Technicum de La Chaux-de-Fonds Cours d'Horlogerie.

Course in horology, theory of escapements.

R270 Berner, Paul**Historique du réglage de précision**

depuis son origine jusqu'au commencement du XX siècle

Bienne: Magron, ca 1910, 21.5 x 14.0 cm, 20 pp.

History (French).

History of clock and watch adjusting.

R271 Berner, Paul**Rapport sur les mouvements de montres de fabrication américaine**

Neuchâtel., 1909, 4to, 62 pp, 140 ill, 5 plates.

(French).

Report on watch movements manufactured in America.

R272 Berner, Paul**Table des valeurs naturelles des expressions trigonométriques**

calculées avec quatre décimales pour les angles successifs de dix en dix minutes

Neuchâtel: Journal suisse d'horlogerie, 1921, 4to, 32 pp.

Theory (French).

Trigonometric tables.

R273 Berner, Paul**Théorie et emploi de la filière a réglettes**

pour le mesurage des pivots

Bienne and Besançon: Magron, 1925, 18.0 x 12.0 cm, 16 pp, 4 ill, 1 table.

Repair, theory (French).

One source ascribes this to GA Berner.

"avec tableau comparatif des différents genres de filières et plusieurs figures.

Theory and use of the sector gauge for measuring pivots.

R274 Bernoulli, Johann**Beschreibung des Fürstenthums Welsch-Neuenburg und Vallengin**

Berlin: J. Bernoulli, 1783, 17.5 x 11.0 cm, 494 pp, fld map.

History (German).

Two 2 printings, with and without the map.

The 1783 edition is available as a Google Book PDF file without the map.

This is a greatly expanded and rewritten German translation of Osterwald "Description des montagnes et des vallees qui font partie de la principaute de Neuchatel et Valangin" (which see). It includes descriptions of regions not covered by Osterwald.

[Remark] The map from this book is available as a part of the translation of Osterwald "Description des montagnes et des vallees qui font partie de la principaute de Neuchatel et Valangin".

R275 Berryer, A-M

La mesure du temps a travers les âges

aux musées royaux d'art et d'histoire

Brussels: Musées royaux d'art et d'histoire, 1974 (1961), 24 x 15 cm, 152 pp, 53 ill, 39 plates (142 pp, ill, 37 plates).

History, illustration (French).

One source gives 100 pp.

Time measurement through the ages, from the royal museums of art and history.

R276 Bertele, H

Marine and pocket chronometers

Marine und taschenchronometer

geschichte, entwicklung, auswerkungen

Munich: Callwey; USA: Schiffer, 1991 (1981), 31.0 x 24.0 cm, 319 pp, 391 ill (364 pp, 391 ill, slip case?). History, bibliography, illustration, makers (English, German).

Published in separate English and German editions.

Eight chapters: The problem of longitude (4 pages), Forerunners of the mechanical chronometer (15 pages), The heroic epoch (55 pages), Sea travel and geographical discovery (10 pages), The epoch of fine mechanics (150 pages with 124 pages of illustrations), Official evaluations (16 pages), Chronometer development in the 20th century (31 pages), and Tourbillons and carousels (17 pages). There is an 8 page bibliography but no index.

[English 1991, fair] *This is a fairly good history of the development of chronometers. Both the text and the extensive illustrations (unfortunately lacking dimensional information) provide a comprehensive overview of the subject.*

Unfortunately, the technical aspects of the text are often vague and obscure. This is partly due to inadequacies in the translation, but I think Bertele had problems striking a balance between producing a book of interest to the general reader and providing precise structural information. In places he outlines details of design too tersely and the result is often more confusing than helpful. Because of this lack of precision, the relationships between different technical developments and their relative importance is vague and unsatisfactory; Gould "The marine chronometer, its history and development" is a far better book in this regard.

I would like to say that the book is a valuable source of illustrations. However, the absence of an index to design features and makers means finding relevant pictures is extremely difficult and greatly detracts from it.

Overall it is a fairly good and useful book, but it could have been far better with a little more concern for the reader.

[Remark] *I am having trouble deciding if this is a good or a bad book. When I started to read it my first impression was that it is vastly superior to Bertele's "The book of old clocks and watches". But I found it difficult to read because the translation, although adequate, is at times stilted and uncomfortable; probably too close to the German with not enough care taken to choose suitable English words. Having personal experience of translation, I initially accepted this. But then I came across a direct quotation from the "introduction" (actually chapter 6) of Gould "The marine chronometer, its history and development". This is actually an English translation of a German translation of Gould's words and the result of the double translation is awkward and not quite what Gould wrote. I can only conclude that the translator was chosen for general competency with German and he may not have had a good knowledge of horology and metallurgy. My experience suggests that a good knowledge of the subject matter is much more important than a good knowledge of the foreign language. The failure to correctly translate technical terminology (which also occurs in Meis "Chronograph - wristwatches to stop time" and which was translated by the same person) makes it difficult, and at times impossible, to understand.*

I say "may not have had a good knowledge of horology and metallurgy" because I am not sure how much of the awkwardness stems from Bertele's original writing. Another example appears on page 110, where the translation reads "The use of spherical (balance) springs was an attempt to avoid the danger of two subsequent windings causing blockage through external shocks". I am not brave enough to guess what Bertele might have been trying to say, if anything.

Bertele includes much detail of escapements in illustrations, but his explanations are too terse, too vague, and consequently inadequate. If escapements or details of manufacture are to be discussed, the author has the responsibility to provide clear, unambiguous explanations, and I found Bertele's text a long way short of what is required. Certainly I could, with a bit of hard work, make some sense of the illustrations, but I don't think I should have to make such an effort. Indeed, there is an overall vagueness which compromises his statements and leaves me feeling very unsatisfied. I certainly get no idea of the relative

importance of and relationships between the technical developments that occurred between 1750 and 1800.

More importantly, I am not sure just how good or bad Bertele is as an historian. There is no doubt that he undertook a large amount of work to collate information from many different sources, but I feel that the few places where he seems to express opinions are inadequate and unconvincing. One example is that when discussing and illustrating the work of Arnold and Earnshaw he fails to clearly distinguish between escapements and the sequence of their development, something that Mercer "John Arnold & Son, chronometer makers 1762-1843" does far better. And I was stunned to see the unnumbered photographs on page 96 with the caption ending "new light is cast on the struggle for priority between Arnold and Earnshaw by the discovery of this escapement" (in 1980). I am a novice as regards chronometers, but even I immediately thought of Landes "Revolution in time" and his delightful explanation of the acute embarrassment that the incorrect dating of this timepiece caused; pages 180-183 (1st edition) and pages 196-199 (2nd edition). OK, I can perhaps accept that the first German edition of 1981 could have included such a disastrous reference to a discredited myth (there may have not been time to change the caption in the months before printing), but in the 1991 English translation? Do we blame Bertele, the translator or the publisher? Even though I can't decide, I am grateful that Bertele has illustrated this notorious chronometer!

My feelings were clarified by the last three chapters. Elsewhere I use the phrase "shot himself in the foot" to describe an author grossly failing to achieve his aims. I think Bertele has gone one better and shot himself in the head.

Chapter 6 has an utterly confusing, inadequate discussion of chronometer rating with next to useless tables of rating data. This incomprehensible text finishes with a completely irrelevant, throw-away mention of scientific positivists, Heisenberg's uncertainty principle and similar concepts of Von Neumann. I have no idea what discipline Bertele's emeritus professorship relates to, but it certainly has nothing to do with the philosophy of science and clear thinking.

Chapter 7 is marginally better; it outlines the work of Guillaume and Paul Dittisheim. This is the only horology book I have read that points out that Guillaume did not receive a Nobel Prize for horology but for research in metallurgy with far broader applications, even though the text doesn't make much sense. All the technical details could have been omitted and the non-technical biographies expanded to create a much better study of the roles of these two people. Or the technical aspects could have been very much enlarged to give the scientific and mathematical readers some insight. But as it is, it is neither one nor the other and simply creates a feeling of frustration.

Chapter 8, on tourbillons and carousels, is best ignored, being almost unintelligible.

R277 Bertele, H

Taschen und schmuckuhren

Braunschweig: Klinkhardt & Biermann, 1964, 19 x 13 cm, 48 pp, 38 ill.

Description (German).

Decorative watches from 1580 to 1860.

R278 Bertele, H; Basserman-Jordan, E

The book of old clocks and watches

Uhren, ein handbuch für sammler und liebhaber

Montres, horloges et pendules

Oude klokken, het handboek voor verzamelaars en liefhebbers

USA: Crown Publishers, London: George Allen & Unwin, Haarlem: Schuyt, Fribourg: Office du Livre, 1974 (1914), 24.0 x 16.0 cm (22 x 15 cm), 522 pp, 388 ill, 20 colour plates.

Collecting, history, illustration (English, German, French, Dutch).

This book, originally written by Basserman-Jordan, has passed through a number of editions. The editions from 1961 (which may be in a slip case) were so extensively revised by Bertele that they are regarded as a different work (as with Britten's "Old clocks and watches and their makers").

There are translations into English (1964, translated from the German 1961 edition by H.A. Lloyd and reprinted in 1969), French (no date) and Dutch (1974, translation of the 6th edition).

A general horological work with only about 12 pages on watches.

There are 7 chapters:

The conception, division and measurement of the passing of time, calendar and astronomical (86 pages).
Appliances for the measurement of time with the aid of astronomical observations (48 pages on sun dials, quadrants and special appliances).

Mechanical clocks and watches (78 pages in three sections: Technical considerations, The history of mechanical control devices, and The different parts of a clock).

The main types and shapes of mechanical clocks with brief characteristics (116 pages in three sections: Classifications not generally used today, The classification of mechanical clocks according to shape and use, and Classification by some particular feature).

Other methods of measuring time (14 pages on water clocks, sand glasses, and oil and candle clocks).

A chronological table of the principal discoveries and inventions (38 pages).

Collectors problems (106 pages covering Motive, Private collections and museums, Origins and makers, Signatures and marks, Restoration and forgery, Buying, Describing and cataloguing, and Handling and packing).

The book concludes with a short bibliography and index.

See also Basserman-Jordan "Uhren, ein handbuch für sammler und liebhaber".

[1st English edition, mediocre] If I may quote a Charles Allix postal catalogue "This book is supposed to be based upon Basserman-Jordan's "Uhren". None of us has ever seen much connection. Instead, the 'beetle' wheels his droning flight through a procession of instruments, clocks and watches over the centuries, providing a large and often useful general survey".

Which is a fair assessment. The beetle's writing is dry, academic and uninspiring, even boring. Even allowing for its age, I was disappointed by this book which contains little of interest other than the very good illustrations.

There is no coherent history and no useful technical information. Despite the preface mentioning bibliographies and the social, mathematical and aesthetic aspects of horology, the book contains little of interest. Most of the text is descriptive (at times glib) and only loosely related to the plates (which occupy the bulk of the pages).

Chapter 1 provides a discussion of time measurement, including calendars and calculating moveable feasts such as Easter. Bertele's explanations of the relative motions of planets and the sun are weak and he is much better when describing as opposed to presenting theory.

Chapter 2 looks at instruments for measuring time from astronomical events, primarily sun dials. Here we first see Bertele's sole objective in writing this book, when he describes a taxonomy for sun dials. So he simply looks at external appearance and provides no information at all about how they work.

Chapter 3 attempts to provide a technical description of clocks, examining technical considerations (2 pages which say precisely nothing, time norms (that part which measures time, such as pendulums and balances), and the different parts of clocks. It is clear that Bertele probably had little understanding of clock and watch mechanisms and probably pilfered the few technical statements from other sources. Again, he is at home when vaguely describing physical features, such as dials, frames and cocks. Overall the chapter is superficial, confused, confusing and of no value.

Chapter 4 is the reason for the book. In it, Bertele presents his taxonomy for clocks and watches, which is based solely on external appearance. In this he spends 17 pages discussing watches and, not surprisingly, fails to come up with a sensible description of them because the outer form is so restricted when compared with clocks. Scattered throughout are disjointed fragments of history which do not provide a coherent picture. I do not know if the taxonomy is sensible, let alone useful, but I doubt it.

Chapter 5 summarises non-mechanical clocks and is so brief as to be rather pointless.

Chapter 6 is a chronology which, except for one strange entry, ends at 1860. But the impression given is that anything after about 1700 is unimportant.

Finally, chapter 7 on collecting is out-of-date and tedious. It does contain some interesting comments, but it is hardly worth the effort of reading it find them.

Compared to Baillie, Ilbert and Clutton "Britten's old clocks and watches and their makers", this is an uninspiring book. The small amount on watches indicates Bertele's lack of interest and lack of knowledge, and the technical sections are poor. Importantly, it is impossible to develop any understanding of trends. Nowhere does Bertele tackle this adequately, and the fact that relevant illustrations are scattered throughout the book and not tied to the chapters makes studying them nigh on impossible.

Overall I should rate this book as poor, even bad, but it is partly redeemed by the photographs of timepieces up to the 18th century.

[Remark] Several times Bertele refers the reader to a second volume, but as far as I know it does not exist.

R279 Berthoud, Charles

Études et biographies

Neuchâtel:, 1894, 8vo, 251 pp, no ill.

Biography, history (French).

Studies and biographies.

Gardner "Catalogue of the Torrens collection" says "good general information about Neuchâtel".

R280 Berthoud, Ferdinand

Essai sur l'horlogerie

Dans lequel on traite de cet art relativement à l'usage civil, à l'astronomie et à la navigation, en établissant des principes confirmés par l'expérience.

Paris: Berger-Levrault (Paris: Merigot, Didot, Jombert) (Paris: Jombert, Musier, Panchoucke), 1978 (1763), 26.0 x 19.5 cm, 2 volumes of liv, advertisement, 477 pp, 5 tables, table of plates, 19 fld plates and viii, 451 pp, 19 fld plates.

Description, repair, technical, tools, watch making (French).

The modern reprint in a slip case is of the second edition (1786) with an introduction by Cecil Clutton.

Volume 1 only of the 1786 edition is available as a Google Book PDF file (with the plates scanned folded and useless).

Essay on horology within which there is a treatise on the comparative art of the civil, astronomical and navigational use, establishing the principles confirmed by experience.

The introduction to volume 1 (54 pp) contains a detailed plan of the book (26 pages), preliminary discourse on horology (21 pages on history and the general processes in clock and watch making) and table of contents.

Volume 1 covers "ordinary" timepieces and has 36 chapters. The first 35 (occupying 216 pages) describe

clocks, watches, escapements, tools (including wheel and fusee cutting engines), faults in watches, judging new designs, and barometers and thermometers. The last chapter is a 261 page, detailed explanation of hand making a repeating clock, including dial making and casing.

Volume 2 is a 47 chapter technical study with details of Berthoud's own experiments on pendulums and balances. The first 46 chapters include levers, gears, calculation of trains, simple and compensation pendulums, astronomical regulators, the balance, balance springs and isochronism, friction, temperature compensation, descriptions of watches and clocks, two marine chronometers (with details of manufacture), and additional notes. The last chapter is an 83 page, detailed explanation of hand making a verge escapement watch.

[2nd edition 1786, excellent] Reviewed in Baillie "Clocks and watches, an historical bibliography" which notes that the second edition is a reprint of the first and is identical. He suggests many later books are compilations from this work.

Also see my review of Berthoud and Auch "How to make a verge watch".

Regarded as Berthoud's most important work and it is hard to disagree. It is undoubtedly one of the most significant and valuable books published, and it is a pity it has not been translated.

R281 **Berthoud, Ferdinand**

Histoire de la mesure du temps par les horloges

Paris: Berger-Levrault (Paris: Imprimerie de la République), 1976 (1802), 10.5 x 8 inch, two volumes, 373 and 447 pp, 23 fld plates.

Bibliography, history (French).

The plates were originally published in a separate atlas.

The reprint of the 1802 edition is limited to 530 copies (500 numbered).

The 1802 edition is available as a Google Book PDF file (plates badly scanned).

History of time measurement by clocks.

Volume 1, 16 chapters:

Chapter 1: Brief exposition of the principle advantages which mechanics obtains for society and the use of machines to measure time (12 pages including portable clocks and the spiral balance spring).

Chapter 2: The first measurement of time by clocks (15 pages, clepsydras and sun dials).

Chapter 3: The invention of toothed wheels (14 pages, ancient clocks and spheres).

Chapter 4: The invention of clocks with wheels using weights (23 pages).

Chapter 5: The invention of striking clocks and watches (21 pages including the balance spring and fusee).

Chapter 6: Discovery of the pendulum by Galileo (7 pages).

Chapter 7: Application of the pendulum to clocks (39 pages).

Chapter 8: Application of the balance spring to watches (16 pages, Huygens and Hooke).

Chapter 9: The invention of repetition (24 pages).

Chapter 10: The natural measurement of time (11 pages, solar and mean time).

Chapter 11: Clocks and watches showing the equation of time (14 pages).

Chapter 12: Astronomical clocks (28 pages).

Chapter 13: Public clocks (33 pages).

Chapter 14: Different methods for determining the longitude (10 pages).

Chapter 15: The invention of clocks and watches to determine longitude (40 pages, Frisius, Huygens, Massy, Sully, Harrison, Berthoud, Le Roy, and Mudge).

Chapter 16: Trials of marine clocks and watches (66 pages, Harrison, Le Roy, Berthoud, Biesta and Arsandaux).

Volume 2, 8 chapters and appendix:

Chapter 1: The invention of the principal escapements for clocks and watches (58 pages).

Chapter 2: The expansion and contraction of metals and the application to pendulums (28 pages).

Chapter 3: The influence of heat on springs and balances and various means to correct these variations (27 pages).

Chapter 4: The invention of the principal instruments and tools for making machines to measure time (35 pages including wheel cutting, fusee cutting and fusee adjusting rod).

Chapter 5: Various inventions in horology (xx pages including 8-day watches, seconds watch by Romilly and a watch with two balances by Berthoud).

Chapter 6: Clocks which show astronomical indications (66 pages).

Chapter 7: Chronological table of discoveries (53 pages).

Chapter 8: Glossary of terms (52 pages).

Appendix List of the principal books on horology (84 pages).

R282 **Berthoud, Ferdinand**

How to manage and regulate clocks and watches

L'art de conduire et de régler les pendules et les montres

Kunst die pendel und taschenuhren

Het regt gebruik der uurwerken

USA: L. A. Seymour (Paris: Coucier) (Leipzig:) (Paris: Ferdinand Berthoud), 1999 (1759), 21.0 x 14.0 cm (18 x 13 cm), 81 pp, 4 plates, tables (107 pp, 4 fld plates, tables) (80 pp, 4 plates).

Repair (French, English, Dutch, German, Italian, Spanish).

A bibliographer's nightmare. There were 6 editions, the last in 1836, and several translations. These

were followed by augmented editions edited by Janvier in 1838 and Robert in 1841. The editions by Janvier and Robert are listed separately because they often appear under those authors' names. I presume, as with Pignet's edition of Sievert, the original author's name is dropped to convey the impression that it is a new work written by the editor.

See Tardy and Robertson "The evolution of clockwork". The 1838 German translation is of the 6th French edition (1836).

There are at least three modern reprints: a first edition facsimile (1983, limited to 300 copies, slip case), a translation into Dutch and a first edition translation into English by L. A. Seymour (1999).

The 1805 edition is available as a Google Book PDF file.

In 15 articles or chapters. They cover true and mean time, clock and watch mechanisms, causes of variation in clocks and watches, how to verify the accuracy of a watch, balance springs, regulating clocks and watches, meridian lines, acquiring clocks and watches and watch maintenance. These are followed by an equation of time table and a table of gnomon heights for desired meridian line lengths.

[English translation, 1999, review by Fortunat Mueller-Maerki, good] *The first timekeepers were used as scientific instruments for highly educated scholars and as playthings for kings and noblemen. But by the mid eighteenth century in Europe watches and clocks had become common enough that that a sizable portion of merchant classes like urban shopkeepers was likely to own or aspire to own a timepiece, but these machines were still novel enough that most owners did not understand them or know how to use them, nor set them. In 1759 the distinguished Paris based horologist Ferdinand Berthoud, "with the approval and assent of the King", saw an opportunity for what can fairly be described as one of the first mass market books on timekeeping.*

While today Berthoud is better known for perfecting the equation clock, and his later, scholarly works on horological theory and horological science, few of his texts were so widely published as this little brochure. In the next 60 years it went through 6 editions in French (including one each in Holland and Belgium), was translated into Spanish and Italian three times each, and was published in German twice, as well as in Dutch. But until L.A. Seymour translated and published the text in English in 1999 it was quite inaccessible to English speaking readers.

While from today's perspective some of the text seems quaint, we must remember that the mid 18th century was basically a non-mechanical era, and even simple mechanical concepts like friction, lubrication or "storing power in a spring or by raising a weight" were virtually unknown to the intended audience. Even before providing instructions on how to set a timekeeper the author had to introduce such concepts as solar time vs. mean time which Berthoud does simply and elegantly at the beginning of the text. Other chapters deal with evaluating and selecting a reputable watchmaker, and with proper maintenance.

The translator/publisher deserves the gratitude of horological enthusiasts for making this classic work finally available in English 340 years after its first publication.

[Remark] *The first book of many written by Berthoud.*

A pleasant book which would have been valuable 250 years ago, being a well written and clear explanation of basic clock and watch rating and adjustment. Although Berthoud's advice is sensible and impartial, I can't help thinking that it was, in part, a clever piece of advertising by a "clockmaker that understands the principles of his art, and from whose continuing studies and subtle experiments theories have been developed".

The translation by L. A. Seymour is very good.

As noted in the introduction, this may be the only book that sensibly explains the quite common and so-called doctor's watch, old watches with an inconvenient stop (hack) lever. Berthoud points out that this feature is to enable accurate setting by a sundial and has nothing to do with doctors or timing events. A quick scan of other books produced only a few references to the mechanism (in Baillie, de Carle and Meis) and no intelligent explanations. Marryat "Watches, volume 1" illustrates a doctor's watch which appears to be quite different and more interesting. However, Floyer in "The physician's pulse-watch" states that the hack feature was developed by him for timing pulses. I prefer Berthoud's explanation.

R283 Berthoud, Ferdinand; Auch, Jacob

How to make a verge watch

Australia: Richard Watkins, 2005, 29.5 x 21.0 cm, 158 pp including 12 plates.

Tools, watch making (English).

This book is in two parts. Part 1 is a translation of sections of Berthoud "Essai sur l'horlogerie", including chapters 31 and 32 from volume 1, chapter 47 from volume 2, and extracts from other chapters. These sections describe the design and hand-making of a verge watch movement. The main extracts from other chapters cover mainspring making, enamel dial making and gilding. Part 2 is a complete translation of Auch "Handbuch für landuhrmacher" which also describes the design and hand-making of a verge watch movement. Part 1 was translated by Richard Watkins. Part 2 was translated by E.J. Tyler and edited by Richard Watkins. There is an index.

[1st edition, very good] *To the best of my knowledge, the two books in this translation are the only ones that describe the complete process of hand-making a watch movement in detail, other than the much later book "Watchmaking" by Daniels. I do not know of any other English language description, although parts of the process are covered in some other books. Despite some criticisms, I feel the two authors provide us with a very valuable insight into watchmaking 200 years ago.*

Although Berthoud and Auch describe the same tasks, they do so quite differently.

Berthoud assumes the reader has the basic skills and takes a somewhat professional approach. That is,

he begins by stating design principles and then describes the construction and finishing of parts in order of manufacture; making the ebauche, planting the mobiles, making the escapement and finishing the movement. He also clearly describes dial and mainspring making, although these are in the context of clock making, and he warns the reader that he is only giving an overview.

In contrast, Auch takes the reader through the process of educating an apprentice. He teaches the student how to make tools and watch components as required skills before relating those skills to making a watch. Thus, very early on we learn how to make barrels, wheels and parts for the regulator (the slide and rack) as exercises in turning rather than as watch components. Later, after discussing calibre drawing, he makes use of these developed skills to construct the correctly sized parts for a verge movement.

Both writers create problems. Berthoud, rather surprisingly, demonstrates an inadequate grasp of some topics, such as temperature compensation, and totally ignores others, such as calibre drawing. Also he shows up the rather large gulf between theory and practice, no more clearly than the contrast between the concept of epicycloid teeth and the practice of rounding up. Through this it becomes apparent that although Berthoud was a famous maker and undertook many experiments he shows little sign of being a competent theoretician. However, his writing is straight forward and precise. Auch, on the other hand, makes it clear from the start that he is himself from the apprentice system where education was largely ignored and skills were based purely on practice and rote learning. This explains his often vague explanations and totally inadequate lip-service to understanding. And it is presumably why a few of his instructions are obscure to the point of being unintelligible (resulting in two short passages being left in the original German because no-one has been able to provide meaningful translations).

This difference in approach gives us an interesting comparison between education of the interested amateur and the training of the apprentice.

[**Remark**] Vigniaux “*Horlogerie pratique a l’usage des apprentis et amateurs*” and Vogel “*Praktische unterricht von taschenuhren*” may also describe watch making, but I have insufficient information about them.

R284 Berthoud, Ferdinand; Janvier, L

Nouveau manuel complet du régulateur

des horloges, des montres, et des pendules

Paris: Librairie Encyclopédique Roret, 1838, 228 pp, 1 fld plate, 36 pp ads.

Repair (French, Spanish).

See Magnier, Le Normand and Janvier “Nouveau manuel complet ...” and Roret “Librairie Encyclopédique de Roret”.

Also a Spanish translation.

New complete manual of the adjustment of clocks and watches.

R285 Berthoud, Ferdinand; Robert, Henri

L’art de connaitre les pendules et les montres

How to regulate watches

Paris: Ferdinand Berthoud, 1865 (1841), 270 pp, 4 fld plates (306 pp, 3 plates).

(French).

Both Tardy and the Franklin Institute catalogue give this only 62 pp. Other sources indicate a substantial book with three publication dates of 1841, 1849 and 1865. Robertson lists both (306 pp, 1849 and 62 pp, 1867) but he gives the shorter work the title “L’art de connaitre et de régler les montres et les pendules”. Robertson also indicates an English translation in 1841.

A reprint of Berthoud “L’art de conduire et de régler les pendules et les montres” annotated by Robert.

R286 Berthoud, Louis

Entretiens sur l’horlogerie a l’usage de la marine

Paris: Louis Berthoud, 1812, 17 x 10 cm, 127 pp, 4 tables, no ill.

History, philosophy (French).

A 20 page article with the same title appears in Dubois “La tribune chronométrique scientifique et biographique”. This is a reprint omitting the appendices. The complete work appears in Sabrier “Longitude at sea in the time of Louis Berthoud and Henri Motel”.

Conversations on marine chronometers. 12 chapters and 2 appendices; the first appendix contains tables on the going of watch number 111.

The horological philosophy of Lois Berthoud, nephew of and successor to Ferdinand Berthoud.

Bonaparte gave Louis Berthoud 10,000 francs per annum provided he instructed his students in chronometer making. This book is addressed to his students and is advice to apprentices, setting out the philosophy and mental attitude that he brought to bear on horology.

Part of it is translated in Sabrier “Longitude at sea in the time of Louis Berthoud and Henri Motel”.

R287 Berthoud, R

German patents, horology and related patent classes

St. Imier: R. Berthoud, 1952, 69 pp.

History (English?).

Cross reference tables between numbers of German horological patents (1877-1952) to the patent categories of the author’s 1940 catalog of Swiss horological patents.

- R288 Berthoud, Robert**
Dictionnaire des engrenages épicycloïdaux
 et tables des facteurs
 St Imier., 1924 (1920), 18 x 12 cm, 54 pp, ill, tables.
 Technical (French).
 Two printings?
 Dictionary of epicycloidal gears and tables of (addenda) factors.
- R289 Berthoud, Robert**
Table des facteurs pour le calcul des dimensions des engrenages epicycloïdaux
 1918.
 Technical (French).
- R290 [Besançon]**
Ecole charitable d'horlogerie Saint-Joseph
 Besançon: P. Jacquin, 1883, 22.5 x 14 cm, 128 pp.
 History (French).
- R291 [Besançon]**
L'industrie horlogère bisontine
 Besançon: Humbert, nd, 16 pp.
 Description (French).
The author may be J. Benoit.
- R292 [Besançon]**
Mémoire présente par les fabricants et ouvriers en horlogerie
 1848, 8vo, 37 pp, no ill.
 History (French).
Gardner "Catalogue of the Torrens collection" says "concerned with setting up organised horological education".
- R293 [Besançon]**
Statuts du syndicat des patrons décorateurs de la boîte de montre de Besançon
 Besançon., 1905, 6 pp.
 (French).
 Listed in Tardy.
 Statutes of the syndicate of employers of watch case decorators in Besançon.
- R294 [Besançon]**
Ville de Besançon
 exposition du centenaire de l'horlogerie 1793-1893, notice et catalogue officiels
 Besançon: Dugourd, 1893, 21.5 x 13.5 cm, about 93 pp, ads, ill.
 Exhibition (French).
 Catalogue of the centenary exhibition, Besançon.
- R295 Bestfit**
Bestfit #101 genuine Swiss material catalogue
 New York: B. Jadow & Sons, 1956 (1952), 10 x 7 inch, 320 pp, ill (256 pp, ill).
 Makers, repair (English).
 Includes assembly, disassembly and oiling of basic chronographs.
- R296 Bestfit**
Bestfit #103 automatic movement guidebook
 New York: B. Jadow & Sons, 1956 (1953), 77 pp, ill.
 Makers, repair (English).
- R297 Bestfit**
Bestfit #111 encyclopedia of watch material
 New York: B. Jadow & Sons, 1998 (1961), 28.0 x 22.0 cm, 2 volumes of 510 and 324 (or 484) pp, many ill.
 Dating, identification, makers, repair, tools (English).
 Produced in at least 7 editions (1961, 1963, 1965, 1968, 1973, 1976 and 1979) with a 1998 reprint of the 1979 edition. There is also a microfiche version of 126 cards produced in 1982. The printed editions seen are almost identical except that some do not include the tools and materials catalogue. Two volumes, #III and #IIIA. A catalogue of movement identification and parts.
 Also included in part IIIA is a reprint of Fried "Watch crown manual" (which see) and sometimes the Vigor/Bestfit tools and materials catalogue (an additional 160 pages).
[4th edition, good] *Bestfit is the most noted American equivalent of Swiss Watchmakers "Official catalogue of Swiss watch repair parts" and, as with that book, the winding and setting parts are used for identification. However, there the similarity ends.*
For each listed movement Bestfit gives the mainspring dimensions and part numbers for the balance staff, stem, roller, and pallet arbor. These part numbers cross-reference tables which give the actual dimensions of the parts and interchangeability with different movements. The only blot on this system is that staffs are only listed in order of length and searching the list may be tedious.
In addition to these basic sections, the main components of automatic, calendar, alarm and chronograph mechanisms are shown and a wealth of other information, including an extensive shock absorber identification section, is given. The section on alarms has assembly, disassembly and other information.

R298 Bestfit

Bestfit #111 encyclopedia of watch material microfiche

New York: B. Jadow & Sons, 1982, 126 microfiche cards.

Dating, identification, makers, repair (English).

This contains the Bestfit #111 encyclopedia and much additional material.

R299 Betts, Jonathan

Harrison

London: National Maritime Museum, Germany: Delius Klasing Verlag, 2007 (1993), 21 x 19 cm, 110 pp, ill (96 pp, ill).

Biography (English, German).

Second edition of 2007 described as 96 pp, ill. Reprinted in 2008 and 2009?

“Centers on the life and achievements of John Harrison - designer and builder of the first accurate marine timekeepers. Includes new material on Rupert Gould who restored Harrison’s timepieces in the inter-war years.”

[2nd edition, 2007] “An excellent book explaining the longitude problem and the life and work of John Harrison. Harrison’s early clocks, the Brocklesby Park clock, the precision pendulum clocks, the R.A.S. regulator and the marine timekeepers H1 to H4 are all illustrated and discussed. Also illustrated is a sketch by Harrison of his ‘lesser watch’ which may have been made but has never been found.”

There is also a pamphlet published by the National Maritime Museum in 1993 (24 pages, ill), but I have no information about it. It may be the first edition.

R300 Betts, Jonathan

Time restored

the Harrison timekeepers and R.T. Gould, the man who knew (almost) everything

Oxford: Oxford University Press, 2006, 22 x 14.5 cm, 480 pp, 18 col ill, 62 b/w ill.

Biography (English).

Biography of Rupert T. Gould.

Introduction, 22 chapters and appendices. The chapters are: Childhood 1890-1905; Navy training 1906-1913; The war, a breakdown and marriage 1914-1920; John Harrison and the marine chronometer; Research and the first restorations 1920-1922; The magnum opus 1921-1923; Horology, the obsession; H2 is restored 1923-1925; The sette of odd volumes; Separation 1925-1927; Oddities and enigmas 1928-1929; The case for the sea serpent 1930; The R.A.S. regulator 1927-1929; H3 is completed 1929-1931; H1, the full restoration 1931-1933; The Loch Ness monster 1933-1934; The Harrison timekeepers and the NMM 1934-1935; Professor Stewart, the BBC & tennis 1936; Many projects 1936-1937; Leaving Downside and leaving London 1937-1939; Upper Hurdcott and the Brain’s Trust 1940-1945; Canterbury and a gold medal 1943 -1948.

[1st edition, review by Fortunat Mueller-Maerki] Most serious students of horology will be familiar with the name of Rupert T. Gould (Lieut. Commander, RN, retired) primarily as the author of “The Marine Chronometer, its history and development”, originally published in 1923 (and reprinted repeatedly up to 1989). That book remains - in the opinion of this reviewer - 80 years after it was written still the best text on the history and technology of the marine chronometer. The general public in the USA is more likely to have come across Gould in Dava Sobel’s bestseller “Longitude” as the amateur clock restorer who rescued the early longitude clocks by John Harrison from obscurity and decay. These clocks - now commonly referred to as H1 to H3 - together with H4 and H5 are clearly among the most significant horological artefacts in existence and form the core of the timekeeping exhibit at the Royal Observatory in Greenwich, the one world heritage site that every horologist should visit.

Jonathan Betts, the Senior Specialist, Horology, at the Royal Observatory, National Maritime Museum, Greenwich, is one of the most respected horological scholars, lecturers and writers alive. As the current custodian of these Harrison clocks he has long felt a deep and personal affinity to the person who - against all odds - brought these horological marvels back to life in the second quarter of the 20th century. For decades, Betts has painstakingly collected and studied material for a comprehensive biography of Gould. He was fortunate to not only have access to Gould’s extensive notebooks (held at the NMM) describing the restoration work in painstaking detail, but also to be personally very familiar with these timepieces. Furthermore, Betts had won the trust of Gould’s heirs and thus access to private diaries, photo albums and other family papers.

The task of writing a Gould biography must at times have appeared overwhelming to Betts, because Gould was a very complex and extremely multifaceted person. The temptation to write only a “horological biography” about his hero must have been tempting to Betts, and such a book on its own would have presented a welcome addition to the horological literature. Such a book would have been easier to read for the many Harrison aficionados and horologists who longed for it. But Betts chose the harder route: He chose to write a Gould biography that would do justice to Gould the person rather than just to Gould the horologist. This reviewer feels that this ambitious task has been accomplished in a balanced and sensitive manner.

R.T. Gould was a brilliant individual, with many heartfelt interests, who made major contributions in many of the tasks he undertook: He was a polymath and scholar of many diverse subjects. He excelled in horology and as a radio presenter; he studied and wrote on the history of the typewriter; he was a brilliant conversationalist and talented artist; he was an expert on sea monsters (including the Loch Ness monster) and systematically collected and documented curious and unexplained facts; and early in his

life he had a promising naval career. But for much of his life he also sporadically suffered from severe mental illness which caused chaos in his marital life and his career.

This reviewer believes that it is impossible to fully comprehend the horological achievements of Gould, to truly understand his obsession with the Harrison sea clocks, without wading through the other more troubled chapters of his life, and without discovering the other subjects that were dear to him.

The author faced the challenge of writing a biography of a genius, who led a chaotic personal and professional life, whose many accomplishments fell into widely diverging disciplines and areas, whose horological endeavors were spaced out over decades. There seems to be no easy way to tell the complete story of such a complex person; both a strictly chronological structure or strictly thematic chapters would be somewhat difficult for the reader to follow. Betts chose a hybrid approach between a rigid timeline and a thematic organization of the material, and in addition wisely chose to move several of the ancillary subjects to appendices and 412 footnotes (which account for over 100 pages of the book).

In the book as published 8 (out of 22) chapters and 3 (out of 6) appendices deal primarily with Gould the horologist. I suppose a reader with a horological focus could possibly read only those parts and learn quite a bit about Gould the horologist. This reviewer is glad to have had all parts of the book available, because Gould - and all his achievements, horological and otherwise - can only be fully appreciated in the larger context of his life and his time.

From a horological perspective, the meat of the book is in the chapters describing Gould's restoration work on the big Harrison sea clocks, H1, H2 and H3, in the 1920s and 1930s. Gould took on this task as a volunteer and amateur horologist. If he had not "rediscovered" those magnificent machines in a state of complete neglect, they would probably no longer exist, let alone run today. Gould kept extremely detailed, richly illustrated notebooks documenting his efforts, which form the basis for much of this book's narrative in the horological chapters. Any horologist with a deeper interest in John Harrison's work must read "Time Restored", because it contains so much additional information on these machines and their history. Anyone who has struggled to bring a long neglected, complex mechanical movement back to life will be fascinated - and will feel empathy with Gould - reading these chapters. Most readers will also be surprised at the utter lack of standards that existed just 70 years ago regarding the restoration and conservation of objects, which today are considered artefacts of global historic significance.

One of the side effects of reading "Time Restored" for this reader was to whet his appetite for future horological publications not yet published, such as a scholarly re-edition of Gould's "Marine Chronometer" with the countless revisions and additions suggested by Gould himself over the decades, and a facsimile edition of Gould's notebooks detailing his work on the Harrison pieces. Now that the Gould biography is published, Betts would be the ideal person to get these priceless horological treasures into print.

In summary: "Time restored" can be enjoyed as a well crafted description of the horological contributions of an important persona of his time, but for the reader so inclined, it is much more, it is a sensitive portrait of a troubled, but brilliant human being, who pursued his horological and scholarly goals against the odds imposed by society and his era.

R301 Beutel, G

Von uhr, sachen und wirkungen

Marbach, ca 1960, 14 cm, 206 pp, ill.

History (German).

History of time measurement from sand glasses to Junghan's clocks.

R302 Bevan, G.P. (ed); Britten, FJ

British manufacturing industries

London: Edward Stanford, 1878 (1876), 17.0 x 12.0 cm, 193 pp (187 pp, 7 ill, 16 pp ads).

History (English).

One volume in a series of at least 13 on British Industry.

There is a Google book pdf of the 1876 edition (available in USA only?).

Five sections: Jewellery (50 pages by George Wallis); Gold working (21 pages by Rev. Charles Boutell); Watches and clocks (37 pages, 7 ill by F.J. Britten); Musical instruments (45 pages by E.F. Rimbault); and Cutlery (34 pages by F. Callis).

[1st edition, mediocre] Britten's article has 18 pages on clocks and 19 pages on watches. Each part has a vague history (extolling British makers), a description of a couple of escapements and some general remarks on manufacture. The section on watches describes the lever and chronometer escapements and then briefly outlines manufacture, mentioning Wycherley. It concludes with statistics on case making. Considering the title of the book, the article is uninteresting. There is too little on manufacturing and no useful information at all.

The articles on jewellery and gold working have some relevant discussion of gold and enamelling.

R303 Beyer, A; Beyer, Th

Antike uhren, the museum of time measurement

Antike uhren, das museum der zeitmessung

Antike uhren, le musée de la mesure du temps

Munich: Callwey Verlag, 1982, 25 x 19 cm, 94 pp, 40 col plates.

Catalogue (English, French, German).

Parallel English, French and German text.

An introduction to the Beyer Museum of Time Measurement in Zurich describing and illustrating fine clocks and watches from the collection, including a Berthoud chronometer and a George Daniels watch.

R304 Beyer, R; Meis, R**Antike uhren neuerwerbungen, uhrenmuseum Beyer Zürich**

Munich: Callwey Verlag, 1996, 25 x 18 cm, 110 pp, 48 col plates.
Catalogue (German).

An introduction to the Beyer Museum of Time measurement in Zurich describing and illustrating 48 fine examples including a Breguet Pendule Sympathetique and chronometers by Le Roy and Arnold. None of the items appeared in the 1982 edition of this book, Beyer "Antike uhren, the museum of time measurement".

R305 BHI**Correspondence course in horological salesmanship**

London: British Horological Institute, nd, 8vo, 12 booklets, ill.
Business (English).

A set of 12 correspondence lessons for salesmanship.

R306 BHI**Correspondence course in technical horology**

London: British Horological Institute, nd (ca 1960), 20.5 x 14.0 cm (21.5 x 14.0 cm), 3 sets of 12 booklets.
Repair, technical, theory, tools (English).

The courses were printed and used over a number of years, apparently without alteration; my copy of the preliminary course is copyright 1963 and my copy of the intermediate course was distributed around 1971 but is copyright 1954.

3 sets of correspondence lessons for the preliminary, intermediate and final grades; 12 lessons in each set.

[Preliminary grade, 1963 edition, good] 12 booklets with 824 pages, 561 ill. The lessons contains sections on Technical horology (275 pages on the verge and recoil anchor escapements, simple clocks, watch movement, fault finding, the watchmakers lathe, time, the pendulum, motive force, trains, and gearing); Practical work including tools and exercises (223 pages); Technical drawing (71 pages); Mathematics (46 pages); Geometry (69 pages); and Mechanics (88 pages). These are followed by test questions.

Four lessons (1, 6, 7 and 11) contain sections on time by Harold Spencer Jones (25 pages) and there is a conclusion to part 12, "Advice and encouragement" by Arthur Tremayne.

The practical work sections give detailed instructions for making hand removing levers, an anvil stake, a balance stake, hammers and screw drivers.

These booklets form the "school" part of an apprenticeship and cover basic knowledge and skills. They assume the practical experience of handling clocks and watches will be obtained elsewhere and many basic topics in repair are glossed over. Other than the exercises, the only significant practical information is a very good explanation of turning.

What is included is covered very well and the course would be very helpful if used in conjunction with other books.

[Intermediate grade, 1954 edition] 12 booklets with 518 pp, 364 ill. There are sections on Horology (248 pages on clock escapements, pivots and bearings, cylinder and lever escapements, compensation pendulums, measuring instruments, balance and spring, mainspring, turret clocks, striking and chiming mechanisms, the alarm clock, and the gravity escapement); Practical work (24 pages); Mathematics (82 pages); Drawing (35 pages); Cleaning machines (6 pages); The sector (1 page); Lubrication (5 pages); and Electrical horology (93 pages).

In addition there are test questions (13 pages), annual examinations (9 pages) and an epilogue by Arthur Tremayne (2 pages).

The practical work sections give instructions for making a balance vibrating tool.

R307 BHI**English clocks and watches and their makers**

London: British Horological Institute, 1924, 61 pp, ill.
Makers (English).

Details of the British Empire Exhibition, Wembley, together with the list of horological exhibitors.

R308 BHI**General catalogue of the library**

of the British Horological Institute

London: British Horological Institute, 1908, 49 pp.
Bibliography (English).

Including an index to the Horological Journal.

R309 BHI**The practical lubrication of clocks and watches**

London: British Horological Institute, 2008, 19 pp, ill.
Repair (English).

R310 Billeter, C**Le réglage de précision**

cours pratique et éléments théoriques

Bienne: E. Magron, 1921 (1912), 20.0 x 13.5 cm, 261 pp, 22 ill, 23 plates (xxvii, 287 pp inc adverts, 85 ill, 28 plates).

Repair, technical (French).

The first edition has 261 pp text and the other page count includes the advertisements.

Precision adjustment, practical course and theoretical elements.

Preface by Paul Berner (20 pages) and Introduction (2 pages) followed by 5 sections: Short description of a modern precision watch and definition of adjusting (8 pages); Regulating parts (24 pages, the balance, balance spring and ancillary pieces); Duration of oscillation and isochronism (11 pages); Classification of the causes of variations (105 pages, faults of the balance and balance-spring, influences of other parts of the watch, and external causes); and Observatory trials (54 pages, Neuchatel. Kew, Geneva and Besancon).

This was regarded as a standard work on adjusting watches and chronometers.

R311 Biolchini, G

Westclox

an identification and price guide

USA: Schiffer Publishing, 2003, 11 x 8.5 inch, 192 pp, 488 ill.

Identification, price guide (English).

An introduction (7 pages on collecting, method of construction, production dates, model numbers and values), 13 chapters, appendices and references. The chapters are: Westclox history (7 pages); Big Ben models; Baby Ben; Key wound alarms; Animated pendulettes, Lolly and children's clocks; Electric table clocks; Electric, battery and 8-day wall clocks; Automobile clocks; Pocket watches and wrist watches (22 pages); Timers, travel alarms, weather instruments; Dealer imprint, advertising, non-original and luminous dials; The dating of clocks; and Repair.

"This book identifies hundreds of Westclox clocks, pocket watches, and wristwatches dating from 1885 to 1980. It includes information about production dates, styles, colors and shapes in the concise text. Prices are given in the illustration captions."

R312 Bion, Nicolas

The construction and principal uses of mathematical instruments

Traite de la construction et des principaux usages des instrumens de mathématique

Neueröffnete mathematische werkschule oder gründliche anweisung, wie die mathematische instrumenten ...

New Jersey: Astragal Press (London: Holland Press) (London: J. Richardson) (London: John Senex) (Frankfurt: Nurnberg: Monath) (Paris: Michel Brunet) (Paris: Charles-Antoine Jombert), 1995 (1709), 31.0 x 23.0 cm, 325 pp, 26 and 4 plates (235 pp, 26 plates) (460 pp, 37 plates).

Technical (French, English, German).

Printed in 4 editions between 1709 and 1752 with translations into German by Doppelmayr (1712, 1721, 1765) and English by Stone (1723 and 1758).

There are two reprints of the supplemented 1758 English translation; 1972 (limited edition of 500 copies) and 1995.

The supplemented English translation of the 1758 edition is in 8 books:

Book I (41 pages): The construction and use of mathematical instruments (compasses, ruler, drawing pen, pencil holder, square and protractor); Additions of English instruments (carpenter's joint rule, four-foot gauging-rod, Everard's sliding-rule, Coggeshall's sliding-rule, an improved protractor, the plain-scale, and Gunter's scale).

Book II (31 pages): The construction and use of the sector and the English sector.

Book III (21 pages): Of the construction and use of several different sorts of compasses, and of divers mathematical instruments (including the sliding pencil holder, fountain pen, fixed square, foot-level, Paris foot-rule and comparison of its length with that of other countries, parallel rules, pedometer, machine for cutting and dividing wheels and pinions, armour for load-stones, artificial magnet, spring steel-yard, beam steel-yard, wind-cane, aeolipile, and microscopes).

Book IV (36 pages): The construction and use of instruments for measuring land, heights and distances (staves, lines, chain, surveying-cross, instruments for angles, the theodolite, quadrant, semi-circle, compass, instruments applied to fortification, plain-table, circumferentor and surveying-wheel).

Book V (15 pages): The construction and use of levels (including a gauge for measuring water, instruments for gunnery, and English callipers).

Book VI (49 pages): The construction and use of astronomical instruments (including the quadrant, micrometer, making celestial observations, an instrument shewing the eclipses of the sun and moon etc., a second-pendulum clock, globes, uses of globes, spheres, orrery, and Gunter's quadrant).

Book VII (13 pages): The construction and use of instruments for navigation (see compass, azimuth compass, instruments for taking altitudes, sinecal quadrant, and Mercator's charts).

Book VIII (44 pages): The construction and use of sun-dials (including the declinatory, instruments for drawing upon dials the arcs of the signs, diurnal arcs, Babylonick and Italian hours, and meridians, portable dials, moon dial, nocturnal or star dial, water-clock, and an instrument shewing on what point of the compass the wind blows without going out of one's room).

These books are followed by: A short description of the tools used in making mathematical instruments (2 pages); and Use of the sector in the construction of solar eclipses (7 pages).

Bion's work bound with "A supplement to the English translation" by Edmund Stone which has 11 chapters: Instruments for drawing or copying draughts and making pictures of objects (3 pages); Modern instruments used at sea (6 pages); Another modern quadrant of Mr Elton's (2 pages); The great mural

quadrant at the Royal Observatory in Greenwich Park (3 pages); Of perspective glasses and refracting telescopes (13 pages); Of Dr James Gregory's reflecting telescope as improved by Mr Hadley (4 pages); Of Sir Isaac Newton's reflecting telescope as improved by Mr Hadley (2 pages); Description of the reflecting telescope made by Sir Isaac Newton himself (1 page); Of microscopes (1 page); A short account of some instruments of less general use (15 pages); and Conclusion containing some miscellanies (10 pages).

[Astragal Press facsimile of 1758 edition, good] *A very important description of mathematical instruments, but largely irrelevant to watchmaking except for a plate and a one-page explanation of a wheel cutting engine.*

Crom "Horological shop tools 1700 to 1900" and "Horological wheel cutting engines 1700 to 1900" reproduce the plate.

R313 Bird, J; Chapman, H; Clark, J
Collectanea Londiniensia

studies in London archaeology and history presented to Ralph Merrifield
 London: London & Middlesex Archaeological Society, 1978, 24.0 x 18.5 cm, 472 pp, b/w ill, fld map.
 History (English).

A biography of Ralph Merrifield and a list of his publications followed by 34 papers, the majority of which focus on the archaeology of London. There are 3 general papers and the remainder are presented in chronological order, from prehistory to the 19th century.

The book contains the article "The impact of the 1797 tax on clocks and watches on the London trade" by Chris Ellmers (11 pp, 2 pp notes).

[1st edition, very good] *The paper by Ellmers provides a detailed history of the consequences of Pitt's tax on the ownership of clocks and watches, and the related duty on gold and silver. The harm caused by this short-lived tax is graphically illustrated by the decline in production and the fact that the cost to the community was vastly higher than the meagre £2,600 revenue collected.*

See also House of Commons "Report on clock and watch makers petitions".

R314 Birmelin, M

Gefälschte armbanduhren

schnell erkannt

Freiburg: Lavori, 2003, 24 x 23 cm, 128 pp, 480 ill.

(German).

"Fälschungen von Nobelmarken wie z.B. Rolex, IWC, Breitling, A. Lange, Tag-Heuer und viele weitere Marken werden mit dem Original verglichen. Auf die wesentlichen Unterschiede zwischen Original und Fälschung wird ausführlich hingewiesen. Dieses Buch kann Sammler vor großem finanziellen Schaden bewahren!"

R315 Blair, GH

A tribute to the life of Henry B. Fried 1907-1996

USA: GH Blair, 1994, 22 pp, ill.

Biography (English).

Forward by George Daniels. Spiral bound.

Reputed to be poorly printed.

R316 Blakey, W

L'art de faire les ressorts de montres

suivi de la manière de faire les petits ressorts de répétitions et les ressorts spiraux

Amsterdam: Marc-Michel Rey, 1780, 41.5 x 21.8 cm, 32 pp, 12 plates.

History, technical (French).

A complete English translation appears in Wayman "The ferrous metallurgy of early clocks and watches, studies in post medieval steel". A summary is given in Baillie "Clocks and watches, an historical bibliography".

The French text (without plates) is available as a Google Book PDF file (as part of the "Encyclopédie méthodique" article on horology).

The art of making mainsprings with the manner of making repeater springs and balance springs.

[English translation, very good] *This is a fascinating insight into late 18th century technology.*

Blakey's booklet provides a complete and detailed description of how to make mainsprings, repeater mainsprings and balance springs. Starting with annealed steel rods Blakey shows how they are drawn, flattened by hammering, hardened, tempered, filed and ground to size, polished and formed into spirals with arbor hook and endpiece holes. In the case of balance springs he details the equivalent process and then describes the English method of rolling and winding on bobbins, a much better method.

Included are details of how to make draw plates and precise instructions for hardening and tempering. The translator (Michael Wayman) is puzzled by tempering in two stages, which is not surprising as Blakey does not really explain. Indeed, I would have been equally puzzled if I had not read Crespe "Essai sur les montres a répétition" in which it is pointed out that if a steel piece (that is distorted by hardening) is tempered, straightened and then polished the distortion will return during polishing. To avoid this Crespe recommends straightening after a first tempering to yellow and then tempering to the final colour before polishing.

Except for an error in the title and a few clumsy sentences, this is a very good translation and well worth reading. It is certainly the most insightful description of spring making that I have read. It is a pity the translation is in a rather obscure book.

R317 Blakey, W**On horology**

comparisons on the french and english arts

London: Sylvanius Urban, 1792 (nd), 21.0 x 13.5 cm, about 5 pp, no ill.

History (English).

Gentleman's Magazine, Volume LXII, Part The First, pages 328-330 and 403-406.

Originally published in the Journal des Scavans at Amsterdam.

There is a Google book pdf of the complete Gentleman's Magazine volume.

Brief notes on the history of horology.

[1st edition, mediocre] This short article is of little consequence, providing only a very small amount of information. It has a supplement (by Blakey) which comments on Fusees and balance springs; it is also unimportant.

A letter was published in the Gentleman's Magazine (same volume, page 529) asking Blakey to explain his description of a compensation pendulum, but as far as I know there was no reply.

[Remark] The only concrete reference to this article I had found was in Gardner "Catalogue of the Torrens library", which listed it without any information. Much later I discovered by chance that it was published in the Gentleman's Magazine, which Gardner did not bother to point out. Unfortunately locating books and reliable information about them is still very difficult, but the internet has become an excellent source, although often hard to search successfully.

R318 Bloch Pimentel**Collection de Bloch Pimentel**

watches, clocks, books

Paris: Hotel Drouot, 1961, 8vo, 56 pp, 126 b/w ill, col frontis.

Collection, catalogue, bibliography (English).

"Montres des XVIe, XVIIe, XVIIIe et XIXe siecles, montres de carrosse, montres a automates, horloges et pendules; livres anciens et modernes sur l'horlogerie".

Sale catalogue of a collection of clocks, watches and books including 187 items.

R319 Bobinet**An exhibition of English pocket chronometers**

from the 18th-20th century

London: Bobinet Limited, 1976, 25 x 20 cm, 17 pp, 15 plates.

Exhibition, catalogue (English).

R320 Bobinger, M**Kunstmacher in alt Augsburg**

Johann Reinhold, Georg Roll and their circle, and the Buschmann family

Augsburg: Hans Rosler Verlag, 1969, 24 x 16 cm, 128 pp, 53 ill.

Biography (German).

Volume 18 in "Abhandlungen zur geschichte de stadt Augsburg", schriftenreihe des stadtarchivs..

The book has detailed biographical information and family trees for the makers and descriptions and illustrations of their work. John Bushman, the sixth generation of the family, moved to London and made clocks there in the late 17th century.

R321 Bock, H**Die uhr, grundlagen und technik der zeitmessung**

Leipzig: Teubner, 1917 (1908), 18 x 13 cm, 139 pp, 55 ill (136 pp, 47 ill).

Description, technical (German).

Rudiments of timepieces.

R322 Bock, H; Kames, A**Réglage et construction de la montre**

Berlin., 1941 (1938), 21 x 15 cm, 162 pp, ill.

Technical (French, German).

Regulation and construction of the watch.

See also Kames "Translations".

R323 Böckle, O; Brauns, W**Lehrbuch für das uhrmacherhandwerk**

Berlin: Michael Stern (Halle: Wilhelm Knapp), ca 2000 (1941), 21.0 x 14.5 cm, CD Rom (296 pp, 226 ill). Repair (German).

Originally a single volume by Böckle and Brauns published in 1941 (248 pp, 170 ill), 1943 (256 pp, 212 ill) 1944 (274 pp, 226 ill) and 1950 (296 pp, 226 ill).

Then a second volume by Schmidt, Jendritzki and Brauns was added in 1951; which see.

Textbook for horological handwork.

Volume 1 covers materials and their basic manipulation. It is in two parts: part 1 materials, part 2 the use of tools (files, drills, lathes), polishing, regulating and technical drawing.

Volume 2 includes time measurement, repair of clocks and watches, gears, mainsprings, cylinder and lever escapements, balances and balance springs.

[Volume 1, 5-7 printing, 1950, good?] Part 1 (123 pages) is a general introduction to the properties of relevant materials with some horological examples. This includes physical and chemical properties of metals, lubricants, polishers, cleaners, gemstones and luminizers.

Part 2 (167 pages) gives instruction on basic methods for shaping materials (the use of saws, files, drills, lathes and measuring tools) together with tempering, grinding and polishing. This is followed by the principles of regulation and technical drawing (very similar to Linnartz "Fachzeichnen des Uhrmachers"). Being a text book for use in schools (with associated lectures, demonstrations and practical work) it is not entirely suitable for self study. However the areas covered are reasonably self-contained and it can be read by itself.

R324 Boeckh, H**Emailmalerei auf genfer taschenuhren**

vom 17 bis zum beginnenden 19 jahrhundert

Freiburg: Walter Oberkirch, 1982, 23.5 x 16.5 cm, 461 pp, frontis, 72 b/w plates with 169 ill.

Description, history (German).

A printed typescript thesis, presumably for a doctorate degree.

Genevan enamel pocket watches of the 17th to 19th centuries.

Three sections: Historical and technical background (45 pages); Decorative styles (222 pages); and A catalogue of 70 items referenced in the text (84 pages). Followed by notes, bibliography, list of plates and index of names.

[1st edition, very good!] The first section covers previous research, political and historical factors in the evolution of enamel watches, and technical aspects of watches and enamelling.

Section two, the main body of the thesis, is in four parts. It begins with an examination of decoration up to 1690, based on book illustrations and paintings. It then considers the case paintings of the Huaud family and its successors to the middle of the 18th century. The third part studies watches from Louis XV to the French Revolution and the fourth part watches made for oriental markets (with the focus on the watches of Piguët & Meylan, Ilbery and Bovet).

The catalogue describes each piece and gives references to descriptions and illustrations of them in other books.

Undoubtedly an authoritative work, although the lack of colour plates detracts somewhat. Unfortunately it is unlikely to be translated, being a thesis rather than a reference book. But that does not justify ridiculous prices.

R325 Boeddicker, O**On the influence of magnetism on the rate of a chronometer**

Dublin: Royal Dublin Society, 1883, 4to, 56 pp, 1 plate.

Technical (English).

Transactions of the Royal Dublin Society.

R326 Boer, AA de**Uurwerken**

Haarlem: De Haan, 1980, 4to, 148 pp, 125 ill.

(Dutch).

Tijdmeting. Antieke klokken. Reisklokken. Electrische klokken. Horloges.

Only clocks?

R327 Bogoff, S**Bogoff antique watch auction**

USA: S. Bogoff, 1976, 21 x 14 cm, 68 pp, 33 plates.

Catalogue (English).

R328 Bohmeyer, A**Der proportionalzirkel**

für gross und klein uhrmacher

(Germany: Hubner), nd (1882), 21 x 15 cm, 21 pp, 2 ill, 9 tables, 16 pp advertisements.

Watch making (German).

Printed in 1882 and 1908 with a modern reprint of the 1908 edition.

Enthaltend neue regeln zur leichten und sicheren berechnung aller zu guten rad- und triebeingriffen ...

The sector for clocks and watches.

R329 Boichat, M; Francis, E**Technologie de la boîte de montre**

La Chaux-de-Fonds: Technicum Neuchatelois, 1966, 8vo, 219 pp, ill.

Watch making (French).

Technology of the watch case.

R330 Boimondau**Boimondau, 10 années d'expérience communautaire**

1951, 24.0 x 15.5 cm, 149 pp, ill.

History (French).

History of watch case making by the Boimondau company.

R331 Boley**Drehstühle und werkzeuge für uhrmacher**

Germany: Boley, nd, 21 x 16 cm, 6, 18 pp, ill.

Tools (German).

Lathes and tools for the watchmaker.

R332 Bolino, AC**Watchmakers of Massachusetts**

USA: Kensington Historical Press, 1987, 22.5 x 14.5 cm, 276 pp, 58 ill, 23 tables.

History, makers, bibliography (English).

An introduction (A brief history of the Massachusetts watch industry) followed by 14 chapters, 3 appendices and a bibliography. The chapters are: Mostly by hand, Early mass production techniques, The Auburndale Watch Co., The Fitchburg Watch Co., The Hampden Watch Co. of Springfield, Massachusetts, E. Howard & Co., The Tremont (Melrose) Watch Co., The United States Watch Co. of Waltham, The American (Waltham) Watch Co., The Waltham Watch Co., Railroad watches, From pocket to wrist, Imitating Massachusetts, and Cases, Dials, and Hands. The three appendices are: A directory of Massachusetts watchmakers, U.S. watch patents Massachusetts residents, and Watch papers in Massachusetts.

[1st edition, fair] Bolino worked as a machinist at the Chelsea Clock Company and later became an economist. However, his book is devoid of information on watchmaking machinery and there is little in it which could be described as economic analysis. It is best regarded as a general history of watchmaking in Massachusetts.

What is most obvious is that the book is both bad and good.

The bad is that it contains enough errors to indicate that Bolino has, at best, a superficial understanding of watch technology. Statements such as the mainspring is "attached to the plate and the center wheel", "lack of poise caused the watch to run in an erratic fashion, because all parts were not synchronised" and writing about the "isochronal balance wheel" clearly indicate he is out of his depth.

The good is that Bolino has very carefully researched the topic, basing his book on extensive reading of articles, newspapers and earlier books, all of which are listed at the ends of the chapters and in the bibliography. So he has brought together a wealth of material in a single, useful reference work. However this is also compromised and there are clear indications that he has compiled the material rather thoughtlessly. For example, he confuses the two 8-day watches produced by Dennison, writing that only one watch was designed but describing it in completely contradictory terms. Later, discussing the events of 1876, he says "the long term Swiss supremacy in watch manufacturing had switched to the United States"; this has some validity if the rest of the world is ignored but is patently wrong otherwise. The blunder of stating that Waltham's advertising expenditure in 1872 was \$63.6 million, when the capital value of the company was only \$800,000, is too obvious to mislead anyone, but surely we expect an economist to get such facts right and not make such an alarming error transcribing from Moore "Timing a century".

These errors are the "tip of the iceberg". When Bolino is compiling and paraphrasing, his book holds together and provides a fairly good history. But too often his deductions and conclusions are vague and unsatisfactory. The introduction summarises the varying economic conditions in America in a way that leaves the reader none the wiser. His remarks on interchangeability clearly show that he doesn't understand the problem. The list of Massachusetts patentees only gives the patent numbers with no information at all on the patents themselves. And he gives the histories of watch companies in alphabetical order because he is unable to handle the chronological interactions.

Despite these criticisms, the book is worth reading. Just ignore Bolino's words and concentrate on the extracts from other writers. Or better, just use the bibliographic information and read all the source material.

R333 Bolli, JJ**L'aspect horloger**

des relations commerciales américano-suisse de 1929 a 1950

La Chaux-de-Fonds: Editions Suisse Horlogerie, 1956, 8vo, 256 pp.

History (French).

Horological view of American-Swiss commercial relations 1929-1950.

Thesis for the School of Commerce and Economics, Neuchatel.

R334 Bolster Instruments**The Bolster watch and clock repair guide**

nd, 5 x 4 inch, 11 pp, ill.

Repair (English).

R335 Bolton, Lyndon**Time measurement**

an introduction to means and ways of reckoning physical and civil time

London: G. Bell and Sons, 1924, 7.5 x 5 inch, 166 pp, 8 b/w plates.

History (English).

The nature of time measurement; The year and day; Time-pieces; 13 and 14th century clocks; Galileo and Huygens; Hooke, Graham and Harrison; Striking and driving mechanisms; Watch and chronometers; Electric clocks; Greenwich Mean Time; and The calendar.

A 5 page appendix gives practical instructions for the construction of an armillary sphere.

R336 Bonnicksen, B**The karussel watch by its inventor**

England: Charles Allix (England: Malcolm Gardiner) (London:), 1975 (1905), 20.0 x 13.5 cm, 48 pp, frontis, 16 ill.

Description, advertising (English).

There are two reprints, one undated (but said to be 1960) and one in 1975.

Advertising for Bonniksen's watches. It contains testimonial letters and information; a description of the mechanism with an illustration (2 pages); descriptions of watches made by Bonniksen (24 pages); charges to buyers for obtaining Kew Observatory certificates; description of a dilatometer for measuring the expansion of metals (3 pages); and English and American trial procedures.

[1st edition reprint, mediocre] *This booklet is described by booksellers as a "technical description of the karussel mechanism" in order to boost its price and desirability. It is nothing of the sort. With the exception of a one-page, superficial description accompanied by a diagram (there are better explanations elsewhere), the book is pure puff. Most of the 2-page spreads on each watch made by Bonniksen have identical text and are simply advertisements. The inclusion of information on English and American trial procedures adds some interest to an otherwise dull and unimportant book.*

R337 Bookwalter, FM

Booklet of forms and blanks for systematic time service records

of watches and other timepieces

Springfield USA: F.M. Bookwalter, 1916 (1909), 60 pp (15 pp).

(English).

R338 Bookwalter, FM

The pocket performance of fine watches

Springfield USA: F.M. Bookwalter, 1917, 176 pp.

Technical (English).

Only one known printing (1917) which is described as the 5th edition.

"The pocket performance of fine watches exhibited by critical and systematic time service records".

R339 Boos-Jegher

Industrie et métiers

Bern: Wyss, 1904 to 1920, 8vo, 188 pp.

(French, German).

"Industrie et métiers" was published in 7 parts between 1904 and 1920, totalling about 1800 pages. It includes:

Part 1: General legislation for protection of workers.

Part 2: Economic, social and historical reports on the development of arts and crafts, etc.

Part 3: Professional education.

Part 6 (1918, 188 pp) contains: Industries of horology, fine mechanics, paper, graphic arts, chemistry, different crafts and industries, and supplements.

R340 Booth, Mary L

New and complete clock and watchmakers' manual

Comprising descriptions of the various gearings, escapements, and compensations now in use in French, Swiss and English clocks and watches, patents, tools, etc. with directions for cleaning and repairing. With an appendix containing a history of clock and watchmaking in America.

New York: John Wiley, 1889 (1860), 20.0 x 13.0 cm, 294 pp, ill, 6 fld plates (288 pp, 12 fld plates, 4 pp ads).

Repair (English).

Printed in 1860, 1863, 1869, 1877, 1882 and 1889. Robertson "The evolution of clockwork" and Tardy indicate that the history of American manufacture was published separately in 1877. In the first edition the 12 plates are numbered I, I continued, II, II continued, ... VI continued and presumably the later printings have the same plates.

The 1860 edition is available as a Google Book PDF file worldwide, and 1863 and 1877 printings are available as a Google Book PDF files (USA only?).

Thirteen chapters: Watches (37 pages); Clocks (12 pages); Belfry clocks (4 pages); Workmanship or execution important parts of timepieces (15 pages); Gearings (7 pages) Escapements (27 pages); Compensation, or methods used to correct the effects of temperature in machines designed to measure time (24 pages); The regulator (22 pages); Methods of calculating the number of teeth which the wheels and pinions of a machine should have (10 pages); Curious and useful inventions (48 pages); Various tools used in clockmaking (25 pages); Description of expired patents (32 pages); and Cleaning and repairing watches (9 pages). With an appendix Concerning American clock and watchmaking (11 pages) and a glossary.

[1st edition, mediocre] *The text is said to be a translation of Le Normand, Janvier & Magnier "Nouveau manuel de l'horlogerie" (which see). Other sources indicate it is derived from Magnier's writing, but the text clearly indicates it is from the writings of Le Normand. In fact it is a translation of Le Normand's 1830 book "Manuel de l'horloger".*

Crom "Horological shop tools 1700 to 1900" suggests it is an "incompetent" translation; which is true, but I think a little unfair. It is clear that Booth was fluent in French and she was used to translate several books on widely differing subjects. It is equally clear she was utterly ignorant of horology. She tried to hide this when she says in her preface "we have endeavoured to retain a literal translation of technical terms". But some of her choices are, although understandable, simply fantastic! How does she get a chick (a spring chicken) instead of a steady pin? Quite easily if Le Normand used the term poussette (a push piece), because a poussin is a spring chicken. Likewise anglicising barette (a thin plate or bridge) to baret

is sensible, as is using the French burin instead of graver and rod instead of arbor. The word coom (in the context of oiling) caused me some trouble until I found out it is a good English word for the matter that works out of the naves or boxes of carriage wheels or out of a machine. But I am still not sure about scotching. I feel a bit sorry for Mary! I think she did a very good job under very difficult circumstances. Presumably some of the glossary was added later to try and overcome her errors.

The book itself is a bit of enjoyable nonsense. When it was first published its contents were not new, in no way complete and of little use to watchmakers. And Booth's suggestion that the "design has been to furnish our artisans a comprehensive treatise on watchmaking ... without being confined to an elaborate description of a single speciality" borders on farcical.

The first chapter describes Berthoud's verge watch calibre and then the "Breguet system", actually the Lepine calibre cylinder watch. Quite unexpectedly there is a description of how to make a regulator index (the only thing in the book on practical work). There is a very good bit on making a master calibre plate and some historically interesting material, but most of the rest is purely descriptive. The chapter continues with descriptions of independent seconds, repeater and alarm calibres. Most of this, including the illustrations, has been taken from Berthoud.

After two chapters of 11 pages on clocks, chapter 4 on workmanship says nothing about workmanship, except how to hammer brass. The purpose of the chapter is to explain why fusees are bad and give details of the authors' great idea of using a stackfreed. They say Breguet approved of the idea, which I find a little unlikely. There is also a brief discussion of a mainspring endpiece and stopwork. Then chapter 5 gives a short description of cycloid gearing, derived from Camus.

Chapter 6 on escapements is peculiar. It begins with a fairly technical description of the cylinder escapement, ruby cylinders and the duplex escapement. It then describes four strange escapements designed by Pons de Paul, Arnold's chronometer escapement, a detached escapement by Le Normand and some clock escapements. There is almost nothing of use to 19th century makers or jobbers in it. The same is true of the next chapter on compensation where bimetallic regulators take pride of place, compensation balances being relegated to a rather obscure discussion of Le Roy and Arnold.

At this point the authors (whoever they were) must have felt they needed to put in a bit more theory. So chapter 8 gives an extensive quote from Berthoud on determining the weight of a balance, followed by some pendulum theory. And chapter 9 quotes Camus on the calculation of trains.

The book then deteriorates into miscellaneous curiosities. Chapter 10 is an unillustrated collection of notes on clocks and watches; the most notable are a watch movement made of rock crystal and how to hermetically seal a clock. Chapter 11 describes tools, most of which were designed by Vallet, who exhibited at the 1849 Paris exhibition: tools for pinions and pivots, including a Jacot tool, several tools for cylinder escape wheels and Berthoud's fusee adjusting rod. The chapter finishes with a long and detailed description of the authors' very sophisticated file holder for rounding up wheel teeth by hand. Chapter 12 gives information about expired patents, presumably because the ideas can be used for free. The only one which is illustrated is yet another cylinder escape wheel tool.

The last chapter, titled "cleaning and repairing watches" gives one page on cleaning (saying precisely nothing), how to regulate clocks and watches (mainly what to do if the hands don't point to the right places) and an unillustrated description of Earnshaw's escapement lifted from Reid.

The appendix is uninteresting, except it mentions the American use of the lever escapement, the major escapement which is totally ignored in the rest of the book!

This book is, in reality, a mediocre description of late 18th century watches, clocks and tools serving as a vehicle for Le Normand to display his (and Vallet's) inventions, and it has some value because of the descriptions of tools.

One source says of Booth "Her translations from the French of the Marble-Worker's Manual (1856) and the New and Complete Clock and Watch-Makers' Manual (1860) were long recognized as valuable works of reference in their respective fields" and I must presume the reviewer hadn't read this book! Another source says her best known are "The Results of Slavery" and "The Results of Emancipation".

It is a pity John Wiley didn't get Booth to translate something useful.

R341 Boquet, F

Description du chronographie imprimant de M P Gautier

ca 1903, 28.0 x 23.0 cm, 15 pp, 13 ill.

Technical (French).

Description of the printing chronograph of P. Gautier.

R342 Boquillon, N

Etudes techniques sur l'exposition

des produits de l'industrie française en 1844

France: Review Scientifique et Industrielle, ca 1844, 435 pp.

Technical (French).

Volume 17 of Review Scientifique et Industrielle with pages 241-333 and 9 illustrations devoted to horology.

It is available as a Google Book PDF file.

Technical studies on the exhibition of French industrial products in 1844.

I have not read it, but it appears to be mainly about clocks.

R343 Borden, L; Blegvad, E**Sea clocks, the story of longitude**

New York: Margaret K. McElderry, London: National Maritime Museum, : Simon and Schuster, 2005 (2004), 10 x 8 inch, 48 pp, ill.

Children (English).

“Written for a target audience between 7-10 years of age.”

R344 Borel**La montre**

Neuchâtel:, 1935, 24 pp, 15 ill.

Miscellany (French).

Elementary instruction for children or beginners.

R345 Borer, Dr**Mémoire hygiénique sur la dorure au feu des pièces de montres**

dans le canton de Neuchâtel

Neuchâtel:, 1846, 8vo, 51 pp.

(French).

Health and the fire gilding of watch parts in the canton of Neuchâtel.

Berthoud suggests you don't breath while doing it!

R346 Borer, E; Robinson, TR**Modern watch repairing and adjusting****Réparation et réglage des montres modernes**

London: NAG Press, 1944 (1931), 22.0 x 14.5 cm, 174 pp, 166 ill, 1 fld ill, tables (118 pp, 120 ill, 1 fld ill, tables).

Repair (English, French).

First edition 1931, reprinted in 1933 and 1934. Second edition 1937. Third edition 1941. The book has been printed at least 5 times between 1931 and 1944.

There is some confusion about these books because each edition has different authors: Borer & Robinson, Swiss expert & Robinson, and Bowman & Borer. There may or may not have been a third “English” edition, but the only third editions I have seen are of the American Bowman & Borer printings; See Bowman and Borer “Modern watch repairing and adjusting”.

Tardy also lists French editions.

The first edition has 9 chapters: Good watches and bad, The barrel and mainspring, Gearing, The lever escapement, General regulation and oiling, More about balance springs, Motion and keyless work, Special types of watches, The size of a watch.

The second edition has 22 chapters: Good watches and bad, The barrel and the spring, Gearing, The lever escapement, Friction tight jewels, Magnetism, General regulation and oiling, More about balance springs, Curb pins, Motion and keyless work, Unbreakable watches, Waterproof watches, Watch recorders, The Straumann recorder, Paulson Time micrometer, The Gibbs recorder, A simple recorder, A perpetual watch, Watches with rate certificates, Crystals and unbreakable glasses, Spare parts, Watch sizes. There is an appendix on the importance of correct oiling.

[2nd edition, good] The flavour of this book is spelled out in the first chapter, where Borer flatly states that bad watches shouldn't be repaired, let alone adjusted. Assuming the reader is a competent repairer, the rest of the book describes what should be done to fine wrist watches without much information on how to do it.

The first chapters cover faults in watches that need to be corrected before adjustment is attempted; the barrel and mainspring, the train, lever escapements, jewels, magnetism and oiling. Although some repair suggestions are given, Borer continually asserts most problems won't occur in good watches. This is clearly emphasised when he discusses train errors. He simply says repairers cannot adequately detect train errors; but if they occur the watch isn't worth worrying about, and anyway they do not occur in good watches!

The discussion of adjustment revolves around inner and outer terminal curves and pinning points for overcoil balance springs. Other aspects are raised, but only at the level of defining what a competent repairer should do.

This main part of the book is followed by remarks on motion work, shockproof jewels, keyless work, water proofing, timing machines (mainly a description of four specific models), replacing crystals and watch sizes. The appendix discusses friction and oiling.

The book is interesting, well worth reading and sprinkled with photographs of Rolex movements. It is probably of more value as a guide to attitude rather than as a manual for repair and adjustment.

[1st edition] The first edition (118 pp, ill) was published under the pseudonym “Swiss Expert”. With the exception of the chapter on special types of watches, it is almost identical to the corresponding chapters in the second edition; there are a few changed words, part of the chapter on watch sizes is different, and one illustration was accidentally omitted.

The chapter on special types of watches is presumably by T.R. Robinson as his name was omitted as an author of the later editions. It discusses eight-day, jump hour, date and automatic watches and is very interesting because it contains some detailed information on early automatics, such as Harwood, Autorist, Wig-wag and Rolls.

Borer was a technical director at Rolex.

- R347 Borle, H**
Les transformations industrielles dans l'horlogerie suisse
 Switzerland; 1910.
 History (French).
 The industrial transformation of Swiss horology.
- R348 Borne, Herve**
Men's watches
 : Fitway, 2005, 6.5 x 5.75 inch, 256 pp, ill.
 (English).
 Written by a journalist specialising in clocks and watches.
 Seven sections: Monday 9am, office hours (Patek Philippe); Tuesday 7pm, a glass or two with an aficionado (Vacheron Constantin); Wednesday 1pm, business lunch (Rolex); Thursday 9pm, dining out in style (Louis Vuitton); Friday 11pm, party time (Francois-Paul Journe); Saturday 11am, fun and games (Porsche Design); and Sunday 10am, this sporting life (Casio).
[Remark] *"There's one for every occasion, as collectors and watch-lovers know well from their own selection. ... The best watches for the weekend, for intimate evenings, for the office; a watch to match my favourite shirt, one to give as a birthday present, or one to make me look like a film star."*
I will not be buying this book. From the above information I am sure the horological content is zero.
- R349 Borrel, G**
Rapports du jury international, classe 96 horlogerie
 Exposition universelle Internationale de 1900 a Paris
 Paris: Imp. Nationale, 1901, 54 pp.
 History (French).
- R350 Borsendorff, L**
The history of a watch narrated by herself
Histoire d'une montre racontée par elle-même sa vie et ses péripéties
 followed by a conversation on watchmaking between Mr Trotteville and Mr Vabien suivie d'un dialogue sur l'horlogerie entre Monsieur Trotteville et Monsieur Vabien
 Australia: Richard Watkins (Paris: L Borsendorff, 2007 (1869), 29.5 x 21.0 cm (14.0 x 9.5 cm), 40 pp, no ill (131 pp, no ill).
 Miscellany (French).
 The 2007 English translation by Richard Watkins is a computer PDF file.
 The book is available as a Google Book PDF file worldwide.
 The history of a watch related by herself, her life and fortunes, together with a dialogue on horology between Mr Trotteville and Mr Vabien. By Borsendorff horologer.
[1st edition translation, very good] *The first section is a delightful but very sad story of a watch. She begins with such high hopes and eventually suffers an ignominious end. The other story narrated by a watch (Reed "The adventures of a three guinea watch") is a jolly boys' tale of adventure. In contrast this is a realistic description of the life and fate of very many watches. The second section is more philosophical. Trotteville and Vabien represent two aspects of horology, the practical maker of watches for people and the master craftsman. In their conversation they argue about the causes of the decline in watchmaking, each presenting contradictory but equally valid perspectives. The two sections are related in that Trotteville's argument supports and to some extent explains the events in "The history of a watch". This is not a book of any importance, but it is a pleasure to read. See Tardy for Borsendorff's other publications.*
- R351 Bossart, M**
Phillips terminal curves for Breguet hairsprings
Courbes terminales Phillips pour spiraux Breguet
Phillips endkurven für Breguet spiralen
 Switzerland: Editions Horlogeres, 1976 (1951), 21 x 15 cm, 4 pp, 8 plates with 24 ill.
 Repair (English, French, German, Spanish).
 At least 3 printings in 1951, 1955 and 1976.
 A balance spring is placed over a diagram and manipulated to suit.
 Multilingual (English, French, German and Spanish).
See also de Carle "Practical watch adjusting and springing" in which the plates are reproduced.
- R352 Bottum, JM**
Directions for using Bottum's patent improved universal lathe chucks
 and improved lathes
 New York: Hart & Holden, 1852, 8vo, 23 pp, 28 ill.
 Repair, tools (English).
 Reprinted in Crom "Horological shop tools 1700-1900".
 "For turning and finishing every description of watch pivots, pinions, staffs, etc. Also for turning and finishing every description of work connected with the watch movement".
 Instructions for using Bottum's wax lathe. The majority of the booklet describes the lathe and its chucks, with diagrams. There are five short notes on techniques at the end.
[Crom reprint, fair] *The lathe is a wheel-driven headstock which takes threaded wax chucks, all*

work being cemented. Chucks and tools for turning, grinding and polishing are described. Basically advertising, but interesting.

R353 Bouasse, H**Pendule, spiral, diapason**

Paris: Delagrave, 1920, 24 x 17 cm, two volumes 474 and 518 pp, 295 ill.

Theory (French).

Gardner "Catalogue of the Torrens collection" gives volume 2 as 274 pp, 294 ill.

Pendulum, balance spring, tuning fork.

R354 Boudra**La montre**

Besançon:, 1913, 20 pp, ill.

(French).

Listed in Tardy.

R355 Bougard, AJ**De l'alpha à l'omega, un itinéraire suisse de la précision**

histoire de la dynastie des Brandt, fondateurs de la marque et entreprise Omega

Hauterive: Gilles Attinger, 2003, 23 x 21.5 cm, 113 pp, ill, plates.

History (French).

R356 Boultinghouse, M**Silversmiths, jewelers, clock and watch makers of Kentucky**

1785-1900

Lexington USA: M Boultinghouse, 1980, 11.25 x 8.5 inch, 368 pp, 171 ill, 76 plates.

Makers (English).

Biographies and makers' marks.

R357 Bourdais, M**1001 secrets d'ateliers**

Recettes et procédés nouveaux et pratiques a l'usage des horlogers, bijoutiers, mécaniciens, graveurs, orfèvres, opticiens, armuriers, doreurs, mouleurs, argentiers, bronziers, peintres, nickeleurs, droguistes, vernisseurs, etc.

France: Lib. Centrale des Sciences Desforges, Girardot et Cie, 1929, 12mo, 424 pp.

Repair (French).

R358 Bourdais, M**400 procédés modernes**

a l'usage des horlogers, bijoutiers, orfèvres, etc

Lille: Imprimerie-Libraire Camille Robbe, 1901 (nd), 227 pp (180 pp).

Repair (French).

Robertson "The evolution of clockwork" lists 3 editions, but does not give dates.

Also listed as "500 pprocédés modernes a l'usage des horlogers, bijoutiers, orfèvres, etc".

400 modern procedures for the use of horologers, jewellers, etc.

R359 Bourdais, M; Grall, G**ABC de l'apprenti horloger**

Paris: Dunod & Pinat, 1950 (1912), 18 x 11 cm, 232 pp, 180 ill.

Repair (French).

Produced in at least 10 editions; 1912, 1917, 1927 (4th), 1948 (9th) and the tenth in 1950 (see Tardy).

Practical guide to lead the apprentice by the hand from his entry into apprenticeship until his leaving.

R360 Bourdin, JP**Les fabricants d'horlogerie Loclois 1785-1985**

Le Locle: Editions du Château des Monts, 1986.

Identification, makers (French).

Dictionary of horological manufacture in Le Locle.

R361 Bourdin, JP**Répertoire des horlogers loclois XVIIIe-XXe siècles**

cinq siècles d'histoire horlogère au Locle

2005, pp, with CD.

Makers (French).

"Dix mille noms d'ouvriers, de chefs d'entreprises, de commerçants de fabricants ou d'artistes qui ont façonné l'industrie dominante de la ville avec leurs mains, leur coeur et leur volonté"

6000 names of workers, company directors, ...

R362 Bourriau, RP**Notes pour servir a l'histoire des horlogers a la Rochelle**

du 16th siècle au début du 18th siècle

Besançon: Millot, 1934, 17.0 x 11.0 cm, 38 pp, 11 plates.

History, makers (French).

Also given as 38 pp, 16 figs.

Notes of use to the history of horology in Rochelle from the 16th century to the start of the 18th century.

Early watches with a list of makers.

- R363 Bouvier, JR**
English books on finding longitude at sea to 1775
 an annotated bibliography
 USA: J. Bouvier, 2000, 251 pp.
 Bibliography (English).
 Privately printed, spiral bound
- R364 Bouvin, F**
Les secrets de l'horlogerie
 Amiens:, 1891, 16mo, 48 pp, 4 ill.
 (French).
 Listed in Robertson "The evolution of clockwork".
- R365 Bowman, John J**
American watch manufacturing and merchandising
 1869 - 1944
 USA: John Bowman, ca 1944, 33 pp.
 Marketing (English).
- R366 Bowman, John J**
Lancaster's part in the world's watchmaking industry
 Lancaster, PA: Lancaster County Historical Society, 1945, 23.0 x 15.5 cm, 22 pp, 8 plates.
 History (English).
 In volume XLIX no. 2 of "Papers Read before the Lancaster County Historical Society".
 Also available as a PDF file and as a Google Book PDF file (USA only?).
[1st edition, fair] A brief, interesting (and a little puffy) history of watchmaking in Lancaster written by the son of Ezra Bowman.
Part of this has been reprinted in the NAWCC Mart, December 2006.
- R367 Bowman, John J**
The manipulation of steel in watchwork
 New York: Jewelers Circular, 1903, 8vo, 64 pp, 19 ill.
 Repair (English).
 Nine sections: Hardening steel, Tempering, Manufacture of hairsprings and mainsprings, Annealing, Filing, Turning, Pivoting and staffing, The rotary pivot polisher, and Grinding and polishing flat work.
- R368 Bowman, John J**
Your future and our school of watchmaking, engraving, etc
 To help you make a wise choice of an occupation on which you can safely depend for your future welfare.
 1914, 91 pp, ill.
 Description (English).
- R369 Bowman, John J; Borer, E**
Modern watch repairing and adjusting
 Chicago: Henry Paulson (London: NAG Press), 1941 (1931), 22.0 x 14.0 cm, 188 pp, 186 ill, 1 fld plate with 2 ill, index, 7 pp ill.
 Repair (English).
 See Borer & Robinson and Swiss Expert & Robinson "Modern watch repairing and adjusting" for the first and second editions. This is the third edition of the book and the first American edition. It was anonymously reprinted circa 1960; see Anon "How to repair clocks and watches".
 18 chapters.
 The first 8 are written by Bowman: Improvement of ability, Skilful filing, The efficient use of saws, Lathe work, Drills and expert drilling, Screw thread cutting and tapping, Steel and its heat treatment, and Finishing flat steel work.
 These are followed by Borer's chapters 2-10 from the 2nd edition: The barrel and mainspring, Gearing, The lever escapement, Waterproof watches, Friction tight jewels, Magnetism, General regulation and oiling, More about balance springs, Curb pins, Dial, train, stem winding and keyless work, and Watch recorders. The chapter on timing machines is based on Borer but has been rewritten. The original illustrations retain their numbers from the 2nd edition with gaps and insertions in the numbering for new figures.
 Borer was a technical director at Rolex.
[3rd edition, good] Borer's contribution has been Americanised by deleting chapters 1 and 11-22 from the second edition (bad watches, shock-proofing, Rolex oyster cases, timing machines, Rolex self winding watch, rating certificates, watch glasses, spare parts and watch sizes). The remainder of Borer's contribution is virtually untouched from the second edition and appears to be a repaginated facsimile with a few insertions and deletions. The order of the text in one chapter has been changed and the appendix incorporated to make it more coherent. This section is reviewed in Borer and Robinson "Modern watch repairing and adjusting".
Bowman's additions starkly contrast with the original (rather dry and technical) text. They give basic, down to earth, practical instruction in filing (including very good ideas for filing squares), sawing, making a balance staff, drilling, screw threading, hardening and tempering, and polishing flat steel. Although clear, these notes are a bit too brief and not sufficiently comprehensive, covering only a few

selected topics.

I am not sure why Bowman added his section, although he justifies it in Chapter 1 by emphasising the need for both skills and knowledge. It does not cover all the areas described by Borer (in particular omitting escapement repair and balance spring manipulation) and includes topics he doesn't mention. Consequently the two parts do not meld together and Bowman's contribution is interesting but inadequate.

R370 Bowring, John

Report on the commerce and manufactures of Switzerland

London: His Majesty's Stationery Office, 1836, 33.0 x 21.5 cm, 148 pp, tables.

History (English).

Bowring travelled extensively in Switzerland and this report gives information on a number of towns, the condition of the population and industries. There is an introduction (12 pages) followed by sections on Appenzell (12 pages, textiles), Neuchâtel (13 pages, watchmaking), Thurgovia (5 pages, textiles), Schaffhausen (2 pages, transport, wine), Basil (9 pages, textiles), Zurich (15 pages, textiles), Argovia (5 pages, textiles), Geneva (48 pages, watchmaking, jewellery) and Vaud (6 pages, agriculture). There is a 6 page index and the remaining pages are title pages or blank.

[1st edition, very good] The reports are based on quoting information provided to Bowring by different people, all in positions which enable them to speak with authority. The introduction and all the reports are unabashed arguments in support of neutrality and free trade. They all forcefully argue that the effects of wars, tariffs and prohibitions on trade have done more harm to the originating countries than to Switzerland. Further, most reports emphasise the importance of the cantonal political structures, compulsory free education, very low taxes and government financed religion and social services.

Of great interest is the attitude to smuggling discussed in the introduction; it is seen as an undesirable but reasonable and legitimate response to trade restrictions imposed by other countries. For example, to overcome delays caused by the need to have watch cases assayed in France, the Swiss got empty cases assayed in batches and returned to Switzerland; then movements imported from France were finished and put in the cases, and the complete watches smuggled back into France!

Zellweger's report on Appenzell summarises the history of textile manufacture and provides information about wages, the cost of living, education, banks and paupers. Bowring adds a brief description of the political processes in Appenzell which mirrors the much fuller examination in Steinberg "Why Switzerland?" 160 years later.

The section on Neuchâtel consists of a report written by Houret on the history of watchmaking in the region followed by a description of living conditions, education, legal processes, and the methods used in smuggling past three lines of French customs posts. Bowring notes that dogs and horses were not used for smuggling, in contrast to the article "Manufacture of Watches in Switzerland" from the "Saturday Magazine" of 1842, which see. Houret also suggests that some of Japy's machinery was actually invented by Jeanneret in Le Locle. In this section there is a footnote which explains why Neuchâtel was settled in smallholdings scattered across the land and hence why its manufacturing developed on a putting out system.

Turgovia, Basil, Zurich, Argovia and Vaud are all textile regions and not directly relevant. However, the section on Zurich contains an interesting discussion on attempts to mechanise industry and worker reactions. The report on Basil, by Von der Muhll Burckhardt, contains a very interesting analysis of markets and economies which supports the need for free trade. Schaffhausen, in addition to wine, served as transport corridor for imported and exported goods. The movement of watchmaking to this canton occurred later.

The description of Geneva includes a long letter from an unnamed watchmaking house discussing England's tariffs and mentioning smuggling into England via France. The writer notes that Geneva exported cheaper cylinder watches which did not compete with English manufacture because they were aimed at a different market. Previously, Bowring had noted that such watches "sin against all true principles" and are deliberately made badly to shorten their life. Bowring provides some information on the School of Manufactures which had two separate sections, watchmaking and industry. This includes details of the syllabuses for the industry courses (mathematics, drawing, physics, mechanics, chemistry) and the regulations of both sections. The watchmaking school was divided into two parts, ebauche work and finishing. In reality it appears to have been a cross between an apprenticeship and schooling. It is a pity more details of the watchmaking courses were not included.

Overall Bowring's report is a fascinating examination of Switzerland which contains much valuable information on watchmaking.

[Remark] The following is paraphrased from a biography by Alan Ruston:

Sir John Bowring (1792-1872) was a linguist, political economist, reformer, hymnist, writer and editor, member of parliament, and Governor of Hong Kong from 1854 to 1859. He was among the most famous Unitarians of his time. He (had) a speaking knowledge of eight languages, reading and writing knowledge of seven, and working understanding of a further twenty-five dialects. He wrote hymns in large numbers and translated a vast amount of poetry and the folklore of almost every European country. A forceful proponent of liberalism and free trade, he was seen as an extreme radical.

R371 Brandes, W

Alte Japanische uhren

Munchen : Klinkhardt & Biermann, 1984 (1976), 25 x 17 cm, 196 pp, 106 ill.

History (German).

- Two printings.
History of Japanese timekeeping, temporal and European hours, to 1873.
Probably clocks, but as it goes to 1873 it may include early watches.
- R372 Brandt, C**
1889 exposition universelle a Paris
suisse horlogerie classe 26
Neuchâtel: Delachaux & Niestle, 1890, 22.5 x 15.0 cm, 48 pp.
History (French).
- R373 Brandt, P; Oeschlin, L**
Ulysse Nardin, history in time
Rome: Edizioni Argo, 1996, 31 x 22 cm, 119 pp, ill.
Description (English).
Published for the 150th anniversary of Ulysse Nardin.
Ulysse Nardin watches including the Astrolabium Galileo.
- R374 Branston, T; Eisel, J**
Herefordshire clockmakers and watchmakers
England: Mayfield Books, 2005, 4to, 208 pp, 165 ill, map.
Makers (English).
A comprehensive reference book, covering clock and watchmakers in the county from the earliest times until the end of the nineteenth century. The major part of the book is an alphabetical list of makers and their journeymen, including Herefordshire apprentices who left the county to learn the trade elsewhere. Known working dates are given. Detailed descriptions of some notable clocks. With appendices and index.
- R375 Brassler, CA**
A practical treatise on the balance spring
New York:, 1876.
[Remark] A figment of the imagination.
The only references to this book are in Tardy, Robertson "The evolution of clockwork" and Milham "Time and timekeepers" (probably Tardy's sources). The date of publication and title are identical to Excelsior "A practical treatise on the balance spring" and I expect it is the same work.
Brearley "Timetelling through the ages" says Jewelers' Circular "Workshop notes for jewelers and watchmakers" was compiled by Brassler; which is possible as that book doesn't say who compiled it. But it is not possible in the case of Excelsior. For some books the name of the person entering the copyright has occasionally be used for the author (notably Thorpe), but Excelsior's book was entered by D.H. Hopkinson.
- R376 Braun, D**
Comic character wristwatches
USA: Schiffer, 2001, 23.0 x 15.0 cm, 160 pp, col ill.
Illustration, price guide (English).
A two page history, 3 pages of hints and a 1 page bibliography. The rest of the book consists of colour photographs (two or three per page) with short captions giving price estimates and some production dates. These photographs are organised alphabetically by comic character and all are dial views. The last section gives 6 pages of related items; watch holders, tins, catalogues and books).
[1st edition, good] This book has nothing to do with timekeeping or timepieces. It has to do with collecting images of comic characters which happen to be on the dials of watches. And it achieves this aim very well. The organisation and the colour photographs are very good, and Braun sticks to her subject. So it is a good book for collectors of such items.
[Remark] Rather belatedly I have realised there are many such books. Some books covering single manufacturers, such as Rolex, have the same function; they are written for collectors of a name or an image, and the fact that the name or image is on a watch is often co-incidental. I have criticised some of these books (for example Gordon "Rolex 1905-1989, timeless elegance") for having no relevance to watches other than illustrating dials. But viewed as "object" collecting books they can be quite useful. My problem is that I feel collecting objects without having any interest in or understanding of the object's purpose and design is rather pointless, but other people may differ.
- R377 Braun, P**
A. Lange & Söhne armbanduhren
Germany: Heel, 1999, 30 x 21 cm, 128 pp, 250 ill.
Identification, illustration (German).
With a history of the company, technical, design and model data.
- R378 Braun, P**
Klassische armbanduhren
Germany: Heel, 2002 (nd), 144 pp, ill.
Description (German).
Probably several (annual?) printings.
Includes wrist watches by Blancpain, Breitling, Cartier, Chopard, Frank Muller, Glashütte Original, IWC, Jaeger LeCoultre, Lange & Söhne, Maurice Lacroix, Patek Philippe, Vacheron Constantin and Zenith.

- R379 Braun, P; Fernandes, L**
Wristwatch annual
Armbanduhren katalog
 the catalog of producers, models and specifications
 New York: Abbeville Press, 2009 (1998), 30 x 21 cm, 456 pp, ill (420 pp, 1500 ill) (392 pp, ill) (376 pp, 1100 ill) (408 pp, 1500 ill).
 Catalogue, price guide (German).
 At least three editions to 2002.
 Annual catalogue of wrist watches with dates, data and prices
 The 1998 "Armbanduhren katalog 1998" covers 75 manufacturers.
 The "Wristwatch annual 2000" includes a general history and the current products of 80 makers.
See also Zigliotto "The wrist watch year book".
- R380 Braun, P; Linz**
Rolex armbanduhren, traume für millionen
 1998, 30 x 21 cm, 128 pp, 250 ill.
 Identification, illustration (German).
 Rolex wristwatches, the dream of millions. With a history of the company, technical, design and model data.
I believe Rolex produces some 200,000 watches each year. In which case you don't have to dream for very long.
- R381 Brearley, Harry C**
Time telling through the ages
 New York: Doubleday, Page & Co, 1919, 24.0 x 16.5 cm, 294 pp, 24 plates with tissue guards, 5 ill (and 71 ill in the glossary).
 History (English).
 Published to commemorate the 25th anniversary of the Ingersoll Watch Company.
 Available as a Google Book PDF file (USA only?).
 18 chapters: The man animal and nature's time pieces (6 pages); The land between the rivers (15 pages); How man began to model after nature (13 pages); Telling time by the water thief (10 pages); How Father Time got his hour glass (7 pages); The clocks which named themselves (11 pages); The modern clock and its creators (17 pages); The watch that was hatched from the Nuremburg egg (12 pages); How a mechanical toy became a scientific time piece (12 pages, improvements in watches); The Worshipful Company and English watchmaking (13 pages); What happened in France and Switzerland (16 pages); How an American industry came on horseback (14 pages, American clocks); America learns to make watches (15 pages), Checkered history (8 pages, later American watchmaking); The watch that wound forever (12 pages, Waterbury watches); The watch that made the dollar famous (10 pages, Ingersoll watches); Putting fifty million watches into service (12 pages, Ingersoll watches); and The end of the journey (12 pages).
 About a third of the book is devoted to sundials, clepsydrae and clocks with the remainder on watches. There are 5 appendices: How it works (5 pages, watch mechanisms); Bibliography (6 pages); American watch manufacturers chronology (9 pages); Well known watch collections (3 pages); and Encyclopedic dictionary (42 pages). There is no index.
[1st edition, good] A romantic and picturesque history of the social need for timekeeping. Late in the book Brearley says the "most important development in any affair is naturally the one which concerns the greatest number of people". This sums up the book's style. It is a well written, interesting social history which is incorrect in places, but it provides a nice introduction for the lay person. The glossary is good and the list of collections interesting. The plates are quaint rather than useful, and the bibliography full of errors. There is also a separate "Time telling through the ages, an appreciation" by Dr. Frank Crane (8 pp) which came with my copy of the book. It is a nice piece of advertising puff extolling Ingersoll watches.
- R382 [Breguet, AL]**
Breguet aujourd'hui
Der geist von Breguet lebt weiter
 Switzerland: Montres Breguet S. A., nd, 29.5 x 21 cm, 16 pp, colour ill.
 Illustration (English, French).
 Breguet today (eternal spirit of Breguet).
 Five language pamphlet.
- R383 [Breguet, AL]**
Centenaire de A.L. Breguet
 Paris: Congres National de Chronométrie, 1929, 4to, 262 pp.
 (French).
 Listed in Tardy.
- R384 [Breguet, AL]**
Centenaire de A.L. Breguet 1747-1823
 exposition son ouvre d'horlogerie et chronométrie
 Neuchâtel: Journal Suisse de l'horlogerie, 1923, 10.5 x 8 inch, 38 pp and supplement, 1 plate.

Catalogue, exhibition (French).

Tardy lists Chapuis and Piaget as the authors and suggests 2 plates.

Catalogue for the exhibition on the centenary of Breguet's death.

R385 Breguet, AL

Le guide de l'horloger

unpublished, ca 1820.

Technical, watch making (French).

[Remark] *This non-existent book is listed for two reasons. Firstly, because much of the manuscript is said to still exist in the archives of Maison Breguet, Paris. And secondly, because of the controversy regarding Moinet having copied Breguet's manuscript for his "Nouveau traite général, élémentaire, pratique et théorique d'horlogerie".*

I have, under Moinet, explained why I feel the two books are quite independent in all significant respects. This is re-enforced by Chapuis and Jaquet "The history of the self-winding watch 1770-1931" where some pages and illustrations from Breguet's notes are reproduced. Emanuel Breguet "Breguet, watchmakers since 1775" states that Moinet's book "bore no resemblance to the treatise (by Breguet). Instead, the author made a far from objective attempt to conceal or ignore Breguet's contribution to watchmaking."

A great service would be done if Breguet's notes were organised and published; and translated.

R386 Breguet, ancien élevé de

L'art de l'horlogerie enseigne en trente leçons

Die uhrmacherkunst vorgetragen in 30 vorlesungen

ou manuel complet de l'horloger et de l'amateur d'après Berthoud et les travaux de Vulliamy premier horloger du roi d'Angleterre George IV

oder vollständiges handbuch für uhrmacher und liebhaber der kunst

Paris: (Brussels:) (Leipzig: Baumgärtner's Buchhandlung) (Paris: Audin), 1980 (1827), 17.5 x 10.5 cm, 2 vols of xii, 801 pp, 17 fld plates (620 pp, 17 fld plates, 10 tables in text).

Technical, repair (French, German).

Robertson "The evolution of clockwork" lists 2nd and 3rd editions of 2 volumes in 1828 (Brussels) and 1835. Tardy and Pertuch list a 2nd edition in 1844 (Brussels and Paris).

The German translation by Wolbrecht was published in 1829 (2 vols, 801 pp, 17 fld plates).

There is a modern reprint of the French first edition.

The 1827 edition is available as a Google Book PDF file, but the plates are badly scanned and useless.

The art of horology in thirty lessons or complete manual for the horologer and amateur from Berthoud and the works of Vulliamy watchmaker to King George IV.

Principles of the art, escapements, simple methods of regulation for amateurs, repair and description of inventions.

The 30 lessons are: History of horology, The pendulum clock, Repeater clocks, The mechanics of clock making (3 lessons), Making repeaters (3 lessons), Casing the movement, The hammers and escapement, The escape wheel, Steel, The expansion of metals, Friction and oils, Lengths and vibration of pendulums, Gearing (2 lessons), Escapements (2 lessons), Compensation pendulums, The fusee, Tools, Watches, Repeater watches, Equation clocks and watches (2 lessons), Regulation of clocks and watches, and Repair.

There is an appendix (containing a description of exhibitions and other escapements), a short bibliography and a list of subscribers.

[1st edition, fair] *One source says this book was adapted posthumously from the works of Ferdinand Berthoud, but as nearly everyone has posthumously adapted Berthoud that is an oxymoron. Another source says it might have been written by Ferdinand Martin, godson of Ferdinand Berthoud.*

Nothing relates to Breguet and, in addition to quoting or paraphrasing Berthoud, the author has made extensive use of Crespe "Essai sur les montres a répétition", Partington "The clock and watch-makers' complete guide", Reid "A treatise on clock and watch making" and other sources.

[Remark] *Superficially this book has little in common with Moinet "Nouveau traite general, elementaire, pratique et theorique d'horlogerie". Both are primarily compilations of other people's writing, but there are significant differences in the authors chosen for reproduction.*

Antiquorum "Art of Breguet" (description of Lot 7) notes that legal action was taken against Moinet soon after Breguet's death and quotes a judgement given in 1825. The only circumstantial arguments for ascribing "L'art de l'horlogerie enseigne en trente leçons" to Moinet are the vague similarity in approach and the question: did Moinet really wait 20 years or more before producing his book? As both books are not particularly inspiring it doesn't really matter.

R387 Breguet, C

A.L. Breguet horologer

England: E.L. Lee, ca 1964, 25 x 18.5 cm, 34 pp, frontis, 22 b&w plates with 44 ill.

History (English).

Translated by W.A.H. Brown. Undated and various dates given.

[1st edition, good] *A small book containing 11 pages of brief and interesting snippets on the life and work of Breguet followed by plates. Not a major work, but worth reading.*

R388 Breguet, Emmanuel**Breguet, watchmakers since 1775****Breguet, horloger depuis 1775****Breguet, uhrmacher seit 1775**

Suffolk: Antique Collectors Club, Paris: Alain de Gourcuff (Paris: Alain de Gourcuff), 2001 (1997), 27.5 x 26.5 cm, 388 pp, 500 ills (384 pp, 508 ill, hinged box).

History (English, German, French, Italian).

Separate language editions.

The life and legacy of Abraham Louis Breguet 1747-1823.

A 2 page introduction, Paris 1775, followed by 7 parts, Glossary (31 pages), Genealogy (1page), Chronology (1 page), Sources and bibliography (2 pages), List of illustrations (10 pages) and Name index (5 pages).

The text parts are:

Part 1 1747-1775: From Lake Neuchâtel to the Ile de la Cite (17 pages).

Part 2 1775-1789: Successful debut in an ageing world (25 pages).

Part 3 1789-1795: Watchmaker during the revolution (38 pages); Return to Switzerland (17 pages).

Part 4 1795-1797: Reconstruction (23 pages).

Part 5 1798-1814: Business under the empire (28 pages; Friends, clients and business practices (30 pages); Breguet's international network (45 pages).

Part 6 1814-1823: Honours and rewards (38 pages), The end of summer (19 pages).

Part 7 The legacy of Abraham-Louis Breguet: Antoine-Louis Breguet, a conservative regime 1823-1833 (10 pages); Louis-Clement Breguet, innovatory ideas 1833-1870 (8 pages); The century of the Brown family 1870-1970 (6 pages); Breguet, force for renewal (5 pages).

The second printing (available in English or French) updates the history of Maison Breguet, continuing from the previous edition of 1997 until the present, following the acquisition of the firm by the Swatch Group in 1999. (The two printings are probably identical except for the addition of 4 pages.)

[1st edition, very good?] This book is a very good biography of Abraham Louis Breguet, providing details of his life in the context of the society in which he lived. There is no technical information and most of the photographs of watches are decorative rather than helpful. The last section, a history of the company after Breguet's death, is short and rather superficial.

The biography is excellent, but it does deteriorate towards the end, the last parts being little more than a catalogue of the names of the very rich who purchased his watches. This is understandable as Breguet's contributions to horology have been described and his life had settled down into the fairly routine production of watches and clocks.

Like other books on a single maker, this biography suffers the fault of not putting Breguet's work in context and there are only a few references to other makers, mainly relating to students or somewhat negative attitudes to Breguet. The book conveys the idea that Breguet was better than everyone else at everything, but this is not true. For example, his marine chronometers are not significant simply because he insisted on making every piece from his workshop unique; but this is in stark contradiction to the requirements for uniformity, simplicity and cheapness. Anyway, his production was very small compared with demand. This is not surprising as "the firm ... satisfied the needs of the select market that it had created for luxury and exclusive products ... there was nothing to indicate the slightest desire to appeal to a less wealthy or exacting clientele."

This philosophy, although mentioned briefly and clearly underlying all of Breguet's work, is largely ignored, with the result that a somewhat biased view is given. For example, in several places the author implies (or explicitly states) that Breguet was at times in financial trouble. But this is nonsense and misleading. A single watch at, say 2,000 francs was worth a year's very comfortable living. So in a bad year, when Breguet's profit was only 30,000 francs, his income was about fifteen times that needed. (In 1820 the government gave him an "annual consideration" of 3,000 francs. This would have represented a significant income for most people, but for Breguet it was chickenfeed.) Certainly he was never as rich as his customers, many of whom had effectively unlimited amounts of money, but he never struggled. To suggest that "Breguet's obstinacy in following to the very end the exacting and unprofitable path of making one-off pieces" is ridiculous. He followed that path because it was very, very profitable. This philosophy also explains why America was "not ready" for Breguet's watches, something the author was not able to understand. America simply did not have enough extremely rich people to create a market for extremely expensive watches; most importantly, there was no royal family let alone a system based on a very wealthy, titled ruling class like that which owned much of Europe.

One equally annoying piece of adulation refers to Breguet's appointment to the French Board of Longitude, which "was taken as an indication that Breguet was now the ultimate authority on horology, and particularly on the calculation of longitudes at sea." This is nonsense and the appointment was clearly an honorary one, especially as by this time (1814) the problem of longitude had been solved by Earnshaw and Arnold and was entering the boring, but necessary, mass-production phase.

R389 Breguet, Emmanuel; Sabrier, Jean-Claude; Gosudarstvennyi Ermitazh**Breguet in the Hermitage catalogue**

St Petersburg: The State Hermitage Museum, 2004, 26 x 23 cm, 155 pp, 128 ill.

Collection (Russian).

This catalogue is dedicated to the exhibition at the Hermitage Museum (June 10 - September 26 2004)

- illustrating an important chapter of European culture through the fabulous Breguet collection.
- R390 Breitling**
Instruments for professionals
 Switzerland: Breitling Watch Company, ca 2008 (ca 1998), 188 pp, ill (95 pp, ill).
 Description (English).
 Catalogue produced annually with company history and current range of products replete with colour illustrations of aeroplanes and watches.
- R391 Brenner, HS**
Collecting comic character clocks and watches
 identification and price guide
 USA: Books Americana, 1987, 11.5 x 8 inch, 122 pp, ill.
 Collecting, price guide (English).
 The title has been given as "Modern comic character dial watches".
 Pocket watches, wrist watches and clocks from 1933 to 1972 featuring comic characters.
- R392 Brepohl; Koch**
Schmuck und uhren
 Leipzig: VEB Fachbuchverlag, 1981, 23 x 17 cm, 290 pp, 206 ill, 2 plates.
 Description (German).
 4th edition in 1981.
 Jewellery and timepieces.
 Timepiece mechanisms: electrical timepieces, striking and alarm work, pendulum clocks, watches, stop watches, metals, alloys, minerals, luminous paints, oils, lacquers, shock absorbers.
 Decoration: amber, tortoise shell, coral, horn, ivory, jewels, tools for decoration, pickling, soldering, setting, cleaning.
- R393 Brewster, Sir David**
Edinburgh encyclopaedia
 1830, 18 volumes text, 2 volumes plates.
 Description, technical, tools (English).
 The horology section, of 63 pp and 9 plates, was written by Thomas Reid.
Although not as significant as Rees Cyclopaedia, this work contains much useful information. See Weiss, "Watch-making in England 1760-1820", who has reproduced some of the plates and text relating to glass and dials.
- R394 Briggs, D**
Circle of time, Elgin and the watch company
 Elgin, IL: The Elgin Area Historical Society & Grindstone Productions, 2003, 1 hour, video tape.
 History (English).
 The rise and fall of the Elgin Watch Company, and the resurgence of the city. It includes interviews with employees and local historians. There is no technical detail provided.
- R395 Brillouin, M**
Lois des variations d'amplitude du balancier des chronomètres
 Paris: Chamerot et Renouard, 1899, 4to, 27 pp, ill.
 Theory (French).
 Produced by the Société d'Encouragement pour l'Industrie Nationale.
 Laws of the amplitude variation of chronometer balances.
- R396 Briney, D**
The home machinist's handbook
 USA: McGraw-Hill, nd (1983), 23.5 x 19.5 cm, 275 pp, 247 ill, 23 tables.
 Tools (English).
 A beginners guide to metal work centred around the Sherline lathe.
 11 chapters: reading plans, measurement, hand tools, bench tools, the lathe, lathe operation, milling machines, milling, materials, heat treating & finishing, and projects. An appendix includes tables of standard sizes.
[reprint, good] A general book focussing on the much larger work of clock and model making. The text provides a good basic understanding of techniques and is supported by very good diagrams and photographs.
- R397 Brinkmann, H**
Einführung in die uhrenlehre
 Düsseldorf: Wilhelm Knapp, 1978 (nd), 21 x 14 cm, 132 pp, 134 ill.
 Repair, technical (German).
 Reprinted in 1966 and later (see Brinkmann "Die uhrmacherschule").
 Introduction to the study of timepieces; explanation of the working parts in clocks and watches, different escapements with accurate plans.
- R398 Brinkmann, H**
Werkstoffe und arbeitsverfahren
 Düsseldorf: Wilhelm Knapp, 1981 (nd), 21 x 14 cm, 165 pp, 103 ill, 24 plates.
 Repair (German).
 Reprinted in 1966, 1978 and later (see Brinkmann "Die uhrmacherschule").

Materials and work procedures.
Including materials, oils, tools and regulating.

R399 Brinkmann, H; Brummer, G; Linnartz, J
Die uhrmacherschule

Düsseldorf: Wilhelm Knapp, 1981 (1966), 21 x 14 cm, 5 volumes, ill.
Technical, repair (German).

These were originally published separately, but have been reprinted as a set in 1966 and 1978.

Training manuals for use in horology schools. At least 5 volumes:

Volume 1: Brinkmann, "Werkstoffe und arbeitsverfahren".

Volume 2: Brinkmann, "Einführung in die uhrenlehre".

Volume 3: Brummer, "Fachrechnen für den uhrmacher".

Volume 4: Linnartz, "Das fachzeichnen des uhrmachers".

Volume 5: Brinkmann, "Elektrotechnik und elektrische uhren". (Not in this bibliography.)

See the individual titles.

R400 British Clock and Watch

Five centuries of british timekeeping

London: British Clock and Watch Manufacturers Association, 1955, 7 x 5 inch, 80 pp inc ads, 21 plates.
Catalogue, exhibition (English).

Catalogue of an exhibition in the Goldsmiths Hall, London, which included John Harrison's H5, Mudge's Queen Charlotte watch and Kendal's K2.

See also Clutton and Quill "Pioneers of precision timekeeping".

R401 British Clock and Watch

From pendulum to atom

London: NAG Press, 1958, 8vo, 84 pp, ill.

Catalogue, exhibition (English).

Handbook and guide to a centenary exhibition of clocks and watches.

R402 British Horological Institute

The horological journal, volumes I - IV

London: Kent & Co., 1858 to 1860, 24 x 15 cm, 170 pp, ill; 166 pp, ill; 150 pp, ill; and 146 pp, ill.

History, technical (English).

Available as a Google Book PDF file. The few folding plates have been scanned folded and so they are useless. However, all but one are tables of the performances of chronometers and only one is of diagrams associated with an article.

[1st edition, good] Although a journal, the first 4 volumes are available as a Google Book and so I have decided to treat them as a book.

The primary value of this book lies in the contemporary discussions of the state of the English watch trade, retention of the fusee, and Swiss competition. (American watchmaking only gets a couple of brief mentions, mainly because Waltham was not yet exporting and the American Civil War was just about to start.) These debates show up the fragmented nature of the Clerkenwell watchmakers, who were, after all, fighting amongst themselves for what trade there was. And so the pleas to unite against a common foe had little impact.

In addition there are some valuable long articles: The complete description of Harrison's H4; an English translation of Le Roy "Memoire sur la meilleure maniere de mesure le temps en mer"; a long discussion on the design of the lever escapement; and an English translation of part of Berthoud "Traite des horologes marines" describing his marine chronometer No. 8.

R403 British Intelligence Objectives

German clock and watch industry

London: British Intelligence Objectives Sub-Committee, 1946, 89 pp, ill fld charts.

History (English).

BIOS Trip No. 2622. The authors of the report are: E. Desmond, F. Kienzler, E. O. Chapman, J. T. Whipps, W. Ireland and R. Comer.

Purpose of investigation. Details of journey. List of factories visited. The industry as a whole. Reports on individual factories engaged on alarm clock production. Reports on individual factories engaged on specialised component production. Electric clocks, synchronous & impulse clock systems. Strike and chime clocks. Watches. Summary and conclusion.

"The purpose of this trip was an investigation of the German clock and watch industry with particular reference to alarm clock production but also including watch, strike and chime and electric impulse clocks. Information was also sought in respect of the specialist manufacture of such items as balance-stuffs, balance-screws, mainsprings, etc."

See also McGraw "German clock and watch industry".

R404 British Watch and Clockmakers Guild

Minimum repair charges to the public for the years 1955 and 1956

Suggested guide to minimum repair charges to the public

England: British Watch and Clockmakers Guild, ca 1976 (ca 1955), 8 pp (18 pp).

Repair (English).

Published in at least 1955, 1972 and 1976.

Repair charges for pocket watches, wrist watches, waterproof wrist watches, self-winding wrist watches,

pin pallet watches, interchangeable material, clock repairs, watch glasses, mains electric clocks, English and foreign clocks 20 hour, 8 day, tubes, gongs etc. List of material and tool factors who supported the Guild Registration Scheme.

R405 Brittain, A; Morton, P; Wolpert, S
Engraving on precious metals

London: NAG Press, 1980 (1958), 8.5 x 5.5 inch, 228 pp, 250 ill.
 Technical (English).

A comprehensive study of hand engraving.

R406 Britten, FJ

Former clock and watchmakers and their work

London: E & FN Spon, 1894, 20.0 x 13.5 cm, 397 pp, 187 ill.

Description, history, makers (English).

Available as a Google Book PDF file (USA only?).

[0th edition, fair] This is known as the 0th edition of Britten "Old clocks and watches and their makers"; see that book for my review.

R407 Britten, FJ

Old clocks and watches and their makers

Old clocks and their makers

London: E & FN Spon (London: Batsford), 1932 (1894), 23.0 x 15.5 cm, 822 pp, 859 ill (500 pp, ill).

Description, history, makers (English).

Britten wrote the first three editions; 1899 (500 pp), 1904 and 1911 (790 + 24 pp). The fourth, fifth and sixth editions of 1919 (see below), 1922 and 1932 (892 pp) were produced after F.J. Britten's death and edited by his daughter Annie and his son FW; they are based on Britten's original text and illustrations.

The 6th edition of 1932 was reprinted in 1971.

The Antique Collectors' Club produced a revised 3rd edition in 1977. It has been reprinted and various dates are given: 1983, 1988 and 1994. This should be regarded as a separate edition as it has different text and illustrations.

The 1919 4th edition (597 pp, 400 ill) has the title "Old clocks and their makers, an historical and descriptive account of the different styles of clocks in the past in England and abroad". Apparently because of problems caused by the war, the work was split into two parts, but the second part "Old watches and their makers" was never published.

See Baillie, Ilbert and Clutton "Britten's old clocks and watches and their makers" for editions 7 to 9.

[0th edition 1894] After 19 pages of background on time, sundials and clepsydrae, the book begins with 43 pages of descriptions and anecdotes of early clocks and watches. This is followed by biographies of makers, further descriptions of clocks and watches and technical notes. The book concludes with a 109 page list of makers. There are no chapters, no index and no table of contents.

This original edition inventories English makers and their work, with notes on a few makers from other countries. It begins roughly chronologically, but declines into fairly random remarks on various topics; it is bitty, lacks coherence and is simply a collection of descriptive material. The text is well written, but has no great merit and the illustrations (etchings and line diagrams) are just adequate. However, it is no worse than other 19th century books.

[5th edition 1922] Eight chapters; time, weight clocks, portable timekeepers, pocket watches, early makers, French clocks, English clocks, and mechanisms. These are followed by a 123 page list of makers. Edited by Annie Britten who says it comprises "the whole of the last edition compiled by my father, revised and enlarged".

Structurally this is the same as the 0th edition, just very much enlarged; the only noticeable changes are the many additional descriptions of items in collections and the deletion of most of the section on mechanisms. It remains a collation of descriptive material with poor illustrations and saved by the "museum guide" approach and the list of makers. It does describe the features of cases and movements in different periods and it is a useful means for identification and dating. But it lacks the directness and simplicity of the Baillie, Ilbert and Clutton editions. In its time it would have been very good, but it is now superseded by some much better works.

[Comparison] There are three other 19th century introductory books; Thomson "Time and timekeepers" 1842, Kendal "A history of watches and other timekeepers" 1878 and Benson "Time and time-tellers" 1875. All four books are quite different from each other, all are interesting, but none stands out from the rest as being significantly better. So why has Britten survived when the others have faded into obscurity? Certainly the independence of Britten is a factor, the other three being, in part, advertising for particular watchmakers. But I think Britten's popularity is a consequence of the "museum guide" approach and the makers list. We should remember that there were no instant cameras, no television and transport was not simple. People of the time had to rely on visiting collections to look at items, and any book that combined horological insight with a list of things to see would have been a godsend.

Viewed in this light, an otherwise ordinary work becomes important, not for its text but for its reference information. Indeed, if I were to grade books by how often I open them, Britten would be one of the top three. I frequently refer to the list of makers and search for information on dating movements; but I don't read it. In fact, looking at all of Britten's writing I find it hard not to conclude that he is a rather uninspiring and mediocre compiler.

R408 Britten, FJ

On the springing and adjusting of watches

London: E & FN Spon, 1898, 19.0 x 13.0 cm, 152 pp, 75 ill.

Repair (English).

Someone suggested that "On the springing and adjusting of watches" has been reprinted but I am unable to find any information; probably it was an incorrect reference to Britton "The escapements, their action, construction and proportion".

Available as a Google Book PDF file (USA only?).

In nine chapters: Introduction and effect of various springs (14 pages); Terminal curves (19 pages); Temperature compensation (11 pages); Springing and adjusting (50 pages); Manufacture of springs (12 pages); Non-magnetic and temperature invariant materials (7 pages); Gauges (4 pages); Observatory tests (12 pages); and Examination of escapements (12 pages).

[1st edition, good] *The first chapter has a short and rather uninspiring history mixed in with a compilation of assorted "good rules" and suggestions by other people. Chapter 2 defines the theory of overcoils, gives a detailed description of a tool for making large-scale models of overcoils and testing them, and provides some practical remarks about pinning points. Chapter 3 gives little information on temperature compensation and is primarily a description of balances with auxiliary compensation. Likewise, chapters 5 to 8 offer a more academic than practical discussion. Chapter 9, in contrast, is a concrete summary of the examination of English lever, chronometer and cylinder escapements, but this is presumably based on Britten's handbook.*

These chapters give me the impression of gathering together interesting points that have been brought to Britten's attention. They are cookery-book in style and do not provide much understanding. For example, causes of deviation from the isochronal theory of overcoils are listed as facts without giving any insight into the influence of the escapement and balance. This does not really surprise me. The biography of Britten (in Baillie, Ilbert and Clutton "Britten's old clocks and watches and their makers") notes he was a draughtsman, drawing instructor for the BHI and later editor of its journal. From this it seems he was an amateur horologist and his writings support this; they are best when he is compiling and worst when he writes for himself. He says within this book "so far I have endeavoured to summarize the practice of various craftsmen" and this is a good description of its contents. This is most noticeable in chapter 4 which forms the bulk of the book. I found the explanation of adjustment for isochronism and positions somewhat confusing and I would not recommend it.

But much of the book is quoted from contemporary sources (including Earnshaw, Glasgow, Paillard's patents and others) and so provides a fascinating insight into methods of the middle of the 19th century. Viewed as a digest of techniques it is a valuable historical account.

R409 Britten, FJ

Watch and clockmakers' handbook, dictionary and guide

England: Antique Collectors' Club; England: Baron Publishing (London: W. Kent & Co; New York: E. & F. N. Spon) (Melbourne:), 1987 (1878), 23.0 x 15.0 cm (20.5 x 14.0 cm), 598 pp, 470 ill (312 pp, ill) (499 pp, ill) (172 pp, 96 ill, 5 ill).

Description, dictionary, repair, tools (English).

There have been 16 editions: 1878 (12 pp?), 1879, 1880 (3rd edition, 16 pp), 1881, 1884 (5th edition, 312 pp), 1886, 1887, 1892, 1897, 1902 (10th), 1907 (11th, 499 pp, reprinted in 1915, 1976, 1988, 1993, 1995 and 2001), 1929, 1932, 1938 (14th edition, 547 pp, reprinted in 1946), 1955 (15th edition, 598 pp), 1978 (16th, reprinted in 1987). The later editions were edited by J.W. Player (14th and 15th) and Richard Good (16th).

The 1881 and 1896 editions are available as Google Book PDF files (USA only?).

A dictionary of terms and descriptions.

The 11th and 15th editions have an index.

[Several editions, very good] *One of the most famous and useful of the encyclopaedia style books. In each edition "obsolete" material has been deleted and new information added. Consequently much interesting material on early tools and techniques is only found in the earlier printings.*

[5th edition 1884, 14th edition 1946 and 15th edition 1955] *This contains "such information as I possessed that seemed likely to be useful to young workmen and students". The book has definitions of terms, descriptions of mechanisms, biographies, escapement details and some general repair tips. Because of its organisation it assumes you know a technical word and want information about it. However, it can be "read" from cover to cover, if a bit disjointedly.*

It is hard to assess such a book. I devoured it when I first got the 5th edition, which has superb illustrations of tools, but I have rarely opened it since. It does contain much interesting information, but many entries are too terse and so it basically gives an interesting overview. When you need to know a little about something, then it is very good. But I often want detailed information on a specific topic and other books are then far better.

[4th edition?] *The first edition (and up to the 4th edition?) was titled "Watch and clockmakers' handbook" and presented the material by subject instead of alphabetically: time, wheels and pinions, mainsprings, watch escapements, balance springs, keyless mechanisms, repeaters, pendulums, clock escapements, calendar and striking work, polishing, tools (depthing, rounding up, mandrel, jacot), trains, verge conversions and useful memoranda.*

There is considerably less material in this edition, but I found the organisation much better than the later

dictionary style. However dictionary organisation is much simpler for the compiler of jottings and so the change was inevitable.

R410 Britten, FW**Horological hints and helps**

Suffolk: Antique Collectors Club (New York: Norman W. Henley Publishing Co.), 1988 (1930), 19.0 x 13.0 cm, 375 pp, 158 ill (357 pp, ill).

Repair, tools (English).

The first (?) edition is titled "Watch and clockmaker's manual" on the cover.

Three sections: The lathe (56 pp); Clocks (127 pp); and Watches (159 pp). These are followed by some additional notes on clocks and watches. The first section deals with watch repair involving turning and only covers lathes indirectly.

Written for the experienced watch jobber.

[4th edition, good] A much better organised book than his earlier "The watch repairers' instructor" although it still has symptoms of "stream of consciousness" writing. The lack of an adequate index and incoherent organisation makes finding information difficult. Which is a pity as it does contain many valuable repair ideas and there is a lot of useful information, especially on the cylinder escapement and Swiss cylinder watches. At times more knowledge is assumed than I feel is reasonable. But then, the book was written at a time when you could send work out to specialists, such as escapement makers.

Worth reading.

R411 Britten, FW**The watch repairers' instructor**

London: The Technical Press, 1946 (ca 1944), 18.0 x 12.5 cm, 140 pp, 112 ill.

Repair, tools (English).

A revision of Hasluck "The watch jobber's handybook" (which see).

Four chapters: Early time measurers and modern watches (10 pages); A watch movement (11 pages); Examining and cleaning (10 pages); and Repairs and adjustment (98 pages).

[1st edition, mediocre] This book has to be one of my favourites! It is a classic example of "stream of consciousness" writing devoid of editorial control.

Chapters 1 to 3 are basically the same as Hasluck's original text with additional material inserted from that author's glossary. But strange things happen; besides moving our work bench from the drawing room table to the kitchen table, we are engrossed in putting on the fusee chain when suddenly we are told all about detents; a bit distracting!

In chapter 4 the insertions from the original glossary become almost random (sometimes duplicated) and the text quite incoherent, especially as Britten has added his own new material without any regard for how it fits into the existing text.

My favourite bit is when he is talking about problems in motion work. Without warning the flow is interrupted by the need for a brass hammer, general remarks on hammers, how to make a brass hammer (they were hard to buy), tempering steel (to make a drill to make the hole for the handle), shaping the drill for brass and the definition of a stake (to hammer the drill bit on while making it). One and a half pages later he comes back to motion work and writes how a set arbor can be straightened with a hammer! Clearly he was about to write this when he realised he needed a hammer; and so he just inserted the rest without any explanation.

The title page states "Author of ... Old Clocks and Watches," etc." which is rather misleading. Still, relying on the fame of his father was probably one way to get such stuff published. It is not a good book, but it is fun.

R412 Britton, FJ**The escapements**

their action, construction and proportion

USA: Arlington Book Co (Chicago: Geo. Hazlitt & Co.), 1984 (ca 1895), 21.5 x 14.0 cm (19.5 x 13.5 cm), 66 pp, 21 ill.

Description, technical (English).

Descriptions of nine escapements; cylinder, chronometer, duplex, lever and verge for watches, and anchor, dead beat, pin pallet and pin wheel for clocks.

[1st edition, good] There is a detailed study of the English lever, but the other escapements are given less consideration. The orientation is more towards the watch maker than the repairer.

The book consists of extracts from an early edition of Britten's "Watch and clockmakers' handbook, dictionary and guide" later than 1884. The incorrect spelling of his name may be an error or for copyright evasion (the corresponding text in Abbott "American watchmaker and jeweller, an encyclopedia ...", 1894, has also been pillaged from Britten with slight acknowledgement and a few changes).

R413 Britton, K**What makes it tick?**

Cambridge: Houghton Mifflin, 1943, 8vo, 233 pp, ill.

Description, children (English).

The country of publication, England or USA, is not given.

Answers to all sorts of questions children ask about how things work and why things happen; appliances, electricity, farming, weather, transportation, cameras, television, war machines, etc.

Listed in Pertuch which is why it ended up in this bibliography.

- R414 Brocot, A**
Calcul des rouages par approximation
Berechnung der raderübersetzungen
 nach einer neuen methode
 Paris:, 1862, 8vo, 97 pp.
 Technical (French, German).
 The German translation was printed twice in 1871 and 1879.
 The calculation of trains by approximation. The final 5 pages of the French edition are a summary in English, enabling “English clockmakers to avail themselves of Brocot’s new tables”.
 See Merritt “Gear trains, including a Brocot table of decimal equivalents and a table of factors of all useful numbers up to 200,000”.
- R415 Brodbeck, D**
Journal imaginaire d’Abraham-Louis Breguet
 Imaginé par D. Brodbeck en l’an 1990 d’après des documents authentiques, originaux et d’époque.
 1990, 83 pp.
 (French).
- R416 Brodbeck, D; Syndicat Français des Fabricants de Montres**
Horlogerie, made in France
Watches, made in France
 Paris: Editions Challenge, 1996, 4to, 96 pp, ill.
 Description (French).
 Produced for the Syndicat Français des Fabricants de Montres.
- R417 Bromley, J**
The Clockmakers’ library
 England: Sotheby, 1989 (1977), 29 x 23 cm, 136 pp, 52 ill.
 Collection, bibliography (English).
 A catalogue of 1151 books, manuscripts, prints, etc. in the library of the Worshipful Company of Clockmakers.
 The main catalogue, covering printed material, consists of brief bibliographic data and a subject index providing cross referencing of general topics. This is followed by a catalogue of manuscripts, indexed in the same manner, and a list of pictorial material.
 The illustrations are primarily of title pages and fragments of manuscript.
 [1st edition, fair] *Although well presented, the book is of not much use other than to determine the existence of an item. What surprised me was how few books are listed as being in this prestigious library. See also Baillie “Catalogue of the library of the Clockmakers Company in the Guildhall, London” and the Clockmakers Company catalogues.*
- R418 Bronnimann, F**
Über den isochronismus des pendels und der unruhe
 Frauenfeld:, 1875, 20 pp.
 Technical (German).
 On the isochronism of pendulums and the balance.
 Listed in *Pertuch*.
- R419 Brown & Sharpe**
A treatise on the construction and use of milling machines
 Treatise on the construction and use of milling machines
 : Nabu Press (India: Pranava Books) (USA: Brown & Sharpe), 2010 (1894), 24 x 16 cm, 230 pp, ill.
 Tools, watch making (English).
 Published in 1894, 1900 (230 pp), 1914 (322 pp), 1930, 1944 and 1952. With modern reprints in 2008 and 2010.
 This is essentially a trade catalog for all kinds of plain and universal milling machines, cutters, drives, details etc.
- R420 Brown and Bigelow**
Playing cards
 with illustrations of the Southern College of Watchmaking
 USA: Brown & Bigelow, nd, two packs of cards.
 Miscellany (English).
 The Southern College Of Watch Making was in Memphis.
- R421 Brown and Sharpe**
The Brown and Sharpe handbook
 a guide for young machinists
 USA: Brown and Sharpe, 1941 (1938), 17.0 x 12.0 cm, 317 pp, 251 ill, tables.
 Tools (English).
 A general machinists handbook.
 [1941, good] *Of no direct relevance to watch work, except that much of the description of hand tools and their use is applicable.*
The caption to the frontispiece notes that the company began in 1833 and grew out of a small watch and clock shop run by David Brown. Brown and Sharpe credit themselves with developing the first vernier

calliper (1851) and the first micrometer (1867).

R422 Brown, H; Thomas, N

Comic character timepieces

seven decades of memories

USA: Schiffer, 1992, 31 x 23 cm, 280 pp, 600 col ill.

Identification, price guide (English).

A survey of character timepieces with price guide illustrating 375 watches. Mainly wrist watches but including pocket watches and clocks.

[1st edition, review by Henry B. Fried] *The husband and wife team of Hy Brown and Nancy Thomas has assembled a very significant collection of comic character watches. They pay much tribute to Robert Lesser, a pioneer collector of such timepieces as well as to collector Howard Brenner. whose book on such watches was published in 1987, "Modern Comic Character Dial Watches".*

The authors state that character watches began production in 1933 when the Ingersoll Watch Company of Waterbury made special arrangements with Disney to produce and market the Mickey Mouse watch. Its success sparked competitors to produce watches with well-known comic strip and movie screen characters, sports and highly recognizable political figures.

The authors state that over 5000 different subjects have appeared in such watches. They have chosen and photographed in true color almost 375 different types and about 200 others which are pictured in their book.

The couple's own collection totals over 1400 such pieces and is still growing.

All photos of watches are in high-quality color. The earliest such watch in America is an 1893 Chicago World's Fair item, and another made in 1908 of Buster Brown, a precocious comic strip boy, are illustrated. However, collectors of American pocket watches can point out that the New England Watch Company of Waterbury produced colored, hand-painted, fired-enameled dial watches with the various positions of baseball players instead of numerals, as well as some of their cheaper watches with paper dials with patriotic symbols in the 1890's.

In 1933, Ingersoll employed just 300 workers. After the success of the Mickey Mouse pocket watch in just two years they had to employ 3000 workers to produce 2,500,000 watches. In 1957, Ingersoll, now operating as the U.S. Time Corp., presented Walt Disney with the 25 millionth watch.

There was a hiatus of ten years when few such watches were produced, but in 1968, U.S. Time, which had changed its name to Timex, again went into production of the Mickey Mouse watch.

In 1972, the license to make Disney character and Mickey Mouse watches was acquired by the Bradley Time Corp., a division of Elgin Industries. Bradley had the exclusive rights to produce these from 1973 to 1985. The license was then transferred to the Seiko group until 1990 when numerous other producers were licensed to make and market any Disney character timepiece.

The book is organized rather well, the beginning pages are devoted mainly to early Disney character timepieces including, of course, the charismatic rodent, Mickey Mouse.

Cowboy heroes were the subjects of many makers, domestic and European. The color photos and the characters in each chapter are shown in alphabetical order, making reference and identification comparisons easy.

The quartz watch age is well represented by Elgin and some from France, Japan, and one Mickey Mouse with blinking eyes from Israel, circa 1971.

About 50 pages are devoted to the "Bust or Boom" years, 1958-1972, when the glut of such items caused an almost cessation with Bradley, the only American maker who still marketed the Pinocchio, Quick-Draw McGraw, Yogi Bear and Popeye watches.

The Bradley Time Corp. marketed many watches which actually were good timekeepers. This reviewer was their consultant, who was often called upon to evaluate the various different movements and cases to be used. Bradley also produced the first "digiana" character dial watch with both analog and digital display such as alarm, chronograph, and calendric services shown in the l.c.d. panel below the main character dial. Probably no company had as many models of such watches aside from their regular, jewelry store grade of timepieces.

The last three chapters cover 1985 to the present and feature Seiko's illustrated comic strip bracelet and watches with such characters as Beetle Bailey, Blondie and Betty Boop, from Helbros and Lorus, Hope Sutton and other makers.

Advertising watches were used as promotional items or obtained by premiums. The authors state that some currently fetch good prices.

Politically inspired character watches start with the Spiro Agnew watch by the Dirty Time Watch Co. and a final chapter depicting personalities including the Beatles, Dizzy Dean, Chaplin and even Beethoven (yes, after all, didn't he dedicate the metronomic movement of his 8th symphony to his good friend Mailzel for inventing the metronome?), and for good measure, there is an Arthur Fiedler (Boston Pop Orchestra) watch. A final full page is devoted to listing all the chief items and their current values to collectors-buyers.

While at first glance it appears as an attractive coffee table book, examining its text proves it to be one of dedication and good information in a fine quality product.

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R423 Brown, Isaak

Die neuesten erfindungen und verbesserungen

in der uhrmacherkunst

Munich: Callwey (Quedlinburg & Leipzig: Gottfried Basse), 1981 (1831), 22.0 x 15.0 cm (8vo and 4to), 352 pp, 36 plates (2 volumes 352 pp, 138 ill and atlas of 36 plates).

Description, technical, tools (German).

The 2nd edition was printed in 1854 and the single volume reprint is of this edition. Tardy indicates 138 ill separate from the plates, but this is probably an error.

The newest inventions and improvements in horology. 160 articles, some a single paragraph and others several pages, in no apparent order. There are 485 illustrations on the 36 plates.

[2nd edition reprint, good?] Robertson *"The evolution of clockwork"* says this book is a translation of an English work, but does not elaborate. However the book is a collection of oddments and not a translation of any particular work. Much of the contents has been taken from other sources and Brown acknowledges the authors/inventors at the start of many articles: Baker, Bell, Berrollas, Betteridge, Blessing, Breguet, Brocot, Bryson, Chatelain, Clark, Conte, Dent, Dubois (a 40-page article on watchmaking), Francoeur, Galbraith, Garnier, Hedrich, Herbert, Jacobi, Knight, Laresche, Malo, Merle, Montandon, Mousquet, Nicole, Ogston, Pouillet, Raingo, Rebier, Restell, Revillon, Robert, Roriet, Sauinier, Schmit, Taylor, Ulrich, Wagner, Westwood, White and others. It is obvious that the notes have been compiled from journals and other places, in some instances explicitly stated by Brown, and probably presented in the order of acquisition.

Although it appears to be a very interesting collection of snippets, the Old German script makes it difficult to access it. Also, my brief inspection suggests Brown collected unthinkingly, as many articles are about trite pieces of nonsense, in contrast to others that are of significant interest.

R424 Brown, R

Replica watch report, volume 1

USA: R Brown, 2004, 4to, 184 pp, about 524 ill.

Description, identification (English).

B&W or colour spiral bound. Also distributed as a pdf file with colour illustrations, but the pdf file cannot be printed.

The book consists of introductory material, 17 sections and a summary.

The first 8 sections (48 pages) discuss replica wrist watches in general: Anatomy of a watch, The making of a replica, Know your watch, Spotter's tips, Top ten replica flaws, Buying watches online, Replicas and retail don't mix, and Frequently asked questions.

The remaining 9 sections (118 pages) gives details of particular replicas of brand names: Audemars Piguet, Breitling, Cartier, Omega, Officine Panerai, Patek Philippe, Rolex, Tag Heuer, and Vacheron Constantin. The Rolex section (48 pages) is the most comprehensive.

[1st edition pdf file, very good] This is a very interesting and useful book. At the start Brown states "we never open a watch to check the movement ... the examination is non invasive, to be done quickly with the purpose of assigning risk not authenticity". Thus the aim of the book is to teach collectors how to quickly appraise a watch before purchase. It is written for collectors whose knowledge doesn't go much beyond external appearances and who are most at risk of being duped. The emphasis is on on-line (internet) buying, particularly auctions, and internet watch information sites.

Consequently the reader is given brief, dictionary-style explanations of necessary terms, an overview of how replicas are made and the faults they will display. This provides a very good basis for the later sections and, equally importantly, for examining other watches not explicitly described. Most of the visible errors concern dial and case quality. Also, Frankenwatches, marriages of genuine parts to make a complete but non-genuine watch, are discussed. As great care is needed to detect good replicas, Brown's constant repetition of the need to carefully examine every aspect of a watch is important and necessary.

Although the idea of a guide based on external appearance is good, it seems that it may be inadequate for more sophisticated replicas. For example, Brown notes that there are Eta movement replicas of the Cartier Roadster which may be very difficult to recognise. And some Divan replicas include the word "Cartier" in the VII numeral and consequently its presence is not a guarantee that the watch is genuine. Brown also notes seemingly "correct" replicas which use exactly the same movement as the genuine watch. And so it would appear necessary to include information on movement examination in a future edition. Although I don't collect wrist watches, I have quickly come to recognise that a copy of this book would be one of the necessary tools if I did.

Finally, some black and white illustrations don't show up the features being discussed (such as blue hands), and so I would recommend getting the colour printed version of this book.

[Remark] Brown correctly says that if you buy a \$20,000 watch on eBay you should spend the money and time to go to the watch, handle and check it before parting with your money. But even this might not be enough. I was told recently of a Patek Philippe chronograph that was only recognised as a replica because of a duplicated serial number. Later, on pulling it apart, other signs were found on the finish of the Valjoux movement, which the real Patek Philippe watch also used. Such watches and the Frankenwatch marriages that Brown discusses are a nightmare for the collector.

Another nasty problem is that lots of people are happy with fakes! My daughter makes jewellery and recently one piece which she sells for \$150 was copied and sold for \$15. Of course it wasn't solid silver, it wasn't meticulously hand finished and it looked pretty crude. But one buyer stormed up to her and

declared that he wouldn't buy a real one when he could get the "same thing" at a tenth of the price! Ah, well, some people are not too bright. But then, there are plenty of people happy with a Rolex look-alike on their wrists.

There is an important question in all this: how much of the value of a watch is in the watch itself and how much is in the trade name? To put it another way, do people wear trade-marks or watches? Apparently the Patek Philippe chronograph is worth about 150,000 Swiss Francs (about US\$130,000) and although another brand using the same Valjoux movement may not be as well finished we should ask how much of the \$130,000 is just for the words Patek Philippe? Certainly the higher the price the more time and effort the fakers can put in to make an "indistinguishable" watch. Brown says "there is almost no inherent quality in a replica", but that is not necessarily true as I have noted here. Perhaps we should look at replicas in the context of the retail price of the original because I suspect we might discover some definite quality patterns.

In a way this really doesn't matter, because the watches we are talking about are the horological equivalent of dinosaurs or vinyl records. They have been superseded by far better technology and what is really important is the emotional value and the artistry, not the object itself. I have one because it makes me feel good and a replica doesn't make me feel as good.

R425 Brozek, JE

The Rolex report

Rolex or replica don't get e-screwed

an unauthorized reference book for the Rolex enthusiast

USA: JE Brozek, 2005 (1999), 28 x 21.5 cm, 288 pp, 400 b/w ill, ads (83 pp, ill).

Dating, identification, price guide (English).

4 editions to 2005.

The early edition (first?) contains: Introduction; History (2 pages); Rolex data (14 pages on models, serial numbers, movement and parts illustrations, and bracelets); Rolex or Replica? Don't get E-Screwed! (10 pages distinguishing fake watches); Official Rolex price list (45 pages, February 2000, with wholesale and suggested retail prices); Frequently asked questions (3 pages); and Glossary (4 pages).

The 4th edition contains: Horology, the science of measuring time (62 pages, evolution of clocks, history of the Rolex watch); Rolex or replica, don't get e-screwed (58 pages, terminology, examination, replica types, shopping on line); Rolex parts identification (52 pages, case numbers, bracelets, crowns, tubes, movements); From factory to your wrist (18 pages, Rolex facilities, operation of watches, servicing); Price list (47 pages); and Rolex case reference numbers (18 pages). These are followed by Frequently asked questions, index and bibliography.

The main purpose of the early editions was presumably to help people buying watches on internet (particularly internet auctions) to avoid fakes. Over half the book is an "official" price list, although there is no indication of why it is official.

The fourth edition is a much more substantial book and I presume it has a more general value.

R426 Brückner, M

Uhren als kapitalanlage

status, luxus, lukrative investition

Germany: Finanzbuch Verlag, 2006, 23.5 x 15.5 cm, 294 pp, ill.

Investment (German).

Watches as investment, status, luxury, lucrative investment.

"Watches can be a worthwhile investment for following generations. Michael Brückner concerned with watches as an investment. First he presents well-known makes, like Rolex and Chronoswiss, and deals with their individual characteristics. Then he explains which features can prove to be particularly value-increasing. He gives valuable hints to purchasing from fairs, from dealers or from E-Bay. In this connexion he shows how counterfeiters work and how one can differentiate copies from originals. Finally the author points out how good prices can be achieved, if one is willing to separate oneself from one or other luxury watch."

R427 Brugger; Zaragoza

Musée et collections horlogères

Switzerland: Chronométophilia, 1986, 176 pp, ill.

Collection, miscellany (French, German).

Bilingual French and German text.

The locations and opening times of horological collections in 1986.

Perhaps a useful guide for tourists which will probably be fascinating in 2086.

See also Pfeiffer-Belli "Uhren museen und sammlung historische zeitmesser".

R428 Brummer, G

Fachrechnen für den uhrmacher

die uhrmacherschule band 3

Germany: Knapp Verlag, 1978 (nd), 21 x 14 cm, 109 pp, 25 ill, 5 plates.

Technical (German).

Reprinted in 1966, 1978 and 1981 (see Brinkmann "Die uhrmacherschule").

Calculations for horologists.

Examples for trains, speed of rotation, diameters, balance vibrations, arbor distances (depths), pendulums, etc.

R429 Brunner, G**Armbanduhren**

vom ersten chronometer am handgelenk zum begehrten sammlerstück

Munich: Heyne Verlag, 1996 (1990), 21 x 14 cm, 473 pp, ill (376 pp, ill).

Description, history, makers (German).

Several editions and printings.

Wristwatches from the first chronometer on the wrist to the desirable collection pieces.

There may be some confusion between this book and those co-authored by Pfeiffer-Belli. Unfortunately book sellers often fail to provide accurate information and it can be impossible to tell what they are actually selling without buying it!

R430 Brunner, G**Chopard manufacture**

Berne: Buri Druck, 1999, 60 pp, ill.

Makers (French).

Preface; Chopard - from Sonvilier to Geneva; The automatic movement; The LUC 1.96 movement; The notion of manufacture; Glossary

R431 Brunner, G**The art of horological complications**

Hamburg: Juwelier Wempe, 2009 (2000), 8vo, 81 pp, ill.

Illustration (English).

Produced annually? Editions in 2000 (87 pp, ill), 2001-02 (91 or 100 pp, ill), 2003 (81 pp, ill), 2004-05 (87 or 104 or 120 pp, ill), 2007 (120 pp, ill) and 2009, but with inconsistent dates and descriptions.

A review of watches made by Cartier, Omega, Breitling, Sattler, Jaeger-Lecoutre, Breguet, etc.

[2001 edition] The book "offers collectors an overview and extensive information about an enthralling array of timepieces noted for the precision of their mechanics and their aesthetic appeal. This issue focuses on the "Perpetual Calendar" and features detailed descriptions of the classics as well as of the leading manufacturers' highlights of the year 2001 / 2. In addition, Horst-Deiter Ebert has contributed an inspiring essay about the lifetime achievements of John Harrison, the inventor of the chronometer, who brought us the pleasure of modern timepieces."

R432 Brunner, G; Pfeiffer-Belli, C**Klassische armbanduhren von A - Z**

Ulm: Ebner Verlag, 1996, 29 x 22 cm, 428 pp, 650 ill.

Illustration, price guide (German).

Alphabetical listing of wristwatches from 1915 to 1975 with illustrations, descriptions and prices. Over 200 photographs of collectors' models.

R433 Brunner, G; Pfeiffer-Belli, C**Swiss wristwatches****Schweizer armbanduhren**

chronology of worldwide success

chronologie eines welterfolges

USA: Schiffer, Munich: Callwey, 1991 (1990), 28 x 21 cm, 252 pp, 600 ill with thousands of illustrations of individual watches, 48 plates, price guide.

Description, history, price guide (English, German).

Separate German and English editions.

Subtitled "Swiss watch design in old advertisements and catalogs."

"An overview of the history of Swiss wristwatch design in the 20th century. It portrays the variety of forms and potential styling of cases, dials and hands via pictures from the trade literature of the times, from advertisements and catalogs of Omega, Longines, Tavannes-Cyma, Breitling, Doxa, Universal, Movado, Zenith, etc."

Largely reproductions of old advertisements and catalogues.

[1st edition, reviewed by Henry B. Fried] The subtitle of this book states the format of this English translation from the German original, which was published simultaneously. Gisbert L. Brunner is editor of the journal, Alte Uhren (Old Timepieces) while Christian Pfeiffer-Belli is editor-in-chief of that same publication. Both have published articles on wristwatches.

The authors begin their presentation by stating that the true wristwatch is a twentieth century product. Others, they state, were nineteenth century pocket or pectoral watches worn on the wrist with affixed wristbands. Arguably, this may be so, although Patek Philippe did make special small form watch movements to be worn on the wrist in the mid-nineteenth century. These latter designs were baguette in shape to fit their cases.

This large book is a chronological compilation of catalogs. The earliest is an Omega 1902 offering with round wrist band watches with the winding crown at the figure nine position. However, a 1906 advertisement for a Pery wristband watch shows the stem position at the figure three.

While the hundreds of advertisements indicate German, French and American dealers, the watches featured are Swiss. Thus names on the pictured watches' dials may seem strange. In most cases however, the authors have indicated the Swiss manufacturer.

The first decade of this century featured round watches which probably housed movements of 13 lignes (11 1/4 lignes = 1 inch). The bracelets on one cylinder escapement model of 1906 features a spring pivoted

figure eight linked bracelet which could be termed an expansion model bracelet. Others had mesh bands with buckles.

By 1909, Ducommun-Muller of La Chaux-de-Fonds showed a chronograph with pendant at the 12 position and case lugs at the 9-3 positions. Longines advertised a lady's pectoral watch movement with seconds at the figure 9 position, fitted to round, lug-attached cases. Nurse's stop watches and simple chronographs were unadorned. In 1912 however, Movado offered engine-turned and enamel bezels. Before the end of the second decade, shaped cases had begun to appear in octagon, oval and tonneau shapes. Smaller oval, rectangular and round movements were in evidence with stirrup-shaped cases and dials. Some cases were marquis shaped.

Hebdomas, maker of 8-day watches, featured a wristband watch in 12 and 14 lignes. In 1913, Omega, one of the earlier twentieth century wristwatch makers, unveiled their military model in time for WWI. It contained a radium-painted dial.

A novelty from Schild Freres showed a wristwatch that could be attached to the steering wheel of an auto. In 1915, a war was raging which in two years would involve the United States. Watches with radium-applied dials were offered by many. Tavannes also illustrated its version of the Borgel case wherein the movement was contained in a ring, the outer surface of which was threaded to be screwed into the bottom of the case and secured by a bezel. Evidently, it required a negative setting with the stem and sleeve in the case's pendant. This provided some sort of moisture and dust proofing.

Jacques Depolier & Son of 15 Maiden Lane, New York, is represented by a full-page in French, heralding in the second decade with an aviation wristwatch worn during Rohlf's record 34,610 foot triplane ascent. Now, watches of all shapes are appearing and Ebel had one elaborately diamond encrusted with sapphires on its case. Early Rolex lady's styles of all shapes also were available.

Names like Optima, Cyma, Avia and Mido show 58 different auto-grille designs. To many American readers, some names may seem unfamiliar because these never had representative agencies in America. Names such as Mildia, Driva, Festina Huga, Lunesa, Sabina, and Spori are among the many whose styles are pictured but were never available in the United States.

The textual sections as noted generally are two-page introductions to the advancing decades and the evolutionary changes, noted mainly in style rather than technological advances on their insides.

Seven sections constitute the main segments of this new book. This begins with a Foreword, then the evolutionary changes which almost always are shown as style changes rather than technical advances. The 1930's appears to have introduced many innovations in style. Hunting cased wristwatches, 8-day rectangular watches with an illustrated two barrel movement sans seconds by Ernest Tolc of La Chaux-de-Fonds, were never introduced in the U.S. Jump hours and minutes and one by Piguet-Capt of Brassus featured a calendar and moon phases. Rolex models in profusion also appear in that decade which introduced the small baguette movement.

The war years also introduced thinner watches with round men's watches of sturdy design with self-winding and water-resistant cases. Advertisements in full color make this an attractive section. Many pages show designers' ideas which might never have evolved into watches of these designs.

The period into the 1960's features all types of chronographs, calendar watches with reserve power indicators and a final acknowledgement of that new fangled quartz digital watch.

To the collector-dealer of vintage wristwatches, this is a well represented collection of advertisements from the start of this century through seventy years. It should aid anyone interested in identifying an item and discovering its current value, making it a good resource of items not found in other wristwatch guide books.

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R434 Brunner, G; Pfeiffer-Belli, C

Wristwatches, a handbook and price guide

Armbanduhren, von den vorlaufnern bis zur Swatch

Augsburg: Battenberg, USA: Schiffer, 2005 (1992), 26 x 21 cm, 186 pp, 500 ill (167 pp, 438 ill).

Description, history, makers, price guide (English, German).

Produced in at least 5 editions (separate English and German) of varying sizes with printings in 1992, 1997, 1999/2000, 2003 and 2005.

A price guide in 4 sections:

Introduction to collecting with information on mechanisms, watchmaking companies, collecting, fakes and hybrids, and general advice.

Colour illustrations.

Catalogue illustrations organised by type.

Swatch catalogue illustrations including collecting advice.

"This is a Price Guide handbook for those who buy, sell or collect luxury watches. Some of the prominent brands, for which prices and photos are given, include: Cartier, Rolex, Movado, Vacheron, Longines, Omega, Swatch, Patek Philippe, as well as most other luxury brands. The 60 page preface also includes a quite detailed glossary of terms (most terms are clearly defined with at least a paragraph of text), as well as detailed diagrams. The purpose of this section is to give the collector or dealer the detailed information that will be needed to discuss parts, terms used in the field, etc."

[1st edition, review by Henry B. Fried] Gilbert L. Brunner and Christian Pfeiffer-Belli have teamed again to compile this new book on wristwatches. They have chosen about 300 to represent a sector of

these, and their current value.

This book is intended to aid the beginning collector or dealer. Among the watches selected as representatives are early wristwatches, ladies watches, form watches, hand and automatically wound watches, waterproof watches, those with chronometer ratings, calendar and world-time watches, alarm wristwatches, those that ring the chime on command, and a short section on the Swatch.

The authors cite watches worn on the wrist as early as 1623 when Pascal, inventor of the calculating machine, attached his pocket watch to his wrist. Illustrations of early wristwatches include the famous pair of wrist and calendar watch, worn by Nitot in 1806.

In six pages devoted to important watchmaking firms, 28 are mentioned, all Swiss except Junghans and Glashütte. There is no mention of Bulova, Hamilton or Elgin, though some watches from American firms are discussed elsewhere in the text.

The short advice to the collector contains some good directions and also points out that a watch with a well-known name on the dial brings more money than one without a name, even though their movements are basically by the same maker.

The care of the wristwatch includes instruction in wearing, storing, and maintaining outer appearance and ideas on polishing hands, cases, and watch crystals. Fakes, imitations, and hybrid watches are mentioned and shown, which should be of assistance to the new collector.

Thirty-one watches depicted in color include the products of Patek Philippe, LeCoultre, Cartier, Longines, Waltham, Glycine, Omega, Durbin, Mickey Mouse and Swatch.

The ladies wristwatches shown are examples made in 1900 and soon appear in curious case shapes, progressing into the 20's and late 30's. Formed wristwatches illustrate Elgin and a Rolex example with mediocre quality movement. The early 30's also include digital jump-hour watches.

The display continues with 12 pages of stem-wound watches, many shown with separate views of their movements. These include well-designed movements by Cyma (Tavannes), Zenith, Vacheron Constantin, Ecole d'Horlogerie (Geneva), Piaget and a recent Russian Raketa. Automatically wound watches include the Harwood, the Rolls, Wig Wag, Movado, Juvenia, Girard Perregaux and a Russian Poljot of the 1960 period.

One section features the Russian heavy wristwatch with screw-capped crown and stem and radium dial. Chronometer watches feature those taking license with that exalting term. Chronographs include those by Pavel, Puhre of 1908-1910 period and an Omega rectangular chronograph model of the 1930 era. Production models shown reach into recent decades.

A final section shows 8-day, Hamilton electrics, Longines Hour Angle, sector watches and Accutrons with a final page of Swatches. A list of world auction houses is included.

Like all Schiffer Publishing books, this, too, is well put together.

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R435 Brunner, G; Pfeiffer-Belli, C

Wristwatches, armbanduhren, montres-bracelets

Koln: Konemann Inc, 2006 (1999), 30.5 x 24.0 cm, 512 pp, about 2100 ill.

History (English, French, German).

Three language, parallel text. A later edition of Brunner and Pfeiffer-Belli "Klassische armbanduhren von A - Z"?

An 11 page introduction is followed by 400 pages of brief, alphabetically-ordered histories of 84 wristwatch makers, interspersed with a few pages on general topics. The book ends with curiosa (strange watches), a 32 page chronology, a 14 page glossary and short bibliography.

[1st edition, very good] The company histories are, on the whole, very good and include many interesting pieces. They are accompanied by excellent captioned photographs of dial views of wrist watches (many from auction houses) and a few movement views. There are also many portraits of famous people; I have no idea why they are included unless to make the reader feel good if he happens to have one of the watches they are wearing.

The interspersed general sections include some which describe watch types, manual winding, automatic winding, alarms, repeaters and chronographs. These are descriptive and the technical information is too brief, being only of use to the novice collector. However, the section on alarms includes an interesting list of makers. One section gives a brief general history of watchmaking which provides a good overview and includes a useful table of makers and when they ceased production or were taken over. The section on collecting is, to my mind, too oriented towards making money rather than collecting for learning.

Overall this is a good book for collectors with a lot of useful information.

[Remark] I am not sure if I should include this in my "best books" list. But it is certainly worth reading and it is much more relevant than some of the others that I have included.

Oh, and I don't know why some books use the utterly inappropriate words "whirl" and "vortex" for tourbillons.

R436 Brunner, G; Pfeiffer-Belli, C; Schild, U

Eterna, pioneers in watchmaking since 1856

Eterna, pionniers dans l'art horloger

Eterna pioniere der uhrmacherkunst

Germany: Ebner Verlag, 2006, 32.5 x 24.5 cm, 247 pp, ill.

(English, French, German).

11 chapters: Grenchen and its pioneers (56 pages); Euphonious pioneer performance, Eterna and the world's first alarm (20 pages); Pioneering spirit from wristband to Galaxis (28 pages); Rotary pioneering achievement, Eterna and complete self-winding for wristwatches (30 pages); Pioneer of mechanics for all, from Ebauches SA and Eterna to ETA (18 pages); High frequency pioneer performance, Eterna and its quartz wristwatches (16 pages); Pioneering achievements in chronography, from the first chronograph to the "Indicator" (22 pages); Pioneers support pioneers, Eterna, Thor Heyerdahl and his daring successors (24 pages); When pioneers meet (8 pages); From manufacture to manufacture, Eterna still has much to offer in the coming years (10 pages); and Milestones in the history of Eterna (6 pages). There is an index.

[1st edition, mediocre] *It is apparent that Brunner is a journalist who knows little or nothing about horology. He is a very good writer, but his writing is superficial and he uses lots of words to say next to nothing. As a result, the history is, with one or two exceptions, a vague overview. This is not surprising because, like nearly every other one-company book, Eterna is considered in isolation without any reference to other contemporary watchmakers and very little information on the socio-political circumstances surrounding it; one startling example is that there is no mention of Rolex in the section discussing Eterna's development of a hermetically sealed watch. And, like all other one-company books, Eterna is glorified to the extent that one feels it is the only great watchmaker in the world. The reader is expected to feel a warm glow for which understanding is totally unnecessary. One example is the mention of a quartz watch which is "almost revolutionary ... unique in design and technology (and an) exceptional achievement", yet there is no information about it at all!*

Equally, Pfeiffer-Belli is an excellent photographer, but his photographs are superficial things of beauty devoid of usefulness. And, as often happens in such books, the photographs are unrelated to the text and serve very little purpose.

There is no mention of a translator in the credits, and so I assume Brunner produced the English text. This is important because the few technical remarks in the text are sometimes wrong and all use incorrect terminology. I can cope with a shock absorber which is not described and which "protected the pins of the balance-wheel shaft", but I have no idea what "flux driven central second hands" means or what a "high anglage base movement" looks like. Brunner does provide reasonably interesting histories of self-winding and chronograph mechanisms, but the effort is destroyed by the unintelligible explanations of the Eterna-matic and the calibre 6036 chronograph with their appalling terminology and no illustrations. Unfortunately every technical comment is of the same low standard and I am amazed that the publisher allowed such rubbish to be printed.

I suppose the problem is that there is not much that can be written about Eterna and a much shorter book with competent technical explanations would have been far better. But it probably would not have sold because, unfortunately, it seems most collectors are not interested in going beyond a superficial understanding of watches. So if you need to learn about Eterna you are stuck with this poor offering.

[Remark] *It is interesting to compare the four books I have read which Brunner wrote. One is very good, one is good, one is poor and this book is mediocre. I think the difference must lie in the co-authors, and Brunner's horological incompetence has been covered up by their contributions. But I have rated "Wristwatches, armbanduhren, montres-bracelets" as very good, even though Brunner is the only author! Is this, a bit like Estelle Fallet, an example of Dr Jeckel and Mr Hyde?*

R437 Brunner, G; Pfeiffer-Belli, C; Wehrli, M

Audemars Piguet

Audemars Piguet

masterpieces of classical watchmaking

meisterwerke klassischer uhrmacherkunst

Switzerland: Audemars Piguet, 2000 (1993), 28.5 x 25.5 cm, 285 pp, 466 ill (228 pp, 440 ill).

History, identification (English, German).

Produced in separate English and German editions with a second edition in 2000.

In three parts with a bibliography and indexes of names and technical terms.

Part 1, History (67 pages): History of watchmaking; The French revolution; History of Audemars Piguet from 1875 to 1993; Jules Louis Audemars; Edward Auguste Piguet; Chronology; and Serial number list.

Part 2, Pocket watches (101 pages): Photographs of watches and movements with very short captions.

Part 3, Wrist watches (105 pages): Photographs of watches and movements with very short captions.

[2nd edition, good] *Part 1 begins with a general history of watchmaking in Geneva and the Canton of Vaud, particularly the Vallee de Joux. This is followed by a history of Audemars Piguet. Although basically an overview it is well-written and satisfactory.*

Parts 2 and 3 illustrate watches and are organised from simple watches to the most complicated. Although interesting, the photographs of movements are often too small and fail to clearly distinguish the many parts making up the movements and their complications. However, the book is non-technical with no information on the calibres or their design. So the photographs are primarily to display the variety and excellence of Audemars Piguet watches.

[Remark] *The text of the 2000 edition ends with information relating to 1993. I presume the text is the same as in the first edition and the only changes are to the illustrations.*

R438 Brunner, G; Sich, M

Heuer and TAGHeuer, mastering time**Tag Heuer, die beherrschung der zeit**

London: St Martins Press, Paris: Editions Assouline, 1997, 34.0 x 27.0 cm, 232 pp, ill, plates.

History (English, German).

Three chapters: The Heuer Dynasty, a century of revolutionary watchmaking (56 pages with 13.5 pages of text), Stopwatches and chronographs (68 pages with 12.5 pages of text), and The birth of TAG Heuer (88 pages with 8.5 pages of text). These are followed by photo credits, glossary of terms, parts explosions of two movements, and a chronology from 1860 to 1997.

[1st edition, poor] Chapter 1 provides a history of the company to 1982. The first section gives a biography of Edouard Heuer and his company from 1854 to 1892. It is well written, but no references are given and it is hard to tell whether it is based on the fertile imagination of the authors or on reality. An interesting point is that much of Heuer's work and income came from buying and selling precious stones, an activity that ceased after the discovery of synthetic jewels. Section 2 covers Heuer's descendants up to 1923, the establishment of an American agency and the take-over of Jules Jurgensen. Mention is made of an 1895 patent for a waterproof case, but as no details are given it is impossible to judge its significance. Section 3 covers distribution of watches in America and Russia to 1959. And section 4 summarises the shift into electronic timing (quartz stopwatches and chronographs) up to 1982.

Chapter 2 concentrates on timers. The first section outlines the history of chronograph mechanisms, but it is superficial and contains a number of errors. (For some unknown reason the authors insist on using the term "fly-back" incorrectly throughout the book. Also they insist that chronograph mechanisms are placed under the dial, an arrangement which I have never seen, although Jagger "Paul Philip Barraud" shows one.) Section 2 is about a patent granted to Heuer in 1886-87. The book reproduces the certificate of grant but does not reproduce the text or illustrations of the patent. Consequently it is impossible to comment on it. This is typical of the whole book; there is no technical information other than passing and superficial remarks. Section 3 is a general discussion of Heuer chronograph developments and section 4 the production of wristwatch chronographs. Section 5 outlines the development of the "first" automatic chronograph by Heuer, based on the Buren micro-rotor automatic; a large movement illustration is provided, but I am afraid I cannot see a rotor anywhere and I wonder if it is of the wrong watch. Section 6 continues the brief remarks about timers, dashboard clocks and timers with special dials.

Chapter 3 provides a history of TAG-Heuer (from 1985 to 1997) following the sale of Heuer to TAG (a diversified Saudi-Arabian company). Throughout the book there is reference to Heuer's focus on sports' timing which comes to the forefront in this chapter, with TAG-Heuer diversifying into all aspects of sports' timing and sponsoring events and individuals. Indeed, this chapter is all about sports with next to nothing about the timing devices.

One important question is totally ignored by the authors: Did Heuer, at any time, make watches? Because of the vagueness of the text it is impossible to be sure, but several points make it unlikely. First, the description of the early days (before 1900) strongly suggest an etablissage with Heuer selling and distributing out-sourced watches. Second, Heuer distributed unsigned watches as late as 1920; this may indicate that the name was not important and so the name was not of a manufacturer. Third, the automatic chronograph was developed by a consortium with Buren making the automatic system, Dubois-Depraz the chronograph mechanism and Breitling/Heuer "developing "the other components". Fourth, we are told that in 1958 the company "employed 40 people and had an annual turnover of 1.7 million Swiss francs". There is no doubt that at this time the company manufactured nothing. (It is not an error for 400 because the income is far too low for that many employees.) Fifth, on several occasions the use of out-sourced ebauches is mentioned. And sixth, in 1988 "there was no marketing or technical department." It is likely that TAG-Heuer did do research and development into computer-based electronic timing, but it is unlikely that the company ever manufactured mechanical watches.

Reading this book raises, yet again, the problem of trying to work out the author's aims so that their success or otherwise can be evaluated.

I suppose the first thing to note is that there is no horology in the book. Nowhere in the text or illustrations is there anything that indicates any interest in or information on watches and watchmaking. Oh, there are some superficial remarks and a couple of movements are illustrated, but these snippets are often misleading and sometimes simply false. For example, Brunner and Sich state that in 1869 "Edouard Heuer patents the first crown winding mechanism for pocket watches", having earlier suggested the idea came to him in 1866; I must assume no-one bothered to tell our erstwhile authors about Adrienne Philippe's seminal treatise on keyless watches published in 1863 and other earlier work in the area. Another feature is the glossary which blithely remarks that the first quartz watch was introduced in 1928; but that may simply be editorial incompetence and the inability to distinguish between watches and a large, experimental, laboratory clock. But it is harder to accept that the 1955 creation of a two time-zone watch by Heuer should be blandly presented in a way to imply a "first" when it more realistically verges on being a "last".

This horological incompetence permeates the book and it is exacerbated by the failure to include any context; Heuer is presented in isolation without any mention of other companies or their work. For example, in response to the Philadelphia exhibition "Edouard understood he must act". As there is no mention of manufacturing techniques we must presume Edouard had no understanding of the crisis at all, or the authors have completely missed something of outstanding importance. And other chronograph

manufacturers (such as Longines, Rolex and Omega) are ignored.

What is in this book is a pleasant, well-written bit of adulation. Photographs of racing cars, film stars, politicians and sports people complement a text which attempts and fails to make me say "wow!"

[Remark] Reading this book caused me to ponder which book I feel is the worst book on mechanical watches. For many years Purdom and Hagans "Scientific timing" has held this honour and I am reluctant to nominate any other book. So I need to consider: what makes a book appallingly bad?

"Scientific timing" has the property of being 100% about horology in the small; that is, it is full of information about watches. In contrast Pons "Temps Chanel" is utterly devoid of information. Which is worse? I plump for "Scientific timing" because I consider it to score -100%, or as close as one can reasonably get to complete disinformation, whereas "Temps Chanel" merely records 0% for the total absence of anything.

How do we rate the effort of Brunner and Sich? Ignoring the glossary and chronology (which are, at best, feeble), at least 71% of the pages are filled by pointless photographs which add nothing to the book. Of the remainder, 17% contains text and 12% illustrations that have some, albeit vague, value (dial views of watches). Such a crude measurement makes it clear that up to 83% of the book need not have been printed, without in any way affecting the reader's understanding or knowledge. It could have made an interesting and useful pamphlet, but instead its size and weight make it more valuable for bludgeoning someone to death than for reading.

But recently a new contender has appeared; Barrow "The pocket watch: restoration, maintenance and repair" which is 100% about watches and 100% bad. Unlike Purdom and Hagans, "Temps Chanel" and this book, it has the outstanding feature of misleading beginners and potentially causing serious damage. So, whereas the other books are bad, Barrow's book is dangerous and, I think, it is the only book I know of that should be banned and pulped.

R439 Brusa, G

La misura del tempo

L'antico splendore dell'orologeria italiana dal XV al XVIII secolo.

Italy: Trento, 2005, 28.5 x 21.5 cm, 669 pp, 600 col ill, 92 ill.

Catalogue (Italian).

[1st edition, review by Fortunat Mueller-Maerki] Mention Italian timekeepers to the average horological enthusiast and his mind will draw a blank. That is a pity, because the country has an incredibly rich horological history.

Italy actually played a key role in the various steps that originally brought us the mechanical timekeeper: Giovanni de Dondi, a physician from Padua starting in 1348, built an extraordinary weight driven, geared mechanism with an escapement, which was not a clock in today's sense of the word. It was an ultra-complicated planetarium that showed the seven planets. As the sun (and the moon) then was considered a planet it was designed as a "time calculator" rather than a timekeeper. Another keystone in the documentation of early Italian clocks is the "Almanus Manuscript", written around 1480 in Rome, describing in detail (with teeth-counts) some 30 different mechanical clocks. Later Galileo in Florence discovered the potential of the pendulum as a time standard. For the last 750 years Italians made and appreciated timekeepers of all kinds, and the craze in collecting high-grade, contemporary, mechanical wristwatches in the 1990s nowhere was as prevalent as in Italy.

However in spite of this there never was a major, comprehensive book published in English on the subject of Italian horology. A number of specialized monographs appeared in Italian over the years on specific clocks, or types of types of clocks, but even in their native language the Italians were missing the "opus magnus" on their horological history.

In 2005 finally to some extent this deficit was remedied: Guisepppe Brusa, the "éminence grise" of Italian horological scholars and Curator of horology at the Museo Poldi Pezzoli in Milano has created "La Misura del Tempo", undoubtedly the most ambitious and comprehensive temporary exhibition of timekeeping history ever produced, as well as the eponymous catalog. For a period of four months the Castello del Buonconsiglio, a provincial museum in Trento, hosted a magnificent assembly of 360 extraordinary objects on loan from 30 major Italian (and five foreign) museums documenting horological history from 1450 to about 1800. This included some 30 plus watches, a similar number of historic tools, a dozen old horological books, about 35 sundials or astrolabes, as well as about 20 horological themed major paintings, but the lions share were mechanical clocks of every description.

The exhibit was clearly worth a special trip and drew enthusiastic horologists to Trento last fall. For the majority of us who could not make the trip we still can get the consolation prize; the published catalog. In many ways the catalog is as big an achievement as the exhibit. The richly produced book consists of the catalog itself that has large, color photographs of every item exhibited (sometimes multiple images per object), plus short descriptions, covering some 320 pages. The object descriptions - while in Italian - can be followed relatively easily by an English speaker with the help of a dictionary.

The catalog proper is preceded by a 340 page, richly illustrated collection of articles on various aspects of timekeeping history by many of the world's foremost experts in their fields (including Silvio Bedini, David Thompson, John Leopold, Luigi Pippa and Antonio Lenner). While the text of the articles may be of limited interest to those who don't read Italian, it must be noted that the article section includes also 320 additional illustrations, many large and most of them in color. Those additional pictures alone make it worthwhile to get the book.

There finally is a major book documenting the highlights of Italian horological history. And the excuse

for ignorance on that subject will no longer be valid. Guiseppe Brusa deserves the appreciation of the global horological community for the years of work that must have gone into preparing both the exhibit and the publication.

R440 Brusa, S**L'arte dell orlogeria in Europa**

sette secoli di orologi meccanici

Italy: Bramante Editrice, 1982 (1978), 4to, 491 pp, 826 ill, 134 plates.

History (Italian).

The first edition was of 3000 copies (numbered?).

General history of European horology.

Said to be an important work.

R441 Bruton, Eric**Clocks and watches**

London: Paul Hamlyn, 1968, 28.5 x 21.5 cm, 140 pp, 167 ill, 29 col ill.

History (English).

Nine chapters: The first timekeepers (12 pages), Birth of the mechanical clock (10 pages), Invention of the spring (12 pages), The story of the watch (16 pages), Clocks grow up (20 pages), Navigating by time (12 pages), Clocks and watches in North America (10 pages), Striving for accuracy (12 pages) and Users and uses (16 pages).

[1st edition, good] This is a competent, introductory history of horology. Technical aspects are ignored and the mechanisms of clocks and watches are not considered. There is nothing outstanding and, not surprisingly, a few dubious statements, but it is well written and comprehensive. Despite its age, it is a good and useful book for the beginner.

The chapter "The story of the watch" gives a good overview of the early history of watches. It contains the one bit that I found especially interesting; a plate and captions showing Bilston boxes, false watches made in England.

"Navigation by time" is a good biography of John Harrison with a few passing remarks about other makers, including Spanish attempts to set up a chronometer manufactory.

"Clocks and watches in North America" is weak, with only 2 1/2 pages on watches with no illustrations. However, Bruton notes that in 1968 "early American watches have small interest for the collector" which might justify this inadequacy.

Finally "Users and uses" informally discusses the problem of accuracy and watch adjustment, providing a nice description for the novice.

R442 Bruton, Eric**Clocks and watches 1400-1800**

London: Arthur Barker, New York: Praeger Publishing, 1979 (1967), 8vo (11.25 x 8.5 inch), 209 pp, 110 ill, 38 plates (138 pp, 32 ill, 38 plates with 110 ill).

History, makers (English).

The section on watches covers watch dials and decoration, technical changes and how to buy a timepiece. The appendices include sources of information, eminent makers and guide to dates.

[1st edition reprint, good] Said to be interesting.

R443 Bruton, Eric**Collector's dictionary of clocks and watches**

London: Robert Hale, 2007 (1999), 8.5 x 5.5 inch, 304 pp, ill.

Dictionary (English).

Printed in 1999 and 2007.

A dictionary providing descriptive explanations of terms and brief remarks about significant people.

A new, expanded edition of "Dictionary of clocks and watches".

R444 Bruton, Eric**Death in ten point bold**

London: Herbert Jenkins, 1957, 7.5 x 6.5 inch.

Novel (English).

A crime novel.

He also wrote "Die, darling, die!" (188 pp, 1959), "The devil's pawn" (1962), "The fire bug" (1967), "The hold out" (1961), "The wicked saint" (1965) and "Violent brothers" (1960).

R445 Bruton, Eric**Dictionary of clocks and watches**

New York: Bonanza Books (London: Arco Publications), 1963 (1962), 20.0 x 13.5 cm, 201 pp, 30 ill, 8 plates.

Dictionary (English).

A dictionary providing descriptive explanations of terms and brief remarks about significant people.

[1st edition, fair] Somewhat superficial, but a good introductory book for the new collector. It is worth reading once and then passing on to a friend.

There are quite a few books which produce this feeling in me. After a while I can't remember what is in them and, when I go to them to find out something, they are unhelpful. But when I first perused them I often felt they were very good. I think this shows that they are just for novices. Unfortunately I sometimes feel they are uninspiring and unlikely to foster the desire to learn more. But such an emotive response is,

of course, very personal and what bores me may well excite someone else. However, this dictionary didn't bore me.

R446 Bruton, Eric**The history of clocks and watches****The illustrated history of clocks and watches****Histoire des horloges, montres et pendules****Uhren geschichte schönheit und technik**

London: Little Brown, Time Warner Books (USA: Little Brown) (Germany: RVG, Rheingauer Verlagsgesellschaft) (England: Orbis Publishing), 2000 (1979), 29.5 x 22.5 cm, 288 pp, ill, plates, slip case.

History (English, French, German).

Separate language editions. Printed in 1979 and reprinted in 1989, 1993 and 2000. The German edition was printed in 1982.

A general, non-technical and descriptive history of horology.

Eleven chapters: The earliest clocks (20 pages); The advent of clockwork (16 pages); Domestic clocks (20 pages); European mechanical clocks (18 pages); The time at sea (22 pages); The development of the watch (33 pages, from the beginnings to about 1830); Mass production (27 pages); The technological age (16 pages); Watches for the people (22 pages, 1800 to the present); The science of time (30 pages); and Great clocks of the world (40 pages).

There is a 4-page glossary, a 3-page bibliography. and index.

In addition to the 2 chapters on watches there are also 4 pages on tools which are relevant.

[1st edition reprint, good] *An interesting book and worth reading. It is well written with some good material and it has enough depth to be a useful beginner's reference.*

The chapter on the development of the watch has a good, anecdotal history, although it is a bit glib in places. But I was stunned to read "rack levers were made until about 1830, when Liverpool makers began to use detached levers, based on Breguet's designs". What about Massey? How did Breguet's ideas reach Liverpool, considering that the city mainly manufactured rough parts and cheap watches? And what is the significance of Glasgow's comment on the origin of the English lever in his book "Watch and clock making"?

The later history is enjoyable. A brief discussion of Dennison and American developments (including dollar watches) is followed by a study of the problems in the English industry, Swiss competition and the work of Roskopf.

I am very frustrated by the fascinating cover photographs of a clock inscribed "Chas McDowell, Inventor of the helix lever". I couldn't find any mention of it in this book. (However, later I found that the clock is mentioned and gearing described in Beckett "A rudimentary treatise on clocks, watches and bells".)

Unfortunately the 1993 reprint is marred by the poor quality of the illustrations (perhaps the first edition was better). The bibliography is quite comprehensive but without any guidance for potential readers.

[Remark] *Let me digress. Spike Milligan, an English author, once introduced himself "I am Spike Milligna, the well known typing error". The most famous typing error in horology is the Nuremberg egg. Bruton suggests the translator confused "ueurlein" with "eierlein", but this doesn't make sense as the translator was presumably reading the French words; it must have been a transcription error by the typesetter. But it makes a good story and is much better than Bruton's own error when he writes "Berthoud, the great French hotologist"!*

I think we tend to forget that in the old days manuscripts were hand-written and then painfully typeset by someone ignorant of horology. Most errors are simple mistakes. For example, Robertson lists books written by Swan and these are clearly the result of a typesetter misreading his hand-written notes; there is very little difference between Swan and Sivan when the "i" and "v" are run together. And German eggs and clocks could be easily confused by a printer struggling with the marks from a spluttering quill.

Indeed, most of the small errors in books are just such forgivable mistakes, although Mercer makes dubious use of Earnshaw's. They only become significant when they are mindlessly repeated in later books and develop into myths. Most will not, and I don't think we will ever have a spate of hotologists or books by Swan. But unfortunately eggs have been on the watch collector's menu for a long time.

R447 Bruton, Eric**Watch and clock year book**

England: NAG Press, 1965 (ca 1958), 21.5 x 14.0 cm, 104 pp, ill (144 pp, ill).

History, identification, miscellany, repair (English).

The issues for 1958, 1959 and 1961 to 1965 have been indexed. No references to issues before 1958 or after 1965 have been found.

An annual publication edited by Eric Bruton. In addition to directories (of horological firms, material dealers and trade names), each issue contains several articles and other snippets.

[1958 to 1965, good] *Amongst the advice is to always use sperm oil with red stuff, never olive oil. And, more usefully, how to fold tissue paper squares to make finger cots to avoid touching cleaned work. There are also many contemporary, now historically interesting articles, like the one which wondered if electric watches would ever become common! And another comparing current and past repair practices.*

In addition, three issues (1958, 1961 and 1962) contain lists of makers, updating Baillie "Watchmakers and clockmakers of the world volume 1"; presumably they appear in Loomes "Watchmakers and clockmakers of the world volume 2". Overall, it is interesting if you have it.

R448 Buchanan, N**The watch buff's book of trivia**

465 fun facts about timepieces

USA: Watch Buff Books, 2005, 21.0 x 11.0 cm, 176 pp, no ill.

Miscellany (English).

465 questions and answers arranged by topic: Presidents and prime ministers; Time flies; On screens large and small; Watches and war; Drive time; Watches and royalty; Founding fathers; Game time; Watches and water; Time and the arts; Where oh where?; Style and design; Watches and crime; Watches and writers; What's in a name; Americana; The marvels of mechanicals; Quartz queries; Technology titbits; Movement improvements; and Odds and ends. There is a list of sources and an index.

[1st edition, good] The trivia that fascinates one person will be boring to another, but this book covers a wide range of topics and there is probably something for everyone, despite it having an American focus.

R449 Buchau, Christian von**Die taschenuhren der E. Howard & Co.**

Norderstedt (Germany): Books on Demand, 2010, 21 cm, 224 pp, 153 ill.

Illustration, identification, history (German).

[1st edition, review by Fortunat Mueller-Maerki] Over the years a fair amount of information has been published on E. Howard pocket watches, including the NAWCC 2005 publication of the proceedings of the 2002 NAWCC symposium, which included Clint Geller's excellent "A Study of E. Howard Watchmaking Innovations 1858-1875" (which see).

So why would an American Howard collector be interested in a new German language publication covering much of the same subject matter? Because Howard fans often are fanatics, and care deeply about the minute differences in the many models of pocket watches produced by Howard.

The German collector Christian von Buchau in his text covers much familiar ground of Howard's corporate history. He classifies his countless examples into 17 different types of movements, and pages 40 to 98 give numerous movement illustrations of each type. While he provides no source information for his many movement images, I suspect that many of the examples shown have not been previously published, and may have been in Europe for a long time, and therefore may not be familiar to the American Howard community. In addition, following the text portion of the book there is a 52 page section called "Gallery", consisting of good full page color illustrations of 26 Howard pocket watches presumably from the author's own collection, each shown dial-side and movement-side. That documentation alone may make it worthwhile to get the book, even if you can not follow the text.

R450 Bucher, R; Pfeiffer-Belli, C; Ruediger**IWC pilot watches, flying legends since 1936****Uhrenlegenden - die fliegeruhren von IWC**

Uhrenlegenden - die fliegeruhren von IWC

Ulm: Ebner Verlag, 2006, 27 x 20 cm, 96 pp, ill.

History (English, German).

R451 Buckle, H**Clockmakers, watchmakers**

early days 1884 1902 1918 1940

Saskatoon: H Buckle, ca 1984, 8vo, 74 pp, ill.

History, makers (English).

A history of watchmakers in Saskatoon including a list of retail and manufacturing jewelers to 1930. written by a member of the British Horological Institute and the Antiquarian Horological Society.

R452 Buckley, F**Old watchmakers**

England: Moore & Edwards, 1929 to 1930, 8vo, 7 volumes each approx 8 pp, plates.

Biography, history (English).

A series of pamphlets titled:

"Old Manchester clock and watchmakers, 17th and 18th centuries" (11 pp, 1 plate, 1929)

"Old watchmakers: John Ellicott" (6 pp, 10 ill, 1930)

"Old watchmakers II: George Graham" (6 pp, 1 plate, 1929)

"Old watchmakers III of London" (16 pp, 1929)

"Old watchmakers III of London, biographical notes" (5 pp, 1930)

"Old watchmakers IV: Daniel Quare" (6 pp, 5 ill, 1930)

"Watch and clockmakers of Northumberland and Durham of the seventeenth and eighteenth centuries recorded in newspapers, directories, etc." (11 pp, 1930)

R453 Buffat, E**History and design of the Roskopf watch****Historique et technique de la montre Roskopf**

Australia: Richard Watkins (Geneva: Journal Suisse d'Horlogerie), 2007 (1914), 9.5 x 6 inch, 51 pp, 43 ill (98 pp, 43 ill (11 on 7 plates), 2 portraits).

History, technical (French).

First published in French (98 pp, 43 ill). The English translation by Richard Watkins (51 pp, 43 ill) is available as a PDF file.

In 2 parts. Part 1 (21 pages) is a biography of G.F. Roskopf and a history of the design and manufacture

of the Roskopf watch. Part 2 (26 pages) is a technical description of the watch. It covers the design of the train and motion-work, the escapement, the keyless mechanism, the barrel and mainspring, the case, manufacture, and complications (center-seconds, sub-seconds, chronograph and visible balance). A large section in Part 2, on the design of the escapement, is written by C. Berner.

[English translation, very good] *The first part is a very good, detailed biography of Roskopf and the development of his calibre. Included are extracts from letters illustrating the problems he faced in trying to bring his idea to fruition.*

It is interesting to read about Breguet's involvement in promoting Roskopf's watches, something that has been ignored in all the books about Breguet that I have read!

The second part provides detailed descriptions of the basic calibre and later changes to it, primarily modifications to the motion-work and the addition of mechanised hand-setting (which was missing from the first watches). It includes detailed instructions for drawing a Roskopf pin-lever escapement (by C. Berner). Information about the free mainspring and case design are provided.

Roskopf's watch was based on simplifying the movement, and so later changes which introduced complications were not in the true spirit of the design. Buffat describes some of these (mainly the addition of a seconds-hand and a chronograph).

This book is by far the best description of Roskopf watches that I have read. Considering the importance of Roskopf, the lack of good information is surprising. Watchmakers who had a far smaller impact on horology and society in general are feted in many large, opulent books. But Roskopf, who created an industry which produced millions of watches, has been ignored. Until recently, Cutmore's books have been the main source of information. Then Albin Schaefer's "The proletarian watch" has made a major contribution by providing a photographic record of Roskopf watches supplemented by a useful biography and reproductions of patents. But Buffat's book is the only serious study of the calibres. Together with Schaefer's book, we at last have good documentation of this fascinating person and his work.

R454 Buford Harris, P

Modern watch and clock repairing

Chicago: Nelson Hall, 1972 (1944), 23.5 x 16.0 cm, 250 pp, 148 ill.

Repair, tools (English).

A 1941 printing has been mentioned.

66 short lessons, the last two being additional illustrations and 11 blank pages for self-help notes. Except for 17 pages on clock repair and 11 pages on organising work, the remainder concerns watch repair. Written as a self-help book for novices.

[1st edition reprint, mediocre] *Harris makes things seem far too easy by glossing over topics and making too many assumptions. A couple of pages each on lathes, balance staff fitting and staff making is simply not enough, and the lessons on escapement adjustment confused me. It reads a bit like cookery book and I think it would be very difficult to learn much with this book alone. It does contain a bit of useful material and the diagrams (supplied by watch companies) are very good.*

The introduction says "it is usually possible to start making money at once while you are learning" and this summarises the book; how to make money rather than how to become a skilled workman. As there are far better books I don't think there is much point reading it.

R455 Bühler, Henri

Le pays de Neuchâtel - horlogerie

Neuchâtel: Comité Directeur du Centenaire de la République Neuchâteloise, Paul Attinger, 1948, 21 x 14 cm, 106 pp, 20 plates (with 34 ill).

History (French).

Also given as 3 plates.

The development of the horology industry in Neuchâtel published on the occasion of the centenary of the Republic.

R456 Bulgari

Bulgari

Italy: Nava Web, ca 1990, 4to, 52 pp, ill.

Catalogue, price guide (English, French, German, Italian).

Modern catalogue with illustrations and brief descriptions of 69 watches and pens. Printed on black paper.

Bulgari recently paid someone to write a novel including frequent mentions of the company and its products. But as I feel some "horological" books are little more than advertisements, maybe it isn't a new idea.

R457 Bull, S

Stackfreed 1540-1640

Basel: Dr. E. Gschwind, 1979, 8vo, 114 pp, 75 plates.

Exhibition, illustration (English, French, German).

The text is in English, French and German.

Exhibition of watches and clocks with stackfreeds.

This is probably part of Sturm "Montres du Genève ...", which see.

R458 Bulle, P**Recueil de procédés illustres de rhabillage d'horlogerie**

Besançon:, 1941 (1904), 8vo, 311 pp, 150 ill (303 pp) (244 pp) (171 pp, ill).
Repair (French).

At least 5 editions; 1904, 1909, 1917, 1927, 1937 and 1941.

Collection of practical procedures for the repair of watches and their cases. Including cylinder and lever escapements, pivoting, screws, etc.

"Recueil de procédés pratiques de rhabillage d'horlogerie" has been listed without an author for the dates 1904, 1909, 1917 and 1927. The 1927 printing has been listed with Millot Freres as editors and "published with the co-operation of Philippe Bulle and numerous practicians". The similar title with Bulle as the author has been listed for 1937 and 1941.

R459 Bulova**How to sell a watch**

USA: Bulova Watch Co, 1954, 24 pp, ill.

Advertising (English).

R460 Bulova**Self-winding watches**

USA: Bulova Watch Co, 1950, 7 x 5 inch, 31 pp, ill.

Repair (English).

Description of action and instructions for the disassembly and assembly of Bulova automatic mechanisms.

R461 Bulova School of Watchmaking**Training units**

USA: AWI (USA: Bulova School of Watchmaking), 2003 (ca 1945), 28.0 x 22.0 cm, 344 pp, ill (330 pp, 447 ill) (264 pp, 404 ill).

Repair, tools (English).

Frequently identified by the title of the first unit "Preliminary training unit".

The Bulova school was established in 1945 by the son of Joseph Bulova (see also Lipton "Aim for a job in watchmaking"). It produced training manuals over many years. Editions were published in 1945, 1947, 1948, 1952 (4th), 1954 (5th), 1968 (9th, 330 pp, 438 ill, 40 unnumbered ill, 22 sections), 1972 (10th, 344 pp, 18 sections), 1975 (11th, 344 pp) and 1980 (12th). There is a modern reprint of the 13th? edition.

The 1947 edition consists of 16 units: "Preliminary" (dexterity), 1 (staking balance staffs), 2 (truing balance wheels), 3 (removal of broken balance staffs), 3A (turning balance staffs), 3B (stem making), 4 (burnishing balance pivots), 5 (poising balance wheels), 6 (hairspring truing), 7 (hairspring vibrating), 8 (overcoiling), 9 (watch assembly), 9A (mainspring barrel assembly), 9B (friction jewelers), 10 (escapement) and 11 (finishing).

The ninth edition (1968) has 18 units and 2 additional parts: Supplement to units 10 and 10A (glossary of terminology) and General repair information. The units are: "Preliminary" (dexterity), 1 (staking balance staffs), 2 (truing balance wheels), 3 (basic turning and removal of broken balance staffs), 3A (turning balance staffs), 3B (stem making), 4 (burnishing balance pivots), 5 (poising balance wheels), 6 (hairspring truing), 7 (hairspring vibrating), 8 (overcoiling), 9 (watch assembly), 9A (mainspring barrel assembly), 9B (friction jewelers), 9C (wheel train assembly), 10 (escapement), 10A (how to repair escapements, including escapement height relationship checks and escapement horizontal relationship checks) and 11 (finishing).

[2nd edition, 1947, excellent] These notes were written to support practical work done under supervision. Consequently many topics were not included because they did not require additional material and demonstrations to the students were sufficient.

But what is included are the more difficult tasks of staff making and replacement, balance truing and poising, hairspringing, stem making, barrel repairs and escapement examination. The explanations are excellent with large, clear illustrations. Although not a complete text book, it deserves to be read and used in conjunction with books that explain other aspects of repair work.

[9th edition, 1968] The ninth edition is basically identical to the second. Unit 3 has new sections on turning, but the removal of grooved staffs and use of special staff punches have been omitted. Unit 4 has been expanded to include preparation of burnishers, the Jacot tool, balance chucks and straightening bent pivots. The new Unit 9C covers the principles of gearing, trains, truing train wheels, staking wheels to pinions and the safety pinion. Unit 10A describes lever escapement examination and repairs. Finally, the general repair information has a number of check lists of things to be examined during repair and basic cleaning instructions.

Later editions are said to include the Accutron watch.

R462 Bulova Watch Co; Lawrence**Its time you knew, strange and interesting facts**

USA: Bulova Watch Co, 1944, 8vo, 254 pp, ill.

Miscellany (English).

A general question and answer facts book with some information related to Bulova watches and horological history. It has illustrations and questions, with the answers given in the back.

The majority of the content relates to little known facts and world war II. It was compiled from a regular newspaper feature and probably distributed free of charge as advertising.

- R463 Bures, J**
Hodinove stroje
 Prague:, 1973.
 Description (Polish).
 Clock and watch movements.
- R464 Burki, A; Ebel, L**
A l'heure des petites mains
 l'embauche d'ouvrières italiennes: enjeux d'une politique d'emploi sexuée dans l'horlogerie, 1946-1962
 2008, 21 x 14 cm, 262 pp.
 History (French).
"The recruiting of Italian workers: stakes of a policy of employing women in the watchmaking, 1946-1962.
This study makes it possible to understand the little known migratory policy and the policy of recruiting women."
- R465 Burky, C**
Rayonnement de la Suisse
 Switzerland: Omega, 1948, 27 x 20 cm, 105 pp, ill.
 History (French).
 Published on the occasion of the centenary of Omega, the book traces Swiss history and economy through the horology industry.
- R466 Burlingame, G**
Dictator clock, 5000 years of telling time
 New York: MacMillan, 1966, 8vo, 166 pp, ill, fld map.
 Miscellany (English).
 Why time is a tyrant.
"This book offers an interesting history of keeping time and time pieces."
- R467 Burton, SH**
The watch collection of Stanley H. Burton warts and all
 London: Batsford, 1981, 25.5 x 19.0 cm, 456 pp, 208 ill, 14 plates.
 Collection, makers (English).
 Illustrations of some 900 watches, 70 of them in colour, with photographs of over 600 movements, each with detailed text annotations, and with a separate section on cocks, keys and astrolabes.
Reputedly this book has poor illustrations and inadequate text.
- R468 C, JM**
Table qui indique le nombre des dents nécessaires a la roue de rencontre
 a raison du nombre de celles qui se trouvent aux trois roues qui la précèdent, et aux ailes de leurs pignons; a la suite de quoi l'on trouvera plusieurs autres articles très-commodes pour les artistes horlogers.
 Genève: M Bry-Calas, 1810, 8vo, 4 pp, 72 tables.
 Technical (French).
 Tables giving wheel, pinion and escape wheel numbers, fusee turns, etc. for verge watches.
- R469 Calame, C**
L'échappement a ancre suisse avec repos équidistants
 son trace graphique et sa représentation
 Geneva: (Genève: Journal Suisse d'Horlogerie), 1897 (1880), 8vo, 8 pp, 3 plates.
 Technical (French).
 Printed in 1880, 1882 and 1897.
 The equidistant Swiss lever escapement, its drawing.
- R470 Calkins**
Seven decades of character comic watches
 USA: Calkins Antiques, 1989, 8vo, b/w ill.
 (English).
There might be such a book, but it is hard to locate any information about it and I suspect it is a mistake.
See also Brown & Thomas "Comic character timepieces - seven decades of memories".
- R471 Callet, F; Preud'homme, LB**
Essai sur les échappements
 1780, 10 x 7.5 inch, 42 pp, 3 plates.
 Technical (French).
 Baillie and Tardy give 4 plates. Robertson "The evolution of clockwork" gives the date as 1778. Largely mathematical essay on the cylinder, double virgule and Lepaute's pin-wheel escapements.
See Baillie "Clocks and watches: an historical bibliography".
- R472 Cambiat, L**
Traite d'horlogerie, sur les arrêts de la montre cylindre
 Annonay: Ranchon, 1866, 19.0 x 11.5 cm, 46 pp.
 Technical (French).
 Treatise of horology, on the stoppages of the cylinder escapement.

R473 Camerer Cuss, TA

Camerer Cuss and Co 1788-1988

London: Camerer Cuss & Co, 1988, 10.75 x 8.5 inch, 63 pp, 79 ill.

History (English).

Account of the history of the company at the time of its bicentenary.

[1st edition, review by Jerry Laux] This book is a nostalgic look back at their two hundred years of continuous existence - a remarkable record of longevity.

In 1788, with English horology at its zenith, Camerer Cuss & Co. was established to import and sell Black Forest clocks. Over the next century, the firm prospered and expanded its line to include English, Swiss, and American clocks and watches. This expansion occurred at a time of increasing difficulty for British watch and clockmakers and dealers. In retrospect we can see that much of the firm's success was based on catering to the growing middle class created by the industrial revolution. At the time, however, this was not so apparent. Thus many of their more famous competitors failed while making and selling truly magnificent pieces for the shrinking upper class market. Meanwhile, bolstered by their growing middle class clientele, Camerer Cuss could safely operate at the upper end of the market as well.

The flavor of those times is well captured in this profusely illustrated book, and the story of the firm is continued up to the present. The text is based on original shop records still maintained by the author - the sixth generation of the founders. My only criticism is that the book is too short. We are given a tantalizing hors d'oeuvre when a five course meal is called for. At the end of the history there are twenty-two pages of photos, mostly in color, of some of the fine clocks and watches with which the firm now deals.

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R474 Camerer Cuss, TA

The English watch 1585 - 1970

England: Antique Collectors Club, 2008, 30.5 x 25.0 cm, 503 pp, 830 col ill, 14 figs.

History, illustration (English).

Divided into 6 periods illustrated with photographs of watches in Museums and private collections:

The first period 1590-1630, 30 pages (4 pages of text, 15 watches).

The second period 1630-1675, 56 pages (8 pages of text, 31 watches).

The third period 1675-1725, 78 pages (10 pages of text, 50 watches).

The fourth period 1725-1775, 78 pages (6 pages of text, 61 watches).

The fifth period 1775-1825, 120 pages (9 pages of text, 83 watches).

The sixth period 1825-1970, 80 pages (10 pages of text, 54 watches).

Each watch is illustrated by several photographs (which are called a "plate" even though they may be on more than one page) and has a detailed description.

There is a 34 page glossary, index of makers and retailers, index of case makers, index of engravers, chasers and enamellers, and a general index (which is primarily a list of names).

[1st edition, good?] As a photographic essay this book is excellent. But ...

Some years ago I realised that the best way to review a book was to find out the author's aims and then see how well those aims were achieved. However, all too often the author does not state what he is trying to achieve and it can be difficult to deduce what was in his mind.

This book has two statements of purpose.

First, Camerer Cuss writes in his introduction: "This book is designed to appeal to those fresh to the subject as well as those more familiar with it". That may be true, but what is the purpose? What makes it appealing? What does the book do for those fresh to the subject? All we are told is that it is for everyone.

Second, in the foreword (by Hugh Roberts) it is stated "Not only does this study incorporate enlightening information about the range of skills involved in the making of a watch - from the construction of movements to the finish of the cases - but it makes this important subject both approachable and stimulating by describing with clarity and precision the evolution of English watchmaking and the ground-breaking inventions of our leading makers". It appears Roberts was reading some other book. There is no useful information on watch and case making and the skills they involve. Perhaps more importantly, the book does not describe the evolution of English watchmaking, with clarity and precision or otherwise. What it does do is describe the evolution of the English watch, a different matter altogether. My first reaction was that this book is a superb auction catalogue of watches that are not for sale, and the closest parallels to it are the Antiquorum catalogues. Both have wonderful photographs, organised chronologically, with factual captions describing salient features, and often a few short biographical and historical comments. Like auction catalogues, the reader (as opposed to potential buyer) tends to be overwhelmed and after a while begins to leaf through the book, simply admiring what is on offer. And what is seen are exclusively very high quality watches. There is not one ordinary watch, which is why there is not one wrist watch!

Like a good auction catalogue, the photographs are supported by a little text preceding each section (a total of 47 pages out of 503). This text is divided into parts: Outline (some remarks on watchmaking at the time or general historical points), Early makers (giving a few names), The case (general comments on style and decoration), The dial and hand (general comments on style and decoration), The mechanism (a few remarks on the movement and its decoration), and Timekeeping (how well we can expect watches from the period to keep time). The notes on the mechanism include a discussion of Hooke versus Huygens and a few other points. There is so little text it is inevitably superficial and inadequate; again, more

like an auction catalogue than a scholarly work. Camerer Cuss does try to strengthen his words by references. Most are to articles in the journal *Antiquarian Horology*, to which I, and I expect many readers, do not have access. A few books are mentioned, but often with incomplete or incorrect references (for example, Marryat) and the main ones of note are Landes "Revolution in time" and Weiss "Watch-making in England 1760-1820". There is no bibliography and the reader who is "fresh to the subject" receives no further help.

Much of the book is about decoration; perhaps it should have had the title "The decoration of the English pocket watch case and movement". The vast majority of photographs and their captions for the periods 1585 to 1825 focus on the case. Those that show the movement are concerned with decoration and not mechanism. For example, the early watches have very large escape wheels compared with later verge movements, but this is not mentioned let alone explained. Also there are 2 or 3 photographs of repeater mechanisms, but they are not described and the reader is referred to Wadsworth "A history of repeating watches", which is inadequate. (Plate 94 is particularly interesting because it appears to strike hours, quarters, and 0 to 3 five-minutes within the quarter, which would require 2 superimposed racks as in the better half-quarter repeater. Also both snails have small extensions at the ends of their steps which appear to serve no purpose. All we can do is admire the complexity without understanding. And Plate 137 hides a fascinating mechanism of which the reader will certainly be unaware!) In a couple of places unusual trains or other features are mentioned, such as a motion work with 16 wheels and (Plate 63) "a very long wheel train and a remote canon pinion", but no details and no photographs are provided, and the reader learns nothing about them.

Of course, many of the later watches are decoratively uninteresting, and so for a substantial part of the post 1825 illustrations the focus shifts to the escapement (and later to complications). Unfortunately escapements are normally not visible and so there are many excellent photographs of movements that do not display the central feature. An outstanding example is that a few watches are stated to use Massey's type IV escapement (for example, Plate 242), but without an explanation of this rather strange escapement the reader can have no understanding of the significance or otherwise of the watches. Also, the few views of complications like chronographs enable us to see the mechanisms, but they are not explained and so are largely unintelligible.

I suspect Camerer Cuss and the publisher did not think much about what they were trying to do. It seems obvious to me that decoration and style is best taught comparatively. That is, the book should have commenced with a long, detailed chapter illustrating the development of styles in each aspect of the watch and case being considered. For example, a section on balance cocks would give photographs, side by side, of cocks from all of the periods with an explanation of the changes. After the reader has been shown these changes he would be able to appreciate the photographs of particular watches which are used to illustrate such points. Likewise, appreciation of escapements, chronographs and repeaters only comes after the reader has learned something of these mechanisms. Instead of teaching, Camerer Cuss has simply displayed and has left all the hard work to the reader. Hard work that many, including myself, will not bother to do, and without which the book is reduced to an exquisite coffee-table volume to be flicked through occasionally.

The glossary at the end is symptomatic of this failure. It has been copied from "The Camerer Cuss book of antique watches", but all the "foreign" references and a few other entries have been deleted; and some bad definitions remain. What is its purpose? There are illustrations of only some escapements, but not all are explained and Massey's escapements are not included. There are many technical terms which would be meaningless to the novice because their significance depends on a reasonable knowledge, and with that knowledge the need for definitions ceases. That is, glossaries don't teach. They are of little use to the ignorant and no use to "those more familiar".

The real purpose of a glossary is to absolve the writer who has failed to provide an adequate text; it enables him to pretend that all has been covered adequately when, in fact, it has not. If a term is so important that it needs to be explained, then it should appear in the text. But as soon as it is placed there it usually becomes necessary to rewrite the surrounding text to integrate it. And that often shows up serious faults. For example, the only way many of the watches at the end of the book can be explained is by their escapement. In which case this creates the need for an explanation of these escapements and consequently a long and thorough section on them and on other complications. Of course the problem can be avoided by providing a few good references or a glossary, but then the book is no longer for "those fresh to the subject"!

This is a "Catch-22". It is perfectly reasonable for Camerer Cuss to write a book for beginners which is limited to certain aspects of horology, in particular illustration and decoration, and to rely on references for other areas. But then it is no longer a book for beginners because they should first read other books and so become fairly competent! Unless, of course, such readers are expected to admire the lavish without understanding.

R475 Camerer Cuss, TA

The Sandberg watch collection

Geneva: , 1998, 41 x 30 cm, 512 pp, 1000 ill, slip case.
Collection, description (English).

Deluxe limited edition of 100 copies and ordinary edition of 500 copies.
Description of the collection of 423 timepieces dating from 1540 to 1900.
See also *Antiquorum* "The Sandberg watch collection".

R476 Camerer Cuss, TP

Early watches

England: Country Life Collectors Guides, 1971, 19.0 x 13.5 cm, 64 pp, 66 b/w ill.

Description, history (English).

A history of watchmaking in Europe from the renaissance to the late 18th century (1500-1775). Four chapters: The first watches 1500-1600 (20 pages), The 17th century before the balance spring (7 pages), The introduction of the balance spring (9 pages), and The search for precision 1700-1775 (25 pages).

[1st edition, good] *A competent history of watches to 1775, brief but well-written. The black and white photographs are barely adequate, but they are cross-referenced to the text, something that unfortunately many writers overlook.*

Although it might be a useful book for a novice, far better illustrated books exist which would be preferable.

R477 Camerer Cuss, TP

The Country Life book of watches

England: Hamlyn (London: Country Life), 1967, 10 x 7.5 inch, 128 pp, 130 ill, 4 col plates.

History, illustration (English).

Seven chapters: The first hundred years, 1500-1600; Decorating the watch, 1600-1675; Introduction of the balance spring, 1675-1700; English pre-eminence and the French challenge, 1700-1775; The struggle towards precision, 1775-1830; The lever escapement; and The art and mystery".

[Review by Henry B. Fried] *Camerer Cuss' first book, "The Story of Watches", was an authoritative work on the history and development of the watch. This new book's message, however, is better told, certainly of better quality and the style is on a professional level. Although the foreword states that this new book has the limited purpose of supplying fundamental information, nevertheless it should be a satisfactory addition to the library of the sophisticated collector and is highly recommended to the beginning collector of watches.*

The history of the watch from its probable start in the late 15th century is recounted with photographs of appropriate examples. The early German drum and spherical watches are clearly pictured on good glossy paper and progressive examples of clockwatches, oval-watches and others are included.

The introduction of the hairspring by Huygens changed the position of the watch as a chronometrically "poor relation" to its brother-clock to a reliable timekeeper with strong navigational potentials later realized. In this chapter he relates the claims to the introduction of the balance spring and favors Huygens over Hooke. The necessary technical discussions are simply told and easily understood. The influence over Hooke of Tompion is related in attempts for a more precise timekeeper. How the watch improved from a three to a four wheel train, from a running time requiring winding twice daily to one running continuously for 26 hours. The gradual changes in case designs, dial ornamentation and novelty are told in this chapter on the balance spring.

The various schools of enameling are explained with the help of photographic examples, some in color. Also, the counterfeiting of English watches, he says, are of Geneva and Dutch origin, giving some methods of detection.

After the advent of the hairspring, makers other than British used balance bridges instead of cocks.

The chapter on English pre-eminence and the French challenge (1700-1775) discusses the invention of the striking watch and precision timekeepers, jewelry, lubrication and escapement design. The following chapter, "The Struggle Towards Precision, 1775-1830", tells of the developments leading towards excellence in chronometry, placing equal emphasis on the contributions of both the French and the English. Another chapter on the lever escapement is well-told which details the contributions of Graham, Hautefeuille, Litherland, Mudge, Emery and others. Mention is also made of LeRoy's detached lever contributions, only recently uncovered. The rise of Switzerland as a formidable producer of watches is mentioned as a topic for this chapter in the table of contents but is practically neglected in its texts.

The last chapter, "The Art and Mystery", is concerned with the introduction of various novelties such as keyless-winding, self-winding, Breguet's parachute (shock-proofing), chronographs, tourbillons, karrusels, the English lever, American manufacturing ventures and finally "Swiss supremacy".

A very useful, illustrated glossary of terms associated with watches of all ages takes up 22 pages and is a worthy part of this volume. Full explanations are given with each term. While he lists "guilloche" with engine-turning, this term is defined in most dictionaries as engraving with rounded, interlaced patterns. The author borrows generously from his first book, "The Story of Watches." However, since this is long out of print, the new book might be considered as a completely revised edition of the first with vast improvements in presentation, paper, photographs, size and contents.

Mr. Cuss repeats an annoying habit of some authors in occasionally quoting lengthy passages in another language without accompanying translation. This places an unnecessary burden on most readers. However, the book is good reading, very attractive and at its modest price should be within reach of any watchmaker or collector.

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[Remark] *This book was extensively revised by TA Camerer Cuss and reprinted as "The Camerer Cuss book of antique watches", which see.*

R478 Camerer Cuss, TP**The story of watches**

London: MacGibbon & Kee, New York: Philosophical Library, 1952, 22.0 x 14.5 cm, 176 pp, 94 ill. History (English).

Twelve chapters: The Earth mother of time (7 pages), The finger of time (8 pages), The wheels begin to turn (7 pages), The birth of the watch (13 pages), Decorating the watch (9 pages), Two horological discoveries (12 pages), The new controller (22 pages), Friction (10 pages), The escapement (26 pages), Fashion in cases (14 pages), A treasury of inventions (20 pages), and The art or mystery (14 pages). With a short bibliography and index.

[1st edition, mediocre] Books are like wines. Some improve with age while others need to be read when new. This book is a vin ordinaire that is a long way past its "use by" date.

Camerer Cuss has written a good book. After a brief history of developments before the watch, he provides a competent study which concentrates on pre 1750 watches.

But since 1952 several much better histories have been published. And even if we decide reading the text is worthwhile, the photographs of watches are poor and of little use. Consequently, the discussions of decoration and design, which are the focus of the book and which rely on the illustrations, are inadequate.

R479 Camerer Cuss, TP; Camerer Cuss, TA**The Camerer Cuss book of antique watches**

Suffolk: Antique Collectors Club, 1996 (1967), 28.0 x 22.0 cm, 332 pp, 179 b/w plates, 8 col plates, 34 ills, 3 portraits.

Dating, description, history, identification, makers (English).

This book is a revision of T.P. Camerer Cuss "The Country Life book of watches" (which see) and is effectively the second edition of that book.

Published in 1976 and reprinted in 1987, 1994 and 1996.

Six short chapters providing a history of watches with cross references to the following plates: The first hundred years 1500-1600 (3 pages); Decorating the watch 1600-75 (5 pages); The introduction of the balance spring 1675-1700 (5 pages); English pre-eminence, the French and Swiss challenge 1700-75 (5 pages); The struggle towards precision (4 pages); The lever escapement (6 pages); Nineteenth century refinements, Europe, America and mass production (6 pages).

These chapters are followed by the 238 page pictorial chronology mainly of English watches; each plate is accompanied by descriptive text.

The book concludes with a history of Usher and Cole (16 pages), a glossary (27 pages) and an index.

[1st edition 1976, very good] One of the better general books giving an illustrated history.

The introductory chapters give a very terse, descriptive history. In most of the chapters the emphasis is on styles (of dials, cases, balance cocks, pillars, etc.) and dating watches by these features. Being so brief, the history is factual and requires some background knowledge. I think the beginner would find it hard work even with the extensive glossary; for example, the somewhat technical discussions of keyless mechanisms and karousels are hard to understand without some prior knowledge. Unfortunately there is no bibliography to enable this to be obtained. The last chapter, which considers machine made watches is only mediocre, the topic requiring much more to do it justice.

The excellent black and white photographs of movements and cases have clear, pertinent descriptions containing information about makers and specific features. These include escapements and remarks about forgeries and their detection.

The history of Usher and Cole is very interesting, especially for the description of the process of watch finishing. See also Usher & Cole "A watchmaking centenary 1861-1961" which is probably the same.

Finally, the glossary is very good.

[Remark] I have come to dislike glossaries and notes, and end notes especially. If something is worth including in a book why not put it in the text where it belongs? The glossary of this book is a good example, and only some of the terms are mentioned in the text.

R480 Camm, FJ**Watches, adjustment and repair**

London: George Newnes, USA: Dornay Press, USA: Technical Publishing Co, 1946 (1940), 19.0 x 13.5 cm, 166 pp, 148 ill.

Repair, tools (English).

The second edition was printed in 1941.

22 chapters: The origin of watches (17 pages); Tools and materials (8 pages); The parts of a watch (5 pages); The compensating balance and the hairspring (11 pages); Lever escapement (11 pages); Cylinder escapement (3 pages); Dismantling, fitting winding shafts (4 pages); Fitting mainsprings (6 pages); Cleaning a watch (7 pages); Further notes on cleaning (6 pages); Correcting a balance and pivoting (6 pages); Adjusting the balance and other parts (4 pages); Correcting a balance and repairing hairsprings (6 pages); Fitting teeth, jewels and hands (4 pages); Watch case repairs (6 pages); Practical hints (4 pages); Watch rate recorders (4 pages); Other watch testing machines (8 pages); The N.P.L. watch tests (8 pages); Timing a watch for a Kew certificate (14 pages); British hallmarks (5 pages); and A watch demagnetizer (4 pages).

There are 3 pages of tables and a 4 page index.

The book contains some information on American movements.

[2nd edition, poor] The book begins with a very short, incorrect history of watches and a long adulatory

history of Harrison and longitude. It then lists the tools and materials needed (without any information or discussion of their use), describes the parts of a watch, and goes on to explain compensation balances, balance springs and the lever and cylinder escapements. Much of it is sensible, but it is vague and confused, as though Camm was out of his depth.

Chapters 7 to 16 on repair are almost useless. Camm begins by explaining in 11 lines how to make a stem using a lathe (which he hasn't described) by turning (which he hasn't mentioned). He then discusses mainsprings, cleaning, balance staff pivoting, overcoiling balance springs, repairing wheels, friction jewellery and repairing cases. The methods are mainly correct, but all are explained superficially in a few lines. The feeling is that a lot has been copied without much understanding.

The final chapters are the most interesting; the design of timing machines (but no information on their use) and Kew certificate trials (which includes what pretends to be a study of adjustment). Oh, and there is a description of how to make a demagnetiser.

Most illustrations are not related to the text and they seem to form an almost entirely separate discussion. This was one of the first books I read, and I thought it was good. On re-reading it I now think it is poor. In the preface, Camm says his aim is to provide "an up-to-date book dealing with modern methods of repair, adjustment and timing". He doesn't. The reason is simple when we look at the list of books Camm has published, ranging from aircraft flying through radio construction and diesel engine repair to gear cutting. Camm was a technical journalist. And this book is a journalist's view of watch repair. It can be suspected that Camm visited a watch repair shop, observed what was done, asked a few questions and then wrote about it. As a result it is superficial and next to useless. The only interesting parts are the chapter on timing machines (written by A. W. Krause of the BHI) and a detailed discussion of Kew Certificates (included because Camm got someone to put his name on a tourbillon watch and adjust it for him).

As a piece of journalism for a magazine it is quite good. But as a repair book for "for those interested in horology, professionally or otherwise" it is outstandingly inadequate.

R481 Campbell, R

The London tradesman

being a compendious view of all the trades, professions, arts, both liberal and mechanic, now practised in the cities of London and Westminster. Calculated for the information of parents and the instruction of youth in their choice of business ... the whole delivered in an easy, familiar style suitable to the meanest capacity and containing rules worthy the knowledge and observation of persons of all ranks who are entrusted with the settlement of youth.

London: David & Charles (London: T. Gardner), 1969 (1747), 22.0 x 14.5 cm, 340 pp, no ill.

Miscellany (English).

At least 3 editions, the first in 1747 and the third 1757. There is a modern reprint of the 1st edition. A guide for parents choosing an apprenticeship for their sons, describing their work, working conditions, wages and laws.

Seventy-four chapters followed by an appendix and table of trades. Chapter 1 (24 pages) gives advice to parents. Chapters 2 to 72 describe trades, many chapters being sub-divided and describing several related trades. For example, Chapter 31 on architecture includes stone masons, brick layers, lock smiths and so on. Chapter 73 describes the constitution of London, the guilds and trade companies. Chapter 74 is advice to apprentices. The appendix contains sundry other trades.

The book includes a description of watchmaking trades, most of which is quoted in Weiss "Watch-making in England 1760-1820".

[1st edition reprint, excellent] *Delightful, fascinating, excellent; and I list it amongst my favourite books even though it only contains a few, not very useful pages which are relevant.*

Campbell begins with advice to parents and then examines the three learned professions concerned with healing the mind (divinity), the body (medicine and surgery) and society (law); the chapter on divinity being more concerned with education and human qualities than religion.

These 14 chapters end with remarks on the preliminary education desirable for the following, non-learned trades (most "education" being the prerogative of the apprentice's master). Having decided that the public school teacher is a dolt who "whips his pupils into blockheads", Campbell proposes his own syllabus based on learning English followed by Latin and the useful languages (French, Italian, etc.). Although he goes no further, earlier he has mentioned the fundamental need for training in arithmetic and drawing. The following chapters describe the trades, the abilities required and gives information on wages and conditions. These are well organised, beginning with general utility (painting, printing, working metals, etc.) and then going through human needs (housing, furniture, utensils, clothing, coaches and horses, edged tools), arms, and other trades. Some include quite detailed descriptions of processes, such as engraving and paper making. Finally, Campbell summarises commercial trade; merchants, bankers, insurers and ship builders.

The three pages on watchmaking give a terse, incomplete overview with outlines of some of the trades and their wages. It is interesting but not significant.

The book is predicated on the need to gain the freedom of the city (necessary to set up in business) and hence apprenticeships related to the incorporated companies of London. And so Campbell concludes with an outline of the government of the city, the companies and advice to apprentices.

Campbell does not mince words, damning parents, teachers and priests for their failure to recognise the individual aptitudes of children and to provide the necessary training. Much of his writing seems

relevant to today, as illustrated by his comment on doctors: "... our modern gentlemen think themselves above nature and ... they administer to every disease a certain train of drugs without any regard to the calls of nature or the constitution of the patient". Nothing much seems to have changed in 255 years, although there have been improvements.

But his opinions of some trades could not be described as circumspect: Lawyers "cheating, lewdness and all manner of debauchery being often more studied than law or precedents"; French cooking "he who is under the dominion of a French cook may as properly be termed a patient as he who is under a course of physic"; and Poulterers "the mystery of this trade lies in buying cheap and selling dear, a secret which may be learned in less than seven years" (the time of apprenticeship).

However, his remarks are not unfair. He describes 18th century London impartially, except where he sees deception or hypocrisy, and his aim is to warn parents, not simply to vent his opinions; he also criticises the gentry for not paying bills, milliners for debauching innocent girls, stay-makers for deceiving grooms, and he considers some trades as unfit for the sons of concerned parents.

The result is a book which is a delight to read, a mine of information and a source of wonderful quotes. [3rd edition 1757] With the exception of the title page, the title of the introduction and a very few words, the third edition is identical to the first edition. Indeed, exactly the same fonts and layout are used and I presume both were printed from the same type setup.

The original is easier to read than the reprint, and the reader has the additional pleasure of holding it in their own hands.

R482 Camus, CEL

Cours de mathématique

Paris: Durand (Paris: Prault) (Paris: Ballard) (Paris: L'imprimerie Royale), 1769 (1749), 22.0 x 14.5 cm, 21.0 x 13.5 cm, 4 vols.

Theory (French).

Two or more printings with the volumes being printed at different times.

Vol 1: "Premier partie, Elémens de arithmétique", 1749, viii, 480 pp, 2 fld plates.

Vol 2: "Seconde partie, Elémens de géométrie théorique et pratique", 1750, 1755, 1769, vi, 568 pp, 25 fld plates, 21.0 x 13.5 cm.

Vol 3: "Troisième partie, Elémens de mécanique statique, tome premier", 1751, 1766, xx, 376pp, 28 plates, 22.0 x 14.5 cm.

Vol 4: "Troisième partie, Elémens de mécanique statique, tome second", 1752, 1757, viii, 442 pp, 36 fld plates, 22.5 x 14.5 cm.

The 1749 edition of volume 1 is available as a Google Book PDF file.

Volume 4 contains the treatise on the teeth of wheels translated by Hawkins (which see).

R483 Camus, CEL; Hawkins, JI

A treatise on the teeth of wheels

Demonstrating the best forms which can be given to them for the purposes of machinery; such as mill-work and clock-work, and the art of finding their numbers

: Bastian Books (Philadelphia: Henry Carey Baird, London:) (London: J. Hodson, J. Weale & G. Herbert) (London: W. Stratford), 2008 (1806), 23.0 x 14.5 cm, 200 pp (102 pp, 18 plates, one fld) (181 pp, 18 plates, one fld) (144 pp, 15 plates, one fld).

Technical, theory (English).

English editions were published in 1806, 1837 and 1868 with an American printing of the 3rd English edition in 1869. There are 14 plates from "Cours de mathématique" which are given their original numbers 23 to 36. The first edition had 1 additional plate numbered 1 and the second edition 4 additional plates numbered 37 (the old 1) to 40. The plates also have secondary numbers 2 to 19. Plate 1 of the first edition (secondary number 16) is folding. Presumably it was originally a frontis, but as it is the same size as the other plates there is no reason for it to be bound sideways and folding; several sources indicate this oddity and I don't know if it was ever bound normally. The text retains the original paragraph numbering from "Cours de mathématique".

The 2nd edition of 1837 is available as a PDF file from Google Books, but it is missing plates 37 and 40. The complete book as a PDF file is available from my web site.

The 3rd, posthumous edition is the same as the 2nd edition, but it has been reset on fewer pages. There is a modern reprint.

An English translation by Hawkins of Books X and XI of Camus "Cours de mathématique" volume 4, with additional information in an appendix (with 4 plates).

See also Camus "Sur la figure des dents des roues et des aisles de pignons, pour rendre les horloges plus parfaites" (1735), "Theorie des engrenages" (1749) (mentioned in Baillie "Clocks and watches, an historical bibliography"), "Traite des Forces Mouvantes" (by FJ Camus, his father?) and Thiout "Traite de l'horlogerie mecanique et pratique".

[2nd edition, 1837, excellent] The thesis by Camus is in two parts. The first part (88 pages) begins with a theoretical analysis of the behaviour of gears deducing the required properties of teeth for good gearing. It then demonstrates that the epicycloid satisfies these requirements, subject to practical restrictions on pinions of fewer than 11 leaves. It concludes with an analysis of the shape of teeth for bevelled gears.

The second part (44 pages) is a study of the calculation of trains for clocks and watches. This includes a very lucid account of how to design approximate solutions for trains that cannot be decomposed, illustrated by motion work for a mean solar year and a revolution of the moon.

The appendix by Hawkins is in three parts. The first reprints the additional notes to the first edition (being largely a quote and plate from Imison "Elements of science and art" describing how to mark out teeth on large wheels and racks). It goes on to discuss a debate over generating circles, in which Hawkins admits errors in his original notes and provides further quotes from Rees "Cyclopaedia" and Ferguson "Lectures on select subjects". The second part defines the involute, gives experiments on axial thrust and describes a tracer for shaping involute teeth. The final part remarks on current practice in England, criticising the arbitrary way in which most wheels are made.

This seminal work is an excellent, clear treatment which should be in every library. There may be better, more recent books on the topic, but I doubt it and I haven't found one as yet.

It is interesting to see that even experts make serious mistakes. Gardner "Catalogue of the Torrens library" lists a 3rd edition "lacking plates 1 to 22"; but, as noted above, the book never had them! Perhaps he sold Torrens' copy too cheaply?

[Remark] *John Isaac Hawkins, born 1772, was the son of a watchmaker. He was an inventor and is credited with inventing the upright piano. He set himself up as a consulting engineer and patent agent and published articles on piers, bridges, sugar refining, wood paving and concrete. He was involved with an unsuccessful attempt to build a tunnel under the Thames. He went to America in the late 1840s and died there in 1854.*

R484 Camus, FJ de**Traite des forces mouvants**

Paris: Claude Jombert & Laurent le Conte, 1722, 19.5 x 13.0 cm, (16), 535, (7) pp, 8 fld plates. Technical (French).

The last 3 pages are a 2 page errata and directions for binding the plates.

It is available as a Google Book PDF file, but the plates are scanned folded and are useless.

In two parts. Part 1 (428 pages) begins with general definitions (forces, centre of gravity) and then has 4 chapters on equilibrium, levers (pulleys and screws), percussion (including springs) and movement (including ships, friction and carriages with 2 & 4 wheels).

Part 2 (107 pages) describes a number of machines invented by the author and includes a watch with 6 wheels, a seconds watch and a repeater (as well as 2 clocks).

[1st edition] *The description of the 6 wheel and seconds watches are primarily the specification and illustration of the calibres with some consideration of train numbers.*

The description of the quarter repeater (8 pages) begins by outlining the underlying calibre and then explains the construction and adjustment of the repeater mechanism.

R485 Canetoli, L; Zigliotto, E**Militari da polso di ieri e di oggi**

Rome: Studio Zeta, 2006, 29.5 x 22.0 cm, 185 pp, ill.

Description (Italian).

Military watches.

Seven chapters (introduction, pocket watches and chronographs, wristwatches, divers' watches, wrist chronographs, navigation watches, survey of case marks) followed by an appendix, chronological index and index.

R486 Carbonnier, E**Notice sur une nouvelle invention appelée par l'auteur réveil sonnette****Neu erfundene weckerglocke oder der neue morgen wecker ohne raderwerk ...**

ou nouveau réveil-matin sans engrenage pouvant s'adapter a toutes les montres

Paris: ; Leipzig: Gottfried Basse, 1858 (1837), 8vo, 32 pp, 1 fld plate (41 pp, 16 ill).

Description (French, German).

Translated into German in 1838 or 1858 (given by different sources), but 1838 is most likely.

Notice of a new invention called by the author "réveil sonnette" or a new alarm mechanism without wheels which can be adapted to any watch.

See also Poppe "Der wecker für jedermann".

R487 Cardinal, Catherine**Catalogue des montres du musée du Louvre****Gli orologi del museo del Louvre**

la collection Oliver

la collezione Olivier

Paris: Éditions de la réunion des musées nationaux, 2000 (1984), 27 x 22 cm, 260 pp, 700 ill, 11 plates.

Collection, description, illustration (French, Italian).

This is Volume 1 of "Montres et horloges de table du musée du Louvre".

Reprinted in 2000.

Detailed catalogue of the Oliver collection describing 339 watches and chatelaines from the 16th to the 19th centuries, and including biographies of makers and information on enamellers.

Mainly black and white illustrations.

R488 Cardinal, Catherine**Ferdinand Berthoud, 1727-1807**

horloger mécanicien du roi et de la marine

La Chaux-de-Fonds: Musée International d'Horlogerie, 1984, 27.5 x 21.5 cm, 344 pp, 167 plates.

Biography, collection, history (French).

The book was produced for the 10th anniversary of the founding of the Musée International d'Horlogerie and an exhibition in memory of Ferdinand Berthoud (1984-1985) who was born in Switzerland. The book was edited by Catherine Cardinal under whose name it is usually listed. It is in three parts.

Part 1 (166 pages) consists of 8 papers: Biography (Cardinal); Opinions of Berthoud by his contemporaries and posterity (Cardinal); Berthoud's workshop, its suppliers and its clients (J-D. Augarde); The state of horology in the 2nd half of the 18th century and the research of Berthoud (J-D. Augarde); Art and horology at the time of Berthoud (J-N. Ronfort); The evolution of position at sea from the 18th to the middle of the 19th century (F. Bellec); Problems of navigation in France and England, an historical context for the research of Berthoud (A. Turner); and The contribution of Berthoud to the development of the marine chronometer (J-C. Sabrier).

Part 2 (123 pages) is the catalogue of the exhibition, Ferdinand Berthoud marine horologist.

Part 3 (42 pages) appendices: documents, letters, list of chronometers, chronology, bibliography and index.

R489 Cardinal, Catherine

L'homme et le temps en suisse 1291-1991

Der mensch und die zeit in der schweiz 1291-1991

La Chaux-de-Fonds: Institut l'Homme et le Temps, 1991, 31 x 25 cm, 400 pp, 340 ill, 11 plates.

History (French, German).

Separate French and German limited editions of 1000 copies.

Man and time in Switzerland.

A detailed history of Swiss horology comprised of a number of separate articles.

R490 Cardinal, Catherine

La révolution dans la mesure du temps

calendrier républicain, heure décimale 1793-1805

Switzerland: Musée International D'horlogerie, 1989, 32 x 25 cm, 128 pp, 40 ill, 40 plates.

Exhibition, history (French, German, English?).

Limited edition of 1500 copies with text in French and German (and English?).

A catalogue of watches and clocks made with decimal time for an exhibition commemorating the 200th anniversary of the French revolution.

R491 Cardinal, Catherine

Montres et horloges de table du musée du Louvre

Paris: Éditions de la réunion des musées nationaux, 2000 (1984), 27.5 x 22.5 cm, 2 volumes of 264 pp, 340 ill, 24 col ill; and 240 pp, 568 ill, 40 col ill.

Collection, description (French).

Volume 1 is "Catalogue des montres du musée du Louvre, la collection Oliver", which see, first published in 1984.

R492 Cardinal, Catherine

The watch from its origins to the XIXth century

La montre des origines au XIXe siècle

Die zeit an der kette

geschichte, technik und gehäuseschmuck der tragbaren uhren vom 15 bis 19 jahrhundert : Morena (USA: Wellfleet Press) (Munich: Klinkhardt & Biermann) (Fribourg: Office du Livre), 1998 (1985), 7.5 x 5 inch (28.5 x 25.0 cm), 128 pp, ill (238 pp, 180 ill and colour plates).

Description, history (English, French, German).

Separate French, German (1985, translated by J. Abeler) and English editions between 1985 and 1989, the English of 1989 being 238 pp.

One source lists a new small format edition in 1998 of 128 pp in French.

In three parts: Social and economic (54 pages); Technical (40 pages); and Decorative (103 pages). Followed by notes, a bibliography and extracts from source documents.

The index only lists names of makers.

[1st English edition, very good] *The first part provides a clear, concise history of watchmaking with only a passing mention of post 1800 developments. The emphasis is on French makers and the impact of developments in other countries on the French industry.*

The second part is a brief outline of watch mechanisms and their development, again with a French bias. The 19th century is dismissed in a single page.

The third and major section is a study of watch cases and their decoration, including comparisons of case engravings and paintings with their sources in artworks and model books. The emphasis is on enamelled cases.

This book would be better titled "The French watch case to 1800" and apparently the German translation (Time on a chain; history, technique and cases of watches from the 15th to the 19th century) recognises this. Cardinal provides a general history, but she does so from a strongly French perspective. It is written in a matter-of-fact style with no anecdotes and no discussion of alternative viewpoints. But it is a valuable account and a complementary view to those presented in English and Swiss histories. The illustrations are generally superb, but the lack of cross references to them in the text is very annoying.

Overall it is a very good survey of watch cases.

R493 Cardinal, Catherine**Trésors d'horlogerie le temps**

le temps et sa mesure du moyen age a la renaissance

Paris: RMG, 1988, 29 x 23 cm, 119 pp, 168 ill.

Catalogue (French).

Treasures of horology, time and its measurement from the Middle Ages to the Renaissance.

Exhibition catalogue of 120 loaned items.

R494 Cardinal, Catherine**Trésors du Musée International d'Horlogerie**

La Chaux-de-Fonds

Paris: Editions le Louvre des Antiquaires, 1987, 4to, 63 pp, 100 il.

Catalogue, exhibition (French).

Catalogue of an exhibition in Le Louvre des Antiquaires.

R495 Cardinal, Catherine**Watchmaking in history, art and science****L'horlogerie dans l'histoire, les arts et les sciences****Uhren in geschichte, kunst und wissenschaft**

masterpieces in the Musée International d'Horlogerie

Lausanne: Scriptor, 1984 (1983), 30.0 x 30.0 cm, 128 pp, 63 b/w ill, 47 tipped-in col plates.

Collection (English, French, German).

Separate language editions. Limited edition of 1500 copies of which 1400 are for sale.

The English title is incorrect; the book covers both watches and clocks, and it includes a few other pieces.

Preface (1 page), 3 chapters, notes (6 pages), bibliography (1 page) and index of names (3 pages). The chapters are:

Musee International d'Horlogerie (4 pages).

Watchmaking and civilization from the 15th to the middle of the 17th centuries (31 pages, Watchmaking reflects the development of science and techniques, The place of the clock in the scientific and intellectual life of the time, The place of the clock in daily life, Watchmaking reflects the evolution of the arts).

Watchmaking in artistic, economic and scientific life from the middle of the 17th century to the end of the 18th century (43 pages, The progress of watchmaking techniques demonstrates the advance of science and techniques, The development of the watchmaking industry, The decoration of watches and clocks reflects the evolution of decorative styles).

Watchmaking in the 19th century (33 pages, Watchmaking and technical progress in the 19th century, The watchmaking industry and the industrial revolution, Decoration of watches and clocks and the artistic styles of the 19th century).

[1st edition, mediocre] This is an opulent book, with its padded covers, special paper and tipped in photographs (including that on the front cover). Unfortunately the text does not match the quality of presentation.

Cardinal is a professional art historian. Consequently, those parts which describe how horology followed and made use of artistic periods are good. She is able to give us a brief (although a little too superficial) overview, and the accompanying photographs of watch and clock cases are excellent.

However, the role of horology in history is superficial and unconvincing, and the occasional references to science are hopelessly inadequate. There is almost no technical information about the illustrated time pieces (which include two marine clocks made by Berthoud) and all of the photographs focus on artistic merit; nearly always the technical information relates to features which cannot be seen in them. But then, there is almost no attempt to link the photographs to the text (except in regard to art) and no attempt to explain any scientific or historical merit.

The basic problem is the use of the word "in" in the title. This definitely implies that the book is about the role of horology in the general areas of history, art and science; and equally definitely states that the book is not about the history, art and science of horology; a difference that is not subtle and that is also substantial. But there is no attempt to examine the impact of horology on history or science, if any; although there is a strange digression into electric clock systems which is completely out of place. And it is clear that the artistic aspects are derivative, following trends but never creating them. So the book dramatically fails to fulfil its stated purpose. And this is compounded by the fact that the translator frequently confuses clocks and watches; for example, writing about the Americans Terry and Jerome in the context of watches. This is unforgivable in such an elegant book. (As is stating that "English clockmakers adapted (the long case clock) to a length of .99 cm"!)

The result is a collection of superb photographs which are accompanied by an inadequate, confused and confusing text of no real merit. I bought the book because it mentions a very interesting repeater made by Arnold. And I found nothing else to justify it.

R496 Cardinal, Catherine; Mercer, F; Barrelet, JM**Museums of horology, La Chaux-de-Fonds, Le Locle****Musée d'horlogerie, La Chaux-de-Fonds, Le Locle**

Geneva: Banque Paribas, Zurich: Swiss Institute for Art Research, 1993, 12 x 10 inch, 128 pp, 150 plates.

Collection, description, illustration (English, French).

- Volume 5 in the Swiss Museums series, published in cooperation with the Swiss Institute For Art Research.
Includes "Three centuries of Neuchâtel watchmaking" by Jean-Marc Barrelet.
- R497 Cardinal, Catherine; Piguet, Jean-Michel**
Catalogue of selected pieces
Catalogue d'oeuvres choisies
 of the Musée International d'Horlogerie
 du Musée International d'Horlogerie
 La Chaux-de-Fonds: Institut l'homme et le temps, 2002 (1999), 28 x 20 cm, 384 pp, ill (360 pp, 650 ill).
 Collection, catalogue (English, French, German).
 English edition published in 2002.
[English edition, review by Fortunat Mueller-Maerki] The Musée International d'Horlogerie (MIH) in La Chaux-de-Fonds (Switzerland) is commonly considered among the most comprehensive public collections on timekeeping anywhere in the world. For the horological enthusiast the MIH by itself merits not only a detour, but a trip to Switzerland. But not everyone can do that, and since early 2002 - when they published their first scientific and comprehensive catalogue in English - there is an alternative to investing many days and many dollars in a visit.
This hardcover book will not be taken for a "coffee table" book that focuses only on pretty pictures of clocks for casual browsing. For that it is too comprehensive, too factual, too "scientific". On 384 pages the reader is introduced to 449 items from the MIH collection, each illustrated with clear color photographs. Typically there are one to four photos per item, often including a picture of the movement, and close-ups of interesting details in movement or case. Each text entry accurately describes both the case and the movement of the item, and adds provenance, exhibit history and bibliographic information. In some cases a two-page spread is dedicated to a single object, in other cases as many as four or five watches share a double page.
The book has separate chapters for complicated clocks, regional clocks, decorative clocks, chronometers, non-mechanical timekeepers, and five chapters (by date) on watches. Even though the catalogue bills itself as "Selected Pieces", the book covers just about every major piece that is exhibited at the MIH. Of course, there are comprehensive indexes of craftsmen, manufacturers, keywords etc.
This book, however, goes far beyond only providing dry "reference material". In my opinion, the chosen format strikes a healthy and pleasant balance between being a scientific reference tool for the serious researcher, and offering a thoroughly enjoyable read to the serious horological amateur who cannot visit the MIH personally. It is a "must read" for any horologist preparing for a visit at MIH.
The two authors, Ms. Cardinal, the recently retired director and curator of the MIH, and Mr. Piguet, the assistant curator, know their subject well and have provided a most valuable addition to the horological literature. The book provides a model to be emulated by horological museums everywhere which have not made the content of their collections available in printed format yet.
- R498 Cardinal, Catherine; Sabrier, JC**
La dynastie des Le Roy horlogers du roi
 Tours: Musée des Beaux-Arts de Tours, 1987, square 4to, 82 pp, ill.
 Exhibition, history (French).
 Exhibition catalogue of or including marine chronometers.
- R499 Carlisle, LB**
Vermont clock and watchmakers, silversmiths and jewelers
 USA: Carlisle, 1970, 4to, 313 pp, ill.
 Makers (English).
 "Four chapters detailing the craft of watchmaking, the advance of clockmaking pioneered by Vermont craftsmen and the styles, forms and design in gold and silverwork executed by Vermont artisans. Illustrated by more than 200 reproductions of 19th century advertisements and photographs of makers' marks and wares. There are biographies of 983 craftsmen.
 The information has been compiled through original researches of many sources including business directories, wills and other legal documents, old maps and atlases, court records, town histories, church records and newspaper files."
- R500 Carpano, L**
Note sur le choix et l'emploi des fraises L Carpano
 Switzerland: , 1935 (nd), 24 x 16 cm, 48 pp, ill (30 pp, 42 ill).
 Tools, catalogue (French).
 A note on the choice and use of wheel cutters.
- R501 Carpenter, WB**
Mechanical philosophy, horology and astronomy
 USA: General Books (London: Henry Bohn) (London: W. S. Orr), nd (1843), 19.0 x 12.5 cm (20.0 x 12.5 cm), 579 pp, 181 ill.
 Description, technical (English).
 4 editions in 1843, 1848, 1857 and 1868, with the 1848, 1857 and 1868 editions are available as Google Book PDF files, the last USA only?
 There is a modern reprint.
 The 1857 edition has 22 chapters.

Chapters 1 to 12 cover mechanics: 316 pages on matter, gravity, structures, motion, circular motion, falling bodies, the pendulum, simple machines, and friction.

Chapter 13 is 50 pages "On horology".

Chapters 14 to 22 cover astronomy: 204 pages on heavenly bodies, stars, the motion of the sun and planets, laws of motion, general account of the solar system, comets, the Earth's annual revolution, the moon, and the nebular hypothesis.

[1st edition, good?] Chapter 13, pp 315-364 with 23 ill is titled "Horology; or the construction of instruments for the measurement of Time". It is the only part of the first edition which I have seen.

Chapter 13 begins with general remarks about time and clepsydrae. It then discusses motive power, the fusee, principles of escapements and trains, clock and watch escapements (duplex and Earnshaw's chronometer), compensation balances and pendulums, chronometers (with interesting examples of their use) and repeaters (a description of Elliott's mechanism).

Basically descriptive providing some technical detail, but there is nothing important in it.

[second edition 1857] Chapter 13 seems to be identical. It appears the revisions mainly relate to new material on astronomy.

Other parts of the book may also be interesting. Specifically: pendulums (23 pages), simple machines (60 pages including levers and wheels) and friction (9 pages). There is also a discussion on using a cricket bat.

R502 Carrel, L

Normalisierung in der schweizerischen uhrenindustrie

Leipzig, Bern.; 1936, 24 x 17 cm, 108 pp.

(German).

Standardisation in the Swiss horological industry.

R503 Carrera, R

Gevril, time always has a before and an after

ca 1995, 140 pp, slip case.

History (English).

Probably a company catalogue.

R504 Carrera, R

Hours of love - volume 2

Les heures de l'amour - volume 2

Die stunden der liebe - volume 2

Lausanne: Scriptor, 1993, 27 x 21 cm, 112 pp, 75 plates, slip case.

Description, illustration, makers (English, French, German, Italian).

Text in English/French, Italian and German.

An examination of erotic timepieces including wristwatches.

R505 Carrera, R

Hours of love

Les heures de l'amour

Die stunden der liebe

Lausanne: Scriptor, ca 1977, 27.0 x 21.0 cm, 143 pp, 8 ill, 99 plates, slip case.

Description, illustration, makers (English, French, German).

Parallel text in English, French and German.

Undated but all sources state 1977.

An introduction of 9 pages, including a history of erotic watches, followed by a photographic essay of erotica; covering enamel, enamel automata, engraved automata and engraved watches. Some 100 pocket watches are described.

[1st edition, very good] This is a very good study of a neglected area with excellent illustrations. The focus is on the photographs of erotica, with no illustrations of movements (which are generally ordinary). There are no details of technical features other than very brief notes with rather vague illustrations in the introduction.

I personally found most of the erotica uninspiring and they gave me the impression of being the 19th century version of pornographic video tapes. But there are some beautiful examples of the art of enamelling and automata.

R506 Carrera, R

Les derniers artisans de l'horlogerie

La Chaux-de-Fonds: Editions la Suisse Horlogère, 1976, 8vo, two volumes of 88, ill; and 104 pp, ill.

Makers (French).

The greatest artisans of horology. Descriptions of the different specializations in horological work.

The title could also be translated the worst artisans of horology, but I suspect that would be incorrect although more interesting!

R507 Carvajal, JR de

Catalogo de relojes del Patrimonio Nacional

Madrid: Editorial Patrimonio Nacional, 1987, 29 x 22 cm, 564 pp, 565 ill.

Biography, catalogue, illustration (Spanish).

The collection in the Patrimonio Nacional including over 500 18th and 19th century European clocks.

Only clocks.

- R508 Caspari, E**
Recherches sur les chronomètres et les instruments nautiques
Untersuchungen über chronometer und nautische instrumente,
 studie über den mechanismus und den gang der chronometer
 Bautzen: Ruhl (Paris:) (Paris:), 1893 (1876), 294 pp, 2 plates (204 pp) (150 pp).
 Theory (French, German).
 Sources are vague. First published in 1876 as “Recherches sur les chronomètres et les instruments nautiques” and translated into German in 1894.
 I do not know if the title “Chronomètres de marine” is the second edition or a separate work.
Fundamental research into adjustment.
Caspari, Marine-Ingenieur, schrieb dieses bis heute unübertroffene Werk zur Chronometerkunde. Behandelt Theorie und Praxis, Mechanismen, Gangabweichungen und die Reglage.
- R509 Ceaco**
Out of pocket jigsaw puzzle
 : Ceaco, 1991, 1000 piece jigsaw puzzle.
 Miscellany (English).
 A jigsaw puzzle based on a photograph of about 40 pocket watches.
- R510 Cellini**
Handbook of letter and ornamental engraving on metal,
 pivots and pivoting by the Lightning pivoter
 Philadelphia: Keystone, 1899 (1896), 100 pp, ill (88 pp, ill).
 (English).
 3rd edition in 1896.
 About 22 pages and 5 figs on the Lightning pivoter.
This would seem to be two separate booklets bound together.
- R511 Cesar, P**
Ernest Francillon sa vie son oeuvre
 Saint Imier: Grossniklaus (Switzerland:), 1992 (1900), 8vo, 31 pp, 2 ill (29 pp, 1 plate).
 Makers (French).
 Ernest Francillon, his life and work.
- R512 Cetehor**
French watch movements
Les ébauches françaises
Die französischen uhrwerke
Las maquinas de relojes francesas
 their technical characteristics
 ihre technische beschaffenheit
 sus características técnicas
 France: Centre d'Information de la Montre Française, 1974 (1947), 29.5 x 21.5 cm, 131 pp, ill (100 pp, ill).
 Description, technical (English, French, German, Spanish).
 At least 2 editions have been produced in different languages in 1968 and 1974. The Spanish edition is 1969 (121 pp).
 The 1947 date may be an error.
 A brief summary of the French industry is followed by a description of watch components. Then the specifications of 30 current wrist watch calibres are given, primarily by diagrams of both dial and top plate views. Finally, details of shock absorber systems are described.
[1968, good] Primarily it is advertising directed at the industry, and with statements like “particularly suitable for young sportswomen ... harmoniously proportioned” it borders on puff. It is also a “colouring-in” book with instructions on the last page!
But actually it contains very detailed descriptions of some movements coupled with excellent diagrams, and it includes a few repair hints. It would be very useful for anyone handling these watches.
- R513 Cetehor**
Our first ten years
 Besançon: Cetehor, 1955, 32 pp, ill.
 History (English).
- R514 Ceyp, M**
Fascination of russian watches
Faszination russische uhren
 Bremen: Hauschild, 1995 (1994), 27 x 22 cm, 183 pp, 288 ill (99 pp, 162 ill) (88 pp, 64 ill).
 Description, identification (German, English).
 Two editions in 1994 and 1995. “Faszination sowjetische uhren” (no date, 88 pp, 64 ill) is probably an earlier edition.
 From the military watch to the ship's chronometer, a new collecting area at affordable prices.

R515 Chaddock, DH

R515 Chaddock, DH

The Quorn universal tool and cutter grinder

England: TEE Publishing (England: Argus Books), 1990 (1984), 8vo, 128 pp, ill.
Repair (English).

Reprinted in 1990.

Referenced in Wild "Wheel and pinion cutting in horology" where the tool is described. The tool was produced as a kit and was first described in the "Model Engineer".

R516 Chaille, F

Girard-Perregaux

Paris: Editions Flammarion, 2004 (2004), 29.0 x 25.5 cm, 256 pp, 312 ill (224 pp, ill), slip case.
History (English, French, German, Italian, Spanish, Russian, Chinese, Japanese).

Separate language editions. The English edition is 224 pp, ill.

History of Girard-Perregaux: A brief history of telling time (48 pages); Girard-Perregaux, or a love of fine timepieces (76 pages); A touch of wizardry (38 pages); Company spirit, corporate creativity (48 pages); Index (2 pages, names of people mentioned).

[1st edition, mediocre] This book has been described as "a large, attractive coffee table book written for the uninitiated with a chapter on early watch making history pre Girard-Perregaux". I would add that it leaves the reader just as uninitiated afterwards as before it was opened.

Chaille has written a book that is almost totally devoid of useful information. The first two chapters provide reasonable but superficial histories of horology and the Girard-Perregaux company. However, the rest of the book is pure adulation and makes me feel that I should kneel down and gaze adoringly into Girard-Perregaux's eyes; both the text and the photographs are created for their emotional effect and not to educate. Indeed, Chaille's aim seems to be to make us aware of objects as status symbols and their horological nature is secondary.

The author is described as "a historian of decorative arts". Unfortunately this book shows no signs of scholarship and is much more a piece of journalism than a serious study.

R517 Chaille, F; Cologni, F

The Cartier collection, timepieces**La collection Cartier, horlogerie**

Paris: Flammarion, 2006, oblong 4to, 534 pp, ill.

Illustration (English, French).

"Over 450 pieces, including the complete collection of mystery clocks, are presented here, representing over 150 years of the finest horology. Each piece is accompanied by its history and technical specifications. Full-scale reproductions, including twelve folding plates, are followed by an illustrated and comparative chronology, glossary of terms, and complete index."

Not to be confused with "The Cartier collection, collective work" or "The Cartier collection, jewelry" by the same authors.

R518 Chalet, R

Théorie général de l'échappement

ca 1960, 264 pp, ill.

Theory (French).

General theory of escapements.

R519 Chamberlain, Paul M

It's about time

London: The Holland Press, 1978 (1941), 23.0 x 15.0 cm (26.5 x 18.0 cm), 490 pp, ill.

History, description, bibliography (English).

Reprinted in 1964 and 1978. The 1978 reprint includes the catalogue of his collection, listed separately.

In three parts:

Part 1 Escapements: The lever escapement (100 pages); Evolution of watch escapements (21 pages); Development of the escapement (58 pages); Bibliography (1 page); Early clock escapements (7 pages); Arnold pocket chronometer (3 pages); Early Arnold marine chronometer (4 pages); Alternate impulse chronometer (3 pages); Antoine Tavan's prize chronometer (9 pages); Mozart's three-wheeled chronometer lever (4 pages); Slow revolving escapement (2 pages); Jeunet seconds beating watch (4 pages); Some variations in escapements (6 pages).

Part 2 Experiments and unusual timepieces: Breguet's pendule sympathique (7 pages); Watch regulators (7 pages); Development of the motor barrel (9 pages); Alarm and striking watches (5 pages); Sunrise-sunset watch (4 pages); Raingo's astronomical clock (5 pages); Otay watch venture (10 pages).

Part 3 Famous watchmakers: Seventeenth-century watchmakers (37 pages); Eighteenth-century watchmakers (81 pages); Nineteenth-century watchmakers (62 pages).

Followed by biographical sources and an index.

[1st edition, excellent] The book was compiled from Chamberlain's writings after his death and there are, necessarily, some inconsistencies and overlaps.

Part I of the book is a superb study of escapements. The first chapter, which occupies about a quarter of the book, has a detailed history of the Queen Charlotte watch by Thomas Mudge followed by a lengthy and comprehensive examination of early lever escapements. The only surprise is the omission of a serious study of Massey. Chapter 2 provides a brief summary of some other watch escapements. Chapter 3

illustrates clock and watch escapements from Thiout, Lepaute and Berthoud followed by remontoirs. Chapter 4 shows clock escapements from Caspar Schott "Technica Curiosa" (1644). These are followed by 8 short chapters describing some watches owned by Chamberlain.

Part II contains a mixed bag of topics, including very good surveys of watch regulators and mainspring barrels and a history of the Otay watch company (mainly a biography of P.H. Wheeler).

The book concludes with some 180 pages of biographies which include information not readily available elsewhere.

This is an extremely important and very readable work that should be in every library.

[1964 reprint] The 1964 reprint is a facsimile. The book is smaller because the margins have been reduced, but the size of the text and illustrations is unaltered. The plates in this reprint are not quite as good as the original but perfectly adequate. Indeed, there is no point getting the first printing unless, like me, you collect books.

R520 Chamberlain, Paul M

Watches - the Paul M. Chamberlain collection

at the Art Institute of Chicago lent by the Chamberlain Memorial Museum
(Chicago: The Art Institute), 1978 (1921), 24.0 x 17.0 cm, 58 pp (unpaginated), 57 plates, 29 ill.
Collection, catalogue, exhibition, makers, technical (English).

This catalogue has been included in recent editions of Chamberlain's major work "Its about time". A catalogue of 292 watches and movements with a small number usefully illustrated. The organisation and text focuses on escapements.

[1st edition, fair] The short foreword, which indicates the need to examine the actual watches exhibited, is followed by the catalogue. The entries provide interesting information about the movements and their makers, and diagrams of the escapements of some are given. These diagrams are not discussed, but are identical to those in "Its about time".

In addition, the collection is indexed by maker and escapement type, and there is a list of collections containing similar pieces.

Allix "Postal bid catalogue 1" notes that this collection was stolen and Chamberlain subsequently built up a second collection. However much of the collection was recovered; see NAWCC "Watches of the Paul Chamberlain collection - 2009 NAWCC National Convention exhibit".

R521 Chamelin, M

The Sangamo Special identification

models 8, 9, 10 and 13

USA: Webhorology, 2007, 94 pp, ill.

Description, identification (English).

"2,541,331, 1913 beginning to end 4,761,000, 1930".

The Sangamo Special is a pocket watch made by the Illinois Watch Company. The book has descriptions and detailed identification information for all models and variants of the Sangamo Special railroad grade watch.

R522 Chang, SK

Antique pocket watches

Hong Kong: Sing Tao, 1989, 104 pp, ill, plates.

Description, history (Chinese).

10 chapters (including history, collecting and escapements) with the focus on watches for the Chinese market. With illustrations of enamel watches, Chinese watch pairs, dials and watch keys.

R523 Chapalay & Mottier SA

Terminologie horlogère

établie avec la collaboration des écoles d'horlogerie Suisses et Françaises

Geneva: Chapalay & Mottier SA, 1926, 39 pp, few ill.

Dictionary (French).

R524 Chapiro

L'échappement a ancre et chevilles

applique aux montres

1975, 23 x 16 cm, 12 pp, 16 ill.

Technical (French).

Journal offprint?

R525 Chapiro, A

Jean Antoine Lepine horloger 1720-1814

Jean Antoine Lepine uhren 1760 bis zum empire

Munich: Laterna Magica (Paris: Editions de l'Amateur), 1989 (1988), 28 x 24 cm, 277 pp, 586 ill, 20 plates.

History (French, German).

Separate French and German editions.

"Histoire du développement de l'horlogerie en France, de 1760 a l'empire".

There is also an English language offprint from "Antiquarian Horology" with the same title (London: Antiquarian Horological Society, 1975, 25 x 19 cm, 12 pp, 35 ill).

R526 Chapiro, A

La montre française du XVI siècle jusqu'à 1900**Taschenuhren aus vier Jahrhunderten**

die geschichte der französischen taschenuhr

Munich: Callwey; Paris: Les editions de l'amateur, 1995 (1991), 28 x 24 cm, 464 pp, 882 ill.

Description, history, technical (French, German).

Separate German and French editions. There may be a separate addenda or it may be bound into the 2nd edition.

Detailed history and technical study of French watches from the 16th century to 1900.

[1st edition, review by Henry B. Fried] *What may be considered the most comprehensive expository treatise on the French watch is this massive and authoritative book by Dr. Adolphe Chapiro. He is a leading horological authority, and is director and past president of the French, Paris-based watch and clock collectors (A.N.C.A.H.A.). The author, whose doctorate is in chemistry, is also a director of research of the Centre Nationale de Scientific research. He has contributed over 300 articles on scientific techniques in the field of plastics. Horologically, he has authored over 40 articles on its history as well as cataloging the French timepieces of the (Rockford, U.S.A.) Time Museum. His other major horological work on French horology is his book, "Jean Antoine Lepine Horloger (1720-1814)". He has also contributed articles to the British Antiquarian Horological Society, Chronometrophilia, and the Bulletin of the NAWCC.*

There are over 1000 illustrations of 800 plus watches. The extra views are enlargements of individualistic features of these timepieces. Each is professionally photographed, almost all items in larger-than-life views.

A short history of the watch opens this book with an explanation of how France, following the 30 Years War, 1618-1648, also saw the fading of Germany as a producer of timepieces. Miniaturization of the table clock had already taken place some years earlier and the first truly portable timepieces were mainly French small drum-shaped or spherical. The second half of the seventeenth century witnessed the emergence of France as the principal producer of watches with England and Switzerland also entering that scene. By the second half of that century, some watches appeared small even by current standards, all pictorially represented and explained in this volume.

Exhibited are very early enamel watches dated about 1630, introduced in Blois and soon in Paris. One beautiful example by Jehan Cremsdorf (Paris), which deserves its full page color photo, is reported to have been auctioned at Christies in 1986. Rock crystal watches, chased and highly engraved cases appear, as do pages from the pattern books, which these artisans used to select their designs. Later on, tortoise shell and shagreen case coverings were used, examples of which are included. Bombé dials in porcelain, and with paintings, emerged close to that period.

The changes in balance cocks to the carved and chased circular balance covers secured with diametrically opposite screws followed later in that century. Chapiro states that with the introduction of the spiral balance spring by Huygens, a new dynamic era began. He adds that in 1665, Christiaan Huygens was then in Paris and was a "protege" of Louis XIV. The coiled balance spring spurred a great deal of experimentation by the leading watchmakers of France. Thuret, De-Baufre, Julien and Pierre Leroy, Berthoud and Hautefeuille among others whose efforts can be studied in this section.

A 64-page section is devoted to the development following Huygens contribution to the watch. Many French watches are shown without fusees. The author also acknowledges that technology from France quickly reached over the Alps into Switzerland and, like all technology, to and from both sides of the English Channel.

The appearance of the typical French "oignon" watch is covered in a 50-page section. Many types and variations, complications of calendric, alarm, and repeating details are revealed here. Some, despite their bulkiness, were attractive and very well-made.

From 1730-1790, a long period of invention and development occurred in France. Chapiro devotes 102 pages to this era which includes the Louis XV and Louis XVI periods. The watches in this section are representative of the masterpieces of famous French makers. These complicated watches are in full-page, full color view.

Although the contributions of Lepine are adequately covered in Chapiro's earlier book on this maker, he is given his deserved niche here as well. The watch's development in general in its stylistic evolution has become smaller and thinner, yet attractively ornamented. Movement design and variations by shapes are displayed in comparative views.

No book on French horology dares omit Breguet, one of France's greatest horologists, and this book is no exception. It devotes over 50 pages of photos, production tables, and examples of all types of the grand master's watches with generously sized photos and drawings. In that era, the Breguet, "Marie Antoinette" watch was, by far, the world's most complicated. It is shown with under-the-dial view and contains the only reference to a tourbillon. A helpful section of this chapter is devoted to counterfeit Breguet watches in which Chapiro points out both subtle and obvious differences from the genuine. A listing of the many artists Breguet employed to create this masterpiece and the amount of their contributions are also provided.

French chronometry and samples of its components are viewed with some drawings of their escapements as well as the chronometers themselves.

The last formal section, "The elaboration of the 'modern watch' (1830- 1900)" shows the movement engraved with floral patterns, yet retaining the Lepine-type bridges. Cases and inside back dust covers

also are engraved with informative statements of manufacturer and technical features of its movements, including its jewel count. Mass produced watches in Besançon. the French horological capital, show watches by Lip, who at one time had the most complete watch factory in the world.

The last section contains a list of about 200 French watchmakers who produced "oignon" watches and about 50 Swiss, four Italian, one Belgian and two English who also made these. Charts of their dimensions and characteristics, alarms, repeaters and clock watch actions are provided. In the following part of this final section are reproductions of catalogue pages of the house of Breguet with line engravings of the different types available from that master horologist.

In a book of this size and span it is difficult to keep a review to a readable length. The contents of this book are of such high expert calibre that to mention each important feature would tax editorial indulgence. Despite the French text, the pictures tell so much and anyone who would enrich his knowledge should be able to profit greatly, even with a good French-English dictionary as a companion.

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R527 Chapiro, A; Musée National de la Renaissance

Catalogue de l'horlogerie et des instruments de précision

du début du XVI au milieu du XVII siècle

Paris: Editions de la Réunion des Musées Nationaux, 1989, 4to, 141 pp, ill.

Collection (French).

Catalogue of the horological items in the Musée National de la Renaissance, Château d'Ecouen, France.

R528 Chaponniere, H

Le chronographe et ses applications

Bienne: Magron, 1924, 23 x 14 cm, 128 pp, 72 ill, slip case?.

(French).

The chronograph and its applications.

R529 Chapuis, A

A travers les collections d'horlogerie, gens et choses

Neuchâtel:, 1942, 19 x 14 cm, 276 pp, 170 ill.

Collection, description (French).

Limited edition of 1100 copies.

Through the collections of horology, people and things.

Describing the famous collectors and their collections including Garnier, Planchon, Antoine-Feill, Gelis, Sarasin, Marfels and Pierpont Morgan. With illustrations by A. Billeter.

R530 Chapuis, A

De horologiis in arte

l'horloge et la montre a travers les âges, d'après les documents du temps

Lausanne: Scriptor, 1954, 31 x 24 cm, 154 pp, 214 ill.

Description (French).

The captions are in French, German and English.

Of horology in art - the clock and watch through the ages, according to the documents of the times.

Contemporary illustrations of clocks and watches in domestic situations at different periods and how watches were worn.

R531 Chapuis, A

Fritz Courvoisier 1799 - 1854

chef de la révolution neuchâteloise

Neuchâtel: Attinger, 1947, 25 x 19 cm, 258 pp, 67 ill, 2 plates.

History, biography (French).

Fritz Courvoisier 1799 - 1854, leader of the Neuchâtel revolution.

Biography of the Courvoisier family.

R532 Chapuis, A

Geneva watches and enamels

Louis XIV, Louis XV, Louis XVI and Empire periods

Geneve: Rolex Watch Company, 1945, 24.0 x 17.0 cm, 136 pp, no ill.

Collection, description (English).

A limited edition of 600 copies printed for private distribution by the Rolex Watch Company, "with the compliments of Rolex Watch Co Ltd, Geneva".

The English translation of the text of Chapuis "Montres emaux de Geneve: Louis XIV, Louis XV, Louis XVI et Empire" describing the collection of enamel watches of H. Wilsdorf (which see).

[1st edition, good] *By itself this is of little value as it has no illustrations.*

I have seen no evidence of a 900 copy edition of the translation to accompany the other printing of the main volume, which is presumably why this translation is hard to obtain.

R533 Chapuis, A

L'horlogerie - une tradition Helvétique

Neuchâtel: Edition Bourgade, 1948, 28 x 20 cm, 325 pp, 100 ill, 37 plates, slip case.

History, technical (French).

Horology, a Swiss tradition.

A compilation of contributions by various authors said to give a comprehensive history of Swiss horology.

It includes articles by Jaquet (evolution of methods of adjustment, enamelling), Chapuis (four periods of form watches), Guye (wrist watches), Dumcommon (horological oils), and others.

R534 Chapuis, A**Le grand Frédéric et ses horlogers**

une émigration des l'horlogers suisse au XVIIIème siècle

Lausanne: Journal Suisse d'Horlogerie, 1938, 29.5 x 22.0 cm, 95 pp, 56 ill, table of contents.

History, makers (French).

Frederic the Great and his horologers, an emigration of Swiss horologers in the 18th century. A half century of horology in Berlin (1760-1810).

In 5 parts: Neuchatel horologers in Berlin (27 pages, 3 chapters); History of Huguenin in Berlin (12 pages, 2 chapters); Genevan horologers in Berlin (9 pages, 3 chapters); Friedrichstahl and Berlin a horological colony (28 pages, 5 chapters); and Appendices with a list of makers (9 pages).

Illustrated by drawings by A. Billeter.

R535 Chapuis, A**Les corporations d'horlogers vaudois**

au XVIII siècle, Verey, Lausanne, etc

La Chaux-de-Fonds: Payot, ca 1945, 4to, 30 pp, 34 ill.

History (French).

R536 Chapuis, A**Montres et émaux de Genève**

Louis XIV, Louis XV, Louis XVI et Empire

Genève: Rolex Watch Co and Lausanne: Journal Suisse D'horlogerie, 1944, 29.0 x 22.0 cm, 235 pp, 48 plates, slip case.

Description, collection (French).

1500 copies were produced:

900 numbered copies inscribed "Il a été tire de cet ouvrage 900 exemplaires numérotés de 1 a 900. Edition spéciale du journal suisse d'horlogerie et bijouterie a Lausanne."

600 unnumbered copies inscribed "Il a été tire de cet ouvrage 600 exemplaires. Edition spéciale destinée a Montres Rolex; Exempleire hors commerce".

Both editions are, as far as I know, identical.

An English translation of the text only was produced by Rolex in 1945 to accompany the 600 copy edition. It is listed separately; it is often not sold with the main volume and is occasionally sold by itself.

A collection of enamel watches of H. Wilsdorf, published by the Rolex Watch Company in memory of Wilsdorf's wife. An introduction, a general history of watches and enamelling, followed by 48 tipped-in plates and their descriptions. These cover 46 watches and one clock; they are dated 1680 and 1750 to 1830. All except three illustrations are of cases. There are also music scores for five of the musical watches.

[1st edition, good] A luxurious coffee-table book whose flavour is summed up by "at the outset, the watch was considered primarily as a jewel". The photographs and discussion focus on the cases and workmanship. There are some remarks about the movements, but these are necessarily limited as there are no photographs or technical details of them.

A very beautiful book of a very beautiful collection, but of limited utility.

R537 Chapuis, A**Urbain Jurgensen et ses continuateurs**

Neuchâtel: Paul Attinger, 1923, 8vo, 46 pp, 16 ill, 1 plate.

(French).

Robertson gives the date as 1929 (perhaps a second printing or an error).

This contains Urban Jurgensen's autobiography.

R538 Chapuis, A; Breguet, C**A.L. Breguet - pendant la révolution française**

en Paris en angleterre et en suisse

Neuchâtel: Editions Griffon, 1953, 29 x 22 cm, 120 pp, 51 ill, 1 plate.

History (French).

Limited edition of 1000 copies.

Study of Breguet's work and life during the period of the French Revolution. Based on a collection of documents and over 400 letters between Breguet and his son.

R539 Chapuis, A; Droz, E**Automata****Les automates**

a historical and technical study

figures artificielles d'hommes et d'animaux, histoire et technique

Neuchâtel: Griffon; USA: Griffon (Attinger), 1958 (1949), 4to, 407 pp and index, 488 ill, 18 plates (425 pp, 488 ill, 18 plates).

Description, illustration, technical (English, French).

English translation by A. Reid.

Including tower clocks (mainly in Switzerland), singing birds, mechanical pictures, clocks & watches, machines like the juggler with fan, dancing couples, chess playing machines, etc.

R540 Chapuis, A; Gelis, E

Le monde des automates

étude historique et technique

reprint (Paris: A. Chapuis & E. Gelis), nd (1928), 28 x 23 cm, two volumes, 348 and 352 pp, 540 ill, 7 plates.

Description, history, technical (French).

Limited edition of 1000 copies. The first volume may be 438 pp.

There is a modern facsimile reprint.

The world of automata, historical and technical study.

Includes automata on clocks and watches as well as sections on artificial limbs, etc.

R541 Chapuis, A; Jaquet, E

The history of the self-winding watch 1770-1931

La montre automatique ancienne

un siècle et demi d'histoire 1770-1931

London: B. T. Batsford, New York: Central Book Co (Neuchâtel: Editions du Griffon), 1956 (1952), 29.0 x 21.5 cm, 246 pp, 154 ill (234 pp, 153 ill).

Description, history (English, French).

The first edition is a limited edition, but the total number of copies is not stated.

The second edition in English was published in 1956 and was also produced in an identical numbered edition of 2020 copies for the Rolex Watch Company.

The English revised edition has ten chapters: The precursors (14 pages); Abraham-Louis Perrelet (36 pages); Hubert Sarton (4 pages); Abraham-Louis Breguet (62 pages including translations of several pages and illustrations from Breguet's unpublished book "Le guide de l'horloger" (which see)); Louis Recordon and his patent (24 pages); Jaquet-Droz & Leschot, James Cox (12 pages); Of other makers and their watches, 1780-1825 (30 pages); Pedometers (14 pages); Self-winding watches after 1830 (14 pages); and The advent of the self-winding wristlet watch (10 pages). Followed by conclusions and indexes. There is no bibliography, but some references are given in footnotes.

The French edition has nine chapters with the same titles and almost the same contents. However, the chapter on Hubert Sarton is not included. Instead there is a one page note "Addenda in extremis" on page 62 which notes that the authors had just been made aware of Hubert Sarton's 1799 publication "Description abrégée de plusieurs pièces d'horlogerie" which mentions automatic watches.

[2nd edition (English), excellent] *The first chapter, Precursors, discusses the scant evidence for automatic watches before 1780, including the statements made by Breguet that a watch was made about 1600. But there is nothing concrete prior to about 1780, after which claims are made for German and Viennese origins as well as the Swiss Perrelet and Perret (Jonas Perret-Jeanneret), and the Belgian Sarton.*

Chapter 2 examines the evidence in support of Perrelet being the inventor of an automatic watch. This begins with quite solid documentary evidence that Perrelet made such watches prior to 1777, and then his biography is given. Much of the chapter is devoted to describing an automatic watch with a rotor (the "Leroy" watch, so called after its recent owner), showing that the mainspring and case were almost certainly made in Neuchâtel, and deducing that the movement was probably made by Perrelet. There is, in fact, no evidence at all for who made the unsigned movement, and it could equally have been Perret mentioned earlier in the book. Also, there is no exact date for it, although it is most likely before 1781. The chapter ends with a addendum, mentioning an article describing an automatic watch made in Germany by Link, but this is not examined in depth and its significance is glossed over.

*Chapter 3 provides a translation of a 1778 report to the Paris Academy of Sciences which describes an automatic watch made by Hubert Sarton. It is clear that Chapuis and Jaquet made no attempt to examine this evidence, because they fail to point out that Sarton's watch is clearly identical to the Leroy watch attributed to Perrelet and described in detail in Chapter 2. The authors have glossed over the fact that there are no automatic watches signed by Perrelet and presume he did not sign them because there was no guild to make him sign them. (Viewing Perrelet as such a noble person devoid of any pride in his workmanship seems fairly unlikely, unless he made and sold watches for other people to sign.) There are, I believe, several unsigned watches of the Leroy type (with a central rotor) and one signed by Berthoud, but none signed by Sarton. However, it is difficult to dismiss the report because Sarton was a skilled horologist and a number of very fine clocks made by him exist; see Edward Aghib, "Hubert Sarton of Liège", *Antiquarian Horology*, December 1972, pages 42-54.*

Chapter 4 examines Breguet's perpetuelle watches. It begins by suggesting Breguet invented the self-winding watch, but the quotation from his own notes merely states that he perfected them; anyway, some evidence is provided which suggests both Breguet and Recordon at least initially purchased watches from Perrelet. Most of the chapter concerns later developments from the 1790s onwards, including explanations of his watches, which are translations of Breguet's own notes augmented by his or Moinet's illustrations. Although this approach is "authentic", the text and drawings are obscure, and it is very hard to understand them; the book would have been enhanced if additional illustrations and explanations had been included. The chapter also includes some discussion of Breguet's costs of manufacture.

The authors make no real attempt to compare the Leroy/Sarton rotor mechanism with Breguet's

eccentric “pedometer” weight; the two are completely different and the watch with a rotor is clearly superior in principle. Chapuis and Jaquet suggest that the pedometer system was adopted by Breguet because it wound satisfactorily whereas others did not. But this is contradicted by experiments with the Leroy rotor watch quoted in Chapter 2. There is no attempt to examine the different systems in terms of winding. Breguet’s pedometer weight could only move over a small arc and wound in only one direction, which is clearly less effective than a rotor with unlimited movement winding in both directions. Further, suspending a large weight at the end of a long arm which can flex led to serious problems requiring a roller to support it above the plate, against which it would otherwise rub, and buffer springs to prevent shocks as it bounced up and down. Indeed, at the end of the book Chapuis and Jaquet note that the design “could not resist long and hard wear” and was “subject to damage”.

Chapter 5 provides a biography of Recordon (mostly post 1780) and then gives a detailed explanation of his patent. Unfortunately there is no attempt to compare the patent with watches made by Breguet, although it is hinted that they are basically the same. As Breguet and Recordon had been associated since about 1775, and Recordon probably bought self-winding watches from Breguet, it is likely that the purpose of the patent was to prevent competition, which was a quite common reason and is why patents often cover many design variants even if they were not used.

The focus of the first three and a bit chapters is the origin of self-winding watches. However, it is compromised by a tendency to interpret the scant and ambiguous evidence to favour Perrelet and then, in apparent contradiction, Breguet. What we do know is that at least three people contemporaneously, about 1778, developed self-winding watches: Perrelet, through statements in documents; Sarton, through the very precise report on his watch; and Breguet from watches actually made. But there are no watches signed by Perrelet, and Breguet states he perfected them, not created them; indeed, there is a quote stating such watches were originally invented by Perrelet. This conflict is explained later on the assumption Perrelet made watches with rotors and Breguet invented the pendulum weight system.

Because all the evidence refers to a very short period, about 1777 to 1780, it is rather surprising that Recordon is not mentioned in this context. But it is clear that the authors consider Recordon’s patent to be derivative and so not relevant to the question of invention.

Chapters 6 and 7 cover other makers who produced self-winding watches from about 1780 onward. The most interesting aspect of this summary is that every one used a pedometer weight and there is no mention of any watches with rotors. The remaining chapters provide a succinct description of the development of pedometers and later self-winding watches.

My original review said little more than: “This is one of the best written and most informative books I have seen. Despite its flaws it is essential reading for anyone interested in automatic watches. And it should be read by everyone else as well”. On re-reading it I am now much more critical and less forgiving of the faults, but I still think it is essential reading.

[Rotor and pedometer weight mechanisms] For me, the main fault with this book is the failure to adequately distinguish between rotor and pedometer weight mechanisms, and their origins.

First, Chapuis and Jaquet claim that Perrelet invented the rotor mechanism on the basis of a single, unsigned watch, which they attribute to Perrelet without any satisfactory evidence. The result is what can best be described as a myth, because Breguet (“Breguet, watchmakers since 1775”), Brunner (“Eterna, pioneers in watchmaking since 1856”), Reymondin et al (“The theory of horology”), and others, uncritically attribute such watches to Perrelet on the basis of the same or other unsigned watches, probably basing their text on the statements of Chapuis and Jaquet. However, there is not one shred of hard evidence to support this view.

In contrast, there is strong evidence in favour of Hubert Sarton being the inventor of the rotor mechanism, in Le Roy and Defouchy’s report to the Paris Academy of Sciences. In order to reject this evidence we must accuse Sarton of fraud, in that he deliberately presented the invention of Perrelet as his own. I, for one, am not willing to make such an accusation against a person who was obviously a very good clockmaker. But others are! The Antiquorum catalogue “Important Collectors Wristwatches, Pocket Watches, Clocks & Horological Tools”, 12 and 13 May 2007, Geneva, includes a note providing a short biography of Hubert Sarton, associated with Lot 693, in which it is stated “... he made a trip to Le Locle, where he was able to examine self-winding watches made by Abraham-Louis Perrelet. Afterwards, upon his return to Paris, he filed a document with the Paris Académie des Sciences ...”. However, there is not one shred of evidence to show Sarton visited Perrelet, and the author of this note is presumably deliberately perverting historical knowledge.

In addition, we have Berthoud’s statement that the mechanism was invented in Germany. It is possible that he was referring to the watch made by Egidius Link in Augsburg, although, because Liège lies between Germany and Paris, he may have been incorrectly referring to Sarton. (The Egidius Link watch appears to be identical to one of the watches attributed to Perrelet, and one must wonder if it has been used to bolster an inadequate case for the latter. Of course it could equally be a watch made by Sarton and signed by Link.) Certainly there exists a self-winding watch with rotor signed Berthoud and it is clear that he had intimate contact with this design. However, like Breguet and everyone else, Berthoud probably bought in unsigned movements and finished and signed them himself. So he may have sourced that watch from Germany.

Second, at least one book, again probably relying on the vague statements made by Chapuis and Jaquet, states that Breguet invented the pedometer weight mechanism. Because there can be little doubt that Breguet knew of Perrelet’s watches, this claim depends upon us accepting the first claim (that Perrelet

made watches with rotors), and deducing that Breguet then created a completely different design. However, Breguet himself wrote "It was in ... that we thought of perfecting this kind of watch and surmounting the obstacles which prevented their regularity and preservation". How do we interpret this? The obvious, and I think most likely view is that Perrelet sent Breguet a watch with a pedometer weight and Breguet redesigned the mechanism to improve it. This opinion is supported indirectly by other improvements made by him. The most notable is that the majority of his repeaters are based on Stogden's 1720s English design with two significant adaptations. He definitely did not invent that mechanism. Another, more debatable, is that his overcoil balance spring was probably an adaptation of Arnold's helical balance springs with terminal curves, of which he must have known.

Consequently, a more likely explanation of events is that Perrelet invented the pedometer weight mechanism, which Breguet improved, and Sarton invented the far nicer rotor mechanism.

Which brings us to Joseph Flores. In 1993 he "discovered" the report on Sarton's watch and began to promote Sarton's claim as the inventor of self-winding watches (well, at least the rotor mechanism) over that of Perrelet. Unfortunately, Flores has exhibited some poor historianship which has seriously harmed his case. The obvious problem is his claim to have discovered the report when it had been documented in 1956 and referred to in an article in 1972! In part this is understandable because Flores does not speak or read English and the report is not in the original French edition of "The history of the self-winding watch 1770-1931". (But this assumes he is bereft of English reading horological friends, which seems unlikely.) In addition to which he relies too much on emotive rather than rational argument, pushing his point relentlessly without seriously criticising the accepted, and I think wrong, view of history, and in one instance making a major error in dating.

But I think he is right. I suspect the most probable sequence of events goes something like this: Before 1777 Perrelet invented the self-winding watch with pedometer weight. Breguet and Recordon acquired such watches from him and Breguet turned the design into a practical mechanism. Well, almost practical as it is clear there were problems. Before or in 1777, Sarton came up with his own rotor mechanism which, like Perrelet's watches, were made and left unsigned by them or persons unknown.

What we need now is a competent, impartial historian to do the work needed to clarify what actually happened.

See also Flores "Perpétuelles a roue de rencontre".

R542 Chapuis, A; Loup, G

La montre chinoise

relations de l'horlogerie suisse avec la Chine

reprint (Neuchâtel: Attinger), 1983 (1919), 29 x 22 cm, 272 pp, 245 ill, 33 plates.

Bibliography, description, history, identification, makers (French).

Also printed circa 1922 and at least one printing is undated. The facsimile reprint is a limited edition.

The Chinese watch, Swiss horological connections with China.

A detailed study of the watches made for the Chinese market and the companies who made them.

The standard (and only?) text on the subject.

R543 Chapuis, A; Robert-Charrue, F

Grands artisans de la chronométrie

histoire de l'horlogerie au Locle

Neuchâtel: Editions du Griffon, 1958, 28 x 22 cm, 272 pp, 195 ill, 18 plates.

Biography, description, history, makers (French).

Great masters of chronometry.

History of horology at Locle with biographies of Swiss makers Du Bois, Daniel Jean-Richard, J.-F.

Houriet, Fritz Courvoisier, Jurgensen, David Henri Grandjean, Sylvain Mairet.

With a chapter on the manufacturers including Tissot, Ulysse Nardin, Zenith, Zodiac and Cyma.

R544 Charavel-Lengelle, E

Anglo-French glossary

Vocabulario Espanol-Francais

for the horological, jewellery and optical trades

para relojería, joyería y optica

Paris: Tardy, ca 1960 (1936), 20.5 x 13.5 cm, 32 pp, no ill (16 pp).

Dictionary (English, French, German, Italian, Spanish).

Also produced in other languages, including "Vocabulario Espanol-Francais para relojería, joyería y optica" (20 pages).

A glossary of English terms and their French equivalents.

[reprint, mediocre] An English-French dictionary more useful to the French than the English speaker. It is insignificant and far better dictionaries exist (see Berner).

R545 Charles, V; Turcan, J

Lubrifiants de graissage et d'usage

1947, 269 pp.

Technical (French).

R546 Charost, F; Charost, P**Tratado metodico de la relojería simple**

Madrid: (Madrid: En la Oficina de Don Blas Roman), 1980 (1795), 23.5 x 16.5 cm (8 x 5.5 inch), 151 pp, 16 plates (xvi, 151 pp, no ill).

Description, repair, watch making (Spanish).

The reprint is number III in the series "Monografias Espanolas de Relojeria". It is augmented by 16 illustrations from the "Enciclopedia francesa".

A treatise on watch and clock making divided into two parts: "one treating of weight and table clocks and the other of watches, explaining and teaching their construction and working, with some notes on the repairs they may need."

Workshop methods.

R547 Chastel, F**Recueil de tables progressives pour les vibrations du régulateur**

Genève: Luc Sestie, 1817, 4to, 62 pp.

Technical (French).

Compilation of progressive tables for the vibrations of the regulator.

Pendulums?

R548 Chaudet, AL**Der freie ankergang****Dessins théoriques d'horlogerie - échappement libre à ancre**

Der freie Ankergang - begleitheft zu Blatt IV der farbigen-theoretischen behelrenden Zeichnungen mit der Uhrmacherei (dessins théoriques d'horlogerie) mit erläuterndem Text und praktischen Ratschlägen.

ca 1914, 8vo, 23 pp.

Technical (German).

The lever escapement. - handbook to sheet IV of the coloured-theoretical designs for the watchmaker (Dessins Théoriques D'horlogerie) with explanatory text and practical advice.

Text book to accompany "Dessins théoriques d'horlogerie".

R549 Chaudet, AL**Der zylinderang**

ca 1914, 8vo, 14 pp.

Technical (German).

"Der freie Ankergang - begleitheft zu Blatt I der farbigen-theoretischen behelrenden Zeichnungen mit der Uhrmacherei (dessins théoriques d'horlogerie) mit erläuterndem Text und praktischen Ratschlägen."

The cylinder escapement. - handbook to sheet I of the coloured-theoretical designs for the watchmaker (Dessins Théoriques D'horlogerie) with explanatory text and practical advice.

Text book to accompany "Dessins théoriques d'horlogerie".

R550 Chaudet, AL**Planches avec explications**

1914, 12 pp, ill, 18 plates.

Technical (French).

Listed in Tardy

18 plates with notes describing escapements, gearing, balance springs, chronograph and repeater mechanisms.

Is this "Dessins Théoriques D'horlogerie"?

R551 Chavigny, R; Perissas, M**La mesure du temps à travers les âges**

son art, sa technique

2009, 24 x 17 cm, 306 pp, ill.

History (French).

The measurement of time through the ages - its art, its technique.

"Through the saga of the watchmakers, this book aims to show you the arts, the techniques and the great inventions which made it possible to pass from a precision of about two hours per day in the 14th century to one second in fifteen million years."

Chavigny has written 3 books on clocks and this book may not include watches.

R552 Chenakal, VL**Watchmakers and clockmakers in Russia 1400 to 1850**

London: Antiquarian Horological Society, 1976 (1972), 24 x 15 cm, 64 pp, 11 plates.

History, makers (English, Russian?).

Antiquarian Horological Society Monograph 6.

Translated by W.F. Ryan.

A listing of Russian makers with a historical summary.

[Review by Henry B, Fried] Britten's "Old Clocks, watches and their makers", Baillie's "Watchmakers and Clockmakers of the World", Palmers "Book of American Clocks", Loomes' second edition of Baillie's list of makers, Tardy's "Dictionnaire de horlogers Francaise", and the various other listings of regional watch and clockmakers have supplied names, places and dates of watch and clock makers. Generally, we associate clocks and watches and their makers as English, French, German, American, with a sprinkling

of makers from Austria, Italy and Czechoslovakia. However, how many of us have linked Russia with such makers? Baillie and Britten list none from Russia.

This book's author-compiler, Valentin L. Chenakal, is associated with the Lamanasov Museum of the Academy of Science of the U.S.S.R. in Leningrad.

There are five pages of text before the start of the alphabetical listing. W. F. Ryan, the translator, in his notes states that, "... although some of the listed clock makers were foreigners working in Russia, many - in particular descendants of earlier immigrants, Jews and inhabitants of the Baltic lands - would normally use the Russianised form of their name and indeed might not have known the original spelling of the Latin alphabet." He also reminds us that by the end of the period covered by the book, the Russian Empire included Poland, the Ukraine, the Baltic area, Siberia, the Crimea and the Caucasus. The first were makers of tower clocks at the start of the fifteenth century and by the beginning of the 18th century there were tower clocks by Russian makers in monasteries and in numerous bell-towers.

In the 1600's, domestic wall, table clocks and pocket watches were available, Also, a special institution for clocks was created in Moscow. Later, Peter the Great encouraged the development of the arts and crafts in his country. Their Academy of Sciences had official posts of clockmakers and in 1773 a special class was started in the St. Petersburg Academy of Arts and Sciences. Also, it is noted here that horological organizations existed in numerous cities and some watch and clock makers are also credited with authoring books on practices and theory of their trade. Some horologists were recipients of medals, ribbons of honor and money prizes.

In the alphabetical listing of clockmakers and watchmakers many are listed as "assessors of (Vilna) Christian clockmakers guild, assessor of the Vilna Jewish clockmakers guild." Other notations besides makers' names include, "... head of St. Petersburg German craftsman's association," "official clockmaker of the Court Office of Works," "care of Nikol / skaya tower clock in the Kremlin," "clockmaker at the court of Catherine II," "serf of the estate - owner Alferov, Turret clocks, 24-hour, 7-day, 1-month, and 1-year wall clock with signature Dem'yan Kazimir derevni Popovki." Thus, here is a fine artisan who was a serf, which Webster defines as ... "in medieval Europe and in Russia until 1861, one attached to the land and transferred with it." Others, however, are listed as instrument makers as well and assistants to scientists. Listed are those who were famed makers of marine chronometers including a design for one with four springs. Many foreign watchmakers worked in Russia and are listed. A Swedish watchmaker, Peter Nordsteen worked in St. Petersburg from 1766 to his death in the 19th century and ran clockmaking classes at the Academy of Arts and Sciences, designed a bridge over the river Neva and in 1784 set up a watch factory in Dubrovna, producing high quality watches and at the same time taught 36 pupils. In 1806, he was awarded a life pension.

Reading the various details listed under many of the makers reveals many interesting facts of Russian horology, accomplishments, customs, guilds, awards and restrictions. Since, as noted earlier here, no Russian makers are listed in Baillie's or Britten's standard references, this book aids in rounding out the growing lists of known makers of the world's clocks and watches.

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R553 Cherbuliez, E

Mémoires d'Isaac Cornuaud sur Genève

et la révolution de 1770 a 1795

Genève: Jullien, 1912, 8vo, 762 pp, portrait.

History (French).

Memoirs of Isaac Cornuaud about Geneva and the 1770-1795 revolution.

R554 Chevalier, M

Rapports du jury international

Paris: Centrale Des Chemins De Fer, 1862, 22 x 16 cm, 463 pp, ill, plates.

History (French).

The book contains the report on horology, class 15, from the 1862 London exhibition.

R555 Chevallier, L; Dubois, A

L'emboitage de la montre

Genève: Administration due Journal Suisse D'Horlogerie, 1890, 8vo, 29 pp, no ill.

(French).

The casing of watches.

R556 Chevenard, P

Nouveaux alliages du type elinvar

pour spiraux de chronomètres

La Chaux-de-Fonds: La Société des Fabriques de Spiraux Réunies, 1938, 28 x 20 cm, 59 pp, 19 ill.

Technical (French).

A numbered, limited edition of 1000 copies.

New alloys similar to Elinvar for chronometer balance springs.

R557 Childers, C

Designers of time

New York: Rizzoli, 1999, 27 x 27 cm, 143 pp, ill.

Illustration (English).

Also listed as 176 pp, 200 ill

“The wristwatch is today a platform of innovation for fashion designers. The designer watch was born in the 1970s - this volume celebrates what has grown to be one of the most collectible items in fashion today. Stunning photographs throughout. The words practical and fashion are rarely linked together, with the exception of one item: the wristwatch. Long treasured as an heirloom to be passed down through generations, the wristwatch is a platform of innovation for fashion designers. A relatively new phenomena, the designer watch was born in the 1970s and it has forever changed the way we view time. Now, time is secondary to the statement that the timepiece will make to the world. An item of personal expression, the designer wristwatch is a sensation - many people have several watches, one for every mood or whim. Designers of Time celebrates what has grown to be one of the most collectible, most practical items of fashion today.”

Described as a chic book that explores the world of the watch through the eyes of designers; from pocket and pendant watches to the design giants of today.

R558 Childers, C

Masters of the millennium, timepieces

New York: Rizzoli, 2000, 11 x 11 inch, 244 pp, ill.

Description (English).

Described as giving “insight into the crossover between the fashion and jewelry world, detailing the pervasiveness of time in today’s lifestyles and lives”. With colour photographs of watches by Boucheron, Cartier, Van Cleef, Girard-Perregaux, Philippe, Chaumet, Breitling, Concord, Daniel Jeanrichard, Movado, Paul Picot, Perrelet, Versace, etc.

R559 Childers, C; Naas, R

Great timepieces of the world

USA: BW Publishing and New York: Rizzoli, 1998, 11 x 11 inch, 209 pp, ill.

History (English).

“Masterful timepieces, made by the hands of craftsmen in the mountains of Switzerland, are increasingly drawing the attention of collectors and connoisseurs around the world. The timepieces are fascinating not only because they keep precision time with engines built by man, but often because they offer more than time-telling features, such as mechanisms that record the times of athletes in competition, tell the lunar phase, signal the hour with a gong, or tell the time in several places over the world, all smoothly and intricately finished inside small cases that fit on the wrist.

Stunningly complex, tiny parts, some as thin as a hair, are assembled in designs so artful and beautiful that proud craftsmen leave their work open for display through sapphire glass in what are known as skeleton timepieces.

This book features full-color photographs of these treasures and traces man’s obsession with time to today’s present leaders in the watchmaking industry, including Breguet, Breitling, Blancpain, Franck Muller, Patek-Philippe, and Piaget.”

This has been described by one person as “desirable” and by another as “useless”.

R560 [China]

Clock and watch in imperial palace of Beijing

2004, 275 pp, ill.

Collection, illustration (Chinese).

Catalogue of timekeepers of the Imperial Palace of Beijing.

See also Liao “Clocks and watches of the Qing dynasty, from the collection in the forbidden city”.

R561 [China]

Jewelry and accessories of the royal consorts of Ch’ing dynasty

qingdai haufei shoushi

Beijing: Palace Museum, 1997 (1992), 22 x 29 cm, 152 pp, plates.

Collection (English).

342 pieces, including some pocket watches.

See also Harcourt-Smith “A catalogue of various clocks, watches, automata, ...”.

R562 Choi, Frederick

Escapement available in the market

Hong Kong: Frederick Choi, 2003, 29.5 x 21.0 cm, 95 pp, 151 col ill, 88 b/w ill.

Illustration (English).

Spiral bound.

Descriptions of 32 escapements. Each description consists of one or more diagrams and most include colour photographs of actual watches using the escapement. The book concludes with a list of watchmakers and inventors, each with a few notes and a portrait.

[1st edition, very good] The purpose of this book is simply to illustrate pocket watch escapements that are readily available and, consequently, fairly common. There are no explanations of action, no comparisons and only short remarks about each type. At first glance that would make this a pretty pointless book, especially compared to standard texts such as Chamberlain.

But the whole point of the work lies in the photographs of actual watches and the very detailed, close-up pictures of the escapements. With only a couple of exceptions, Choi has produced superb, clear photographs which take the reader from the abstract diagram to understanding the reality of implementation. In one or two cases there are no photographs and a couple of illustrations are not as clear as I (and I am sure, Choi) would have liked. However, most other books have mediocre, obscure pictures which are often no

more than space-filling distractions, because the poor quality makes them nearly useless; in fact I am sure sometimes they are included simply to increase the number of printed pages irrespective of relevance or usefulness. On the other hand, Choi (like Antiquorum) has recognised the need for and value of good photographs. My copy of this book will live with Chamberlain to provide the illustrations that "Its about time" so sadly lacks.

The final section, brief notes and portraits of horologists (and Derham!) is not up to the same standard, partly because of the size at which the portraits have been reproduced, but it is a convenient place to "look at" some of the leading characters in the preceding "story".

[Remark] I haven't added this book to my short list of favourites but perhaps I should. It is a good example of an author doing precisely what he says he will do, and doing it well. I heave a sigh of relief whenever I read such a book, devoid of meaningless waffle and clearly sticking to the point of interest. There are no earth-shattering revelations and perhaps the book will be forgotten in years to come, but for the moment it has given considerable pleasure.

R563 Chopard, A**Répertoire alphabétique des marques de fabrique**

concernant l'horlogerie de 1880 à 1883 inclusivement

La Chaux-de-Fonds: Haefli & Cie, 1906 (1884), 15 volumes.

Identification, makers (French).

First volume and 14 supplements to October 1906.

Alphabetical list of trade marks relating to horology, 1880-1883 inclusive.

Kochmann "Clock and watch trademark index" says that (between 1880 and 1927) 8,252 horological trademarks were registered.

See also Archives de l'horlogerie "Marques de fabrique horlogeres".

R564 Christianson, D**Timepieces, masterpieces of chronometry**

England: Newton Abbot, New York: Firefly Books, 2002, 24.5 x 17.0 cm, 176 pp, 180 ill.

History (English).

Nine chapters followed by a glossary, bibliography and index: The celestial clock (12 pages); A call to prayer (12 pages); The priceless possessions of a few (16 pages); From tabletop to waistcoat and beyond (16 pages); The craft era in watchmaking (22 pages); The industrial revolution (20 pages); A mountain industry explodes (20 pages); The standardisation of time (20 pages); and The quartz revolution (18 pages).

[1st edition, fair] I think I have become a grumpy old man. I am becoming less forgiving and increasingly irritated by little things.

At the very end of this book, Christianson writes "this account is not a scholarly study ... but it is factual and accurate". In a general way this is true and the book provides a quite good social history of horology. But it is riddled with small errors, statements which are vague or simply wrong. I can cope with a few mistakes, but I cannot accept large numbers and the further I read the further my opinion of the book declined. Incorrect terminology (for example, trundle, bearing hole, thrust bearing), incorrect chronology (Sully was alive in the 1780s) and incorrect descriptions (complications). By themselves none of these errors are of much concern, but taken together they show a significant lack of factual accuracy.

Two other aspects of the book annoyed me. First, the illustrations are not mentioned in the text and appear in seemingly random order. Second there are many pages of "boxed" text which contain information separated from and sometimes unrelated to the text. If the information contained in them is so important that it needs to be included, then why didn't Christianson reorganise the text and include them in the main flow of ideas? Or if they are not so important, why didn't he just omit them?

Finally, this is a history and I naively believe that histories need to present a chronological development of events. However, Christianson does not, jumping back and forth in time, mixing quartz watches with the 18th century.

Although this is a pretty book, I don't understand why it was published. Landes "Revolution in time" covers most of the same material and is infinitely better. Christianson does include some technical information and Landes does not, but he does it badly and again there are far better books available. I think that this is one of many examples of publishers' criteria for books. It is far more important that a book is visually attractive than it contains information worth reading. Indeed, many beautiful books are totally devoid of information! At least this one has meaningful words even if they are marred.

Christianson is described as "a certified master watchmaker and horological historian". The former is presumably true, but the latter is not. He needs to study Morpurgo "The origin of the watch".

R565 Christies**Catalogue of the sale of the celebrated collection of watches by Breguet**

London: Christie's, 1964 to 1965, 24 x 18 cm, three volumes of 22, 23 and 21 pp, 172 ill, 61 plates.

Collection, description, catalogue (English).

Each part is for a separate sale; December 1964, June 1965 and November 1965.

In three parts with full descriptions, technical details, names of buyers and prices paid for 61 Breguet watches. Each watch is shown in 3 illustrations and a photographic plate.

R566 Chronos Magazine**All about Longines****L'elegance du temps dupuis**

Ulm: Ebner Verlag, 1997, 28.0 x 21.0 cm, 150 pp, ill.

History (English).

A special edition of the "Chronos" magazine devoted to the Longines Watch Company.

[1st edition, fair] This is best described as extensive advertising. Although it gives some information about Longines, it is notable for the lack of a coherent history and the generally vague but adulatory text. The most interesting information is that Lindbergh crossed the Atlantic in a wicker chair and there is a two-page spread of Longines manual wind calibers. Also, there are plenty of excellent photographs of Longines watches and general descriptions of watches and important events.

It is interesting, but I wouldn't go out of my way to get a copy.

R567 Chronos Magazine**All about Omega, 125 years of watch history**

Germany: Ebener Verlag, 1994, 4to, 145 pp, ill.

History (English, German).

Published in several separate language editions?

A special issue of the "Chronos" magazine devoted to the Omega Watch Company, covering "the history, technology, adventure and beauty of Omega watches.

R568 Chronos Magazine**Chopard special**

Ulm: Ebner Verlag, 1986, 4to, 150 pp, ill.

Makers, illustration (English).

R569 Chronos, Philo**The art of making clocks and watches**

London: Horological Journal (London: Universal Magazine of Knowledge and Pleasure), 1975 (1748), 20.5 x 13.0 cm, 14 pp, 1 fld plate.

Description, technical (English).

Reprinted in the Horological Journal, March 1975.

It appeared in the Universal Magazine in 4 parts: February pp 88-89 and the plate, March pp 107-110, April pp 156-157, May pp 215-216. It is interposed with a description of the Strasbourg clock in the April issue pp 157-159.

A "mathematical" description of watch and clock works. It begins with a mathematical analysis of the fusee which is followed by train and motion-work calculations. Finally, there is a description of a striking train.

The two-page plate shows a watchmaker seated at his bench and holding a watch. On the bench and the wall are various hand tools and four glass domes covering movements. In the room there is a wall clock and a longcase clock. Superimposed is a striking clock movement with fusees and three diagrams (a fusee, a train and motion-work).

[1st edition, very good] A reasonably clear explanation of the "mysteries". Like Hatton "An introduction to the mechanical part of clock and watch work", it is a topic that seems strange to modern readers with access to many good books, but it would have been fascinating reading 250 years ago.

This article is notable for giving precise, technical explanations, particularly of fusees. In contrast, other writers like Derham meander vaguely around topics they barely understand.

Also reviewed in Baillie "Clocks and watches: an historical bibliography" where the pagination is given incorrectly.

R570 CID SA**Etude des temps et méthode d'assemblage du calibre AS-5206**

mise en place des fournitures, réglage, montage

Switzerland: CID SA, nd, 104 pp, ill.

Technical (French).

R571 Cipolla, CM**Clocks and culture 1300-1700**

London: Collins, New York: Norton, 1978 (1967), 22.0 x 14.5 cm, 192 pp, ill, 10 plates.

History, bibliography (English).

Reprinted in 1978 and perhaps in 1997.

Four sections: Prologue (22 pages); The European masters (39 pages); Chinese mandarins and the self-ringing bell (27 pages); and Epilogue (8 pages).

Followed by an appendix (4 pages on escapements), notes (51 pages) and a bibliography 15 pages). There is an index.

Primarily concerned with clocks rather than watches and, as stated in the preface, "... this is essentially an exploration in economic and social history ... from 1300 to 1700".

[1st edition, fair] I found this book dissatisfying, probably because I had read Landes "Revolution in time" first. In the epilogue, Cipolla writes "the clock was invented ... to satisfy the human need of measuring time". But he never seems to examine who needed to measure time and what form of time measurement they required. He skirts this central issue and so his book skirts the whole subject. In contrast, Landes strongly argues this point; whether we agree with his analysis or not we cannot avoid

being stimulated and challenged by his reasoning.

Cipolla's prologue outlines general factors in the development of Western technology and provides a very interesting background. The following sections, however, tend simply to catalogue events with a few (often equivocal) suggestions of cause. Occasionally the writing whets our appetite (as when he quotes "clockmakers ... were violent and riotous in their youth, litigious in their adult years and dishonest whenever the occasion arose") and there are plenty of references in the notes to search for further information. The discussions of the migration of artisans are interesting, but overall I felt I got not much closer to understanding horological history.

R572 Clark, Claudia

Radium girls

women and industrial health reform 1910-1935

USA: University of North Carolina Press, 1997, 23.5 x 15.5 cm, 289 pp, 1 ill.

History (English).

Introduction (11 pages) and 8 chapters: Watch Alice glow, the New Jersey radium dial painters (27 pages); The unknown god, radium, research and business (26 pages); Something about that factory, the dial painters and the Consumers' League (22 pages); A hitherto unrecognized occupational hazard, the discovery of radium poisoning (25 pages); A David fighting the Goliath of industrialism, compensation in New Jersey and Connecticut (37 pages); Gimme a gamma, iatrogenic radium poisoning (12 pages); We slapped radium around like cake frosting, dial painting in Illinois (19 pages).

With a conclusion, notes, bibliography and index.

[1st edition, very good] *This book is based on a dissertation for a university higher degree. It is detailed history and analysis of industrial health reform in America, centered on the tragic deaths of dial painters. Consequently it is not light reading and has only marginal relevance to horology. Indeed, after reading a couple of pages of the introduction I decided it was not worth reading the rest; it would be too dry, too technical and the story would be buried under academic language and technique. Fortunately I read the first chapter!*

Although most watch and clock collectors will never read this book, hopefully some will. It is a detailed, insightful examination of the conflict between business and government on the one hand, and the rights of workers on the other.

What is simply appalling is that some scientists, doctors and dentists demonstrated utter incompetence or they simply lied (Clark is careful not to be too precise, but it is clear that many deliberately lied). Throughout the book we are told how businesses suppressed evidence, paid professionals to provide suitable reports, and influenced governments to make it almost impossible for the sick and dying dial-painters to receive any sort of justice.

This is not an attack on America. I have no doubt that exactly the same events occurred in other countries, including England and Australia. Indeed, similar events are still occurring, where business deliberately uses the legal system and influence to prevent just claims receiving just outcomes; the recent antics of an Australian firm to avoid liability for deaths from asbestos is a case in point.

Equally it is not an attack on capitalism; there is evidence of similar activities in communist countries. It is, unfortunately symptomatic of the human condition. Those who achieve power largely do so by ruthless suppression of others, often motivated by greed. I suspect some watch collectors might fall into this class. Anyway, the present day Swiss watch industry panders to this greed and need for status, manufacturing watches for maybe 100 million rich, while the remaining 6 billion of us largely go without. The rest of us hope, often without much hope, that we might be treated fairly.

R573 Clark, P

Design icons - the watch, an appreciation

London: Aurum Press, 1998, 17.0 x 17.5 cm, 32 pp, 50 ill.

Description (English).

A volume in the "Design Icons" series.

A survey of 20th century watch design. A 4 page introduction, giving a brief history of wrist watch development, followed by photographs of watches. Each photograph is accompanied by a description of the case, dial and bracelet and a few remarks (as appropriate).

[1st edition, mediocre] *The book is described on the dust jacket as follows: "A witty look at how designers have transformed functional timepieces into objects of desire, and a bright, colorful survey of the development of watch design from the beginning of the 20th century to the present day. Specially commissioned color photographs show 36 of the most significant watch designs from around the world. Fun and stylish gift for time junkies everywhere."*

Clark trained as a designer and knows nothing about watches. So there nothing about horology and the usual errors, such as calling a chronograph a chronometer, occur.

The book illustrates examples of "how much fun a designer can have rising to the challenge of enlivening the familiar", but it has two obvious faults. First, some of the watches illustrated (such as the Omega Speedmaster and Longines Hour Angle) are in no sense interesting designs; they are straightforward, practical watches. As Clark does not distinguish between function and symbol this is not really surprising. Second, there is no attempt to discuss let alone analyse design, fashion or trends (if there are any). We just get to look at some pretty dials and bracelets and learn nothing much in the process. This is a pity because a serious discussion of fashion and design trends would be well worth while.

Overall, the book lives up to its dust jacket blurb.

R574 Clark, SE; Waltham Watch Co**Mental nuts, can you crack 'em?**

USA: American Waltham Watch Co, 1920 (1897), 11.5 x 7.0 cm, 28 pp, ill.
Miscellany (English).

At least 10 printings. Presumably handed out free to customers. Also described as 48 pp, ill.

A book of 100 puzzles followed by the solutions. There are 6 full-page advertisements for Waltham products and each pair of pages is headed by a pithy saying about Waltham watches. The cover has the name and address of a watch retailer.

[1912 revised edition, mediocre] The puzzles are standard and unrelated to horology; most are numerical or trick questions. The book is quite uninteresting unless you enjoy puzzles.

R575 Cleary, WD & Co**Useful information for jewelers and watchmakers**

Atlanta: WD Cleary & Co, 1935, 22.5 x 10.0 cm, 136 pp, ill.
Miscellany, repair (English).

Parts lists and helpful tips produced by a tools and materials supplier.

51 left-side pages contain tips and recipes which are reprinted from Nelson-Hall "Cyclopedia of valuable information for jeweller, watchmaker, optician". The remainder and all right-side pages have KK system information and advertisements: identification of KK movements by winding parts, balance staff dimensions, mainspring charts, hands, tools and American mainspring endpieces and sizes.

[1st edition?, fair] There is no introduction and no information about what the KK system was, so the identification information is of little use.

The hints and recipes are roughly organised but need to be discovered. And there are odd items; like how to bore out gun barrels, metalise baby shoes and kill butterflies. Interesting in parts.

R576 Clerizo, M**Masters of contemporary watchmaking**

London: Thames & Hudson, 2009, 30 x 30 cm, 292 pp, 493 col ill, 179 b/w ill.
Makers, biography, description (English).

A book about 11 independent master watchmakers with long articles on George Daniels, Sven Anderson, Vincent Calabrese, Philippe Dufour, Antoine Preziuso, Frank Muller, Aniceto Jimenez, Alain Silberstein, Marco Lang, Vianny Halter and Roger Smith. The author interviewed all eleven and records their enthusiasm, passion and motivation in designing and making superb watches. Each chapter is illustrated with photographs of their work.

The works of an additional 18 independent watchmakers are also illustrated. They are Felix Baumgartner, Aaron Becsei, Nicolas Delaloye, Paul Gerber, Gruebel Forsey, Richard Habring, Bent Haldimann, John and Stephan McGonigle, Reiner Neinaber, Thomas Prescher, Daniel Roth, Sepan Sarpeneva, Peter Speake Marin, Andreas Strehler, Christiaan Van Der Klaauw, Kari Voutilainen and Volker Vyskocil.

See also Doerr and Baumgarten "Twelve faces of time, horological virtuosos".

[1st edition review by Fortunat Mueller-Maerki] Watchmaker and watchmaking must be two of the words in the English language that are used most frequently in a sense far removed from their original meaning. How many people who are alive today have actually ever 'made a watch', all by themselves? A few such people exist; but even if we are generous and do not insist that the individual has also made the case and the dial him- or herself there are precious few.

The book under review explores the achievements of a significant sample from among the few contemporary artisans who actually make watches all by themselves – but more importantly, it tries to answer the question: What drives them in their seemingly quixotic quest? Michael Clerizo has conducted lengthy visits and interviews with 29 independent watch creators, exploring their motivations, their biographies, their work styles, the philosophies behind their products, and he describes the resulting masterpieces. 220 pages of the book are devoted to 11 chapters describing on 20 pages each the 11 craftsmen he found most fascinating, as well as their work. All these chapters are structured identically: Starting with a portrait page, then 8 pages of narrative, followed by 11 pages of large color photographs illustrating the oeuvre. The artists covered here are: George Daniels, Svend Andersen, Vincent Calabrese, Philippe Dufour, Antoine Preziuso, Franck Muller, Aniceto Jimenez Pita, Alain Silberstein, Marco Lang, Vianney Halter and Roger Smith.

The final section of the book contains shorter chapters (either 2 or 4 pages each) on 18 additional craftsmen, who are introduced only through pictures of themselves and their creations, but without a text section. The list here includes Felix Baumgartner, Aaron Becsei, Nicolas Delaloye, Romain Gauthier, Paul Gerber, Greubel Forsey, Richard Habring, Beat Haldimann, J & S McGonigle, Rainer Nienaber, Thomas Prescher, Daniel Roth, Stepan Sarpeneva, Peter Speake-Marin, Andreas Strehler, Christiaan van der Klaauw, Kari Voutilainen, Volker Vyskocil.

The 29 creators covered in this book account only for a miniscule portion of the high-grade watches produced today in the world, but in many ways their stories condense the essence behind the resurgence of the high-grade mechanical watch. The individuals covered range from those who by choice remain single practitioners, who produce less than a handful of pieces a year, to some who have grown into small brands like Silberstein or Franck Muller. But no matter how small or relatively big their businesses are, these craftsmen are all incredibly passionate about their work and hold strong and interesting opinions about contemporary horology.

Unlike other publications on extremely exclusive timepieces this book avoids the platitudes crafted by the image consultants of the brands and rehashed endlessly by their public relations advisers. It speaks in the voice of the creative geniuses behind these innovative watches, and the reader gets a good sense about the personalities involved. This reviewer found the book entertaining, inspirational and educational. It is a large and heavy book, not conducive for bedtime reading. It is also a pretty and nicely designed book, in some regards too much so: The bulk of the text is printed in 'white on gold background', admittedly elegant, but rather hard to read in less than perfect lighting conditions. The choice of which individuals to cover in this kind of book is a subjective one; this reviewer would have preferred to hear more from the ones doing all the work themselves, and less from makers like Alain Silberstein and Franck Muller who really belong more to the corporate world than to the sphere of craftsmen. In spite of these shortcomings this title is probably the most engaging description published recently on the smallest, but also most interesting sector of the contemporary watchmaking industry.

[Review by Jon Weber] *I had not heard of a lot of these watchmakers but I very much enjoyed what I read. Some of them were very candid and I formed a very negative opinion of a few of them. Their overwhelming conceit came through.*

I found I like most of them, at least as portrayed.

More important the book is lavishly illustrated and, unlike a lot of what I call junk books, this has a lot of very detailed movement photographs which are very well done.

While it is mostly wrist watches, several makers made pocket watches for school projects and these are well illustrated.

I'd like to have seen a section on F. P. Journe and on RG Murphy but its still a very fine book.

R577 Clermont, D de

L'horlogerie vulgarisée petite

méthode pratique d'horlogerie a l'usage des particuliers avec nomenclature des pièces composant la montre ainsi que l'outillage nécessaire

Marseille., 1904, 16mo, 43 pp.

Repair, tools (French).

Robertson gives the date as 1902.

Horology popularised, a small practical manual for personal use, with the nomenclature of watch parts and the necessary tools.

R578 Cleves, C

Identifying the fake Rolex

USA: American Watchmakers Institute, 2001, 35 mins, video tape.

Identification (English).

Basic rules for evaluating the authenticity of a Rolex watch.

R579 Clockmakers Company

British clock and watch making today

London: Clockmakers Company, 1989, 56 pp, ill.

Exhibition (English).

Catalogue of an exhibition at the Goldsmiths Hall showing the work of modern makers.

R580 Clockmakers Company

Catalogue of books in the library

of the Company of Clockmakers

London: B. McMillan, 1830 (1820), 26 pp.

Collection, bibliography (English).

Tardy gives 1820 (120 pp) and 1830 (145 pp).

See also Overall "Catalogue of books, manuscripts, specimens of clocks, watches ... " (1875), Nelthropp "A catalogue chronologically arranged of the collection ..." (1895), Baillie "Catalogue of the library of the Clockmakers Company in the Guildhall" (1931) and Bromley "The Clockmakers' library" (1977).

R581 Clockmakers Company

Charter and bye-laws

London: Clockmakers Company, 1825 (ca 1800), 23.5 x 14.0 cm, 104 pp, no ill (iv, 72 pp).

History (English).

It is available as a Google Book PDF file.

The charter and bye-laws also appear in House of Commons "Report of the committee on the petition of watchmakers of Coventry".

R582 Cloutman, EW; Linnard, W

Henry Williams, Lancarvan

a clock and watchmaker and a great farmer

2003, 136 pp, ill, 4 plates.

History (English).

Limited edition of 300 copies.

A detailed study of the life and work of Henry Williams (1727-1790) who made longcase clocks in the Vale of Glamorgan.

The book is primarily about clocks and there are only two pages on watches. Two watches are known and one (silver cased, hallmarked 1776) is illustrated with several photos.

R583 Clouzot, Henri**Dictionnaire des miniaturistes sur email**

Paris: Albert Morance, 1924, 23.5 x 18.5 cm, 243 pp, 12 plates, frontis.

Makers (French).

Dictionary of miniaturists in enamel.

R584 Clutton, Cecil**Collector's collection**

London: Antiquarian Horological Society, 1974, 25.0 x 19.5 cm, 96 pp, 77 b/w ill.

Collection, description (English).

AHS Monograph No. 8.

A foreword and an introduction followed by descriptions and photographs of 33 pieces: 27 pocket watches, a drum clock, 2 deck watches and 3 carriage clocks.

[1st edition, fair] In his introduction Clutton states that the object of his collection is "to demonstrate every technically important step from the verge escapement to the karussel, by the best examples I could afford". Indeed, he writes "the century from about 1575 to 1675 is the least interesting in the whole history of the subject", and cases and decoration are of no importance to him, even to the extent of being happy to use a paper clip for a pendant bow!

In the context of this clear purpose the book is rather disappointing. His descriptions say very little about the technical aspects of the watches and most of the quite good photographs are ordinary dial and movement views. The writing meanders along with more emphasis on how good his watches are rather than on their features, and the technical remarks are brief and fairly vague; although the description of the Le Roy lever movement fragment and the modifications made by Daniels is good. The only exciting bit is the irrational attack on Earnshaw which is superficial and devoid of supporting evidence; it suggests that Clutton was responsible for that part of Clutton and Daniels "Watches".

Overall, the book has nothing much to offer and will add little to the reader's understanding of technical developments.

R585 Clutton, Cecil; Daniels, George**Clocks and watches**

in the collection of the Worshipful Company of Clockmakers

London: Sotheby Park Bernet, 1980 (1975), 4to, 123 pp, ill.

Description, collection, illustration (English).

This catalogue of the collection on view in the Guildhall is the first one since that of Baillie in 1949. It consists of a short history of the company and its museum followed by a list of selected items from the collection, only a few of which are illustrated.

[1st edition, fair] Unfortunately the plates are generally disappointing and hence only a few illustrations are indexed. Read independently of visiting the museum it has less value than it should. There are much better "picture books" available.

R586 Clutton, Cecil; Daniels, George**Watches****Taschenuhren, geschichte und technik**

a complete history of the technical and decorative development of the watch

London: B. T. Batsford, New York: Viking Press, 1986 (1965), 34.0 x 24.5 cm (30.5 x 23.5 cm), 312 pp, 387 b/w plates, 16 colour plates (159 pp, 597 b/w ill, 2 colour plates, 2 figs).

Bibliography, description, history (English, German).

The German edition of 1982 is 33 x 24 cm, 328 pp, 855 ill, 100 col ill.

First edition, is simply titled "Watches". The text is in four parts:

Part 1 Historical (83 pages):

Mechanical 1500-1750: The invention of watches, Fusee and stackfreed, The movement and its decoration up to 1675. Mean time regulation before the balance-spring, General characteristics and national styles, The invention of the balance-spring 1675-1700, The movement 1675-1700, The movement 1700-1750, Decoration of the movement 1675-1800.

The precision watch 1750-1800: Birth of the precision watch 1750-1770, The detent escapement, Friction rest and the duplex escapements, The lever escapement in England 1770-1830, The lever escapement in France and the work of Breguet prior to 1795, Robin, Pouzzait, Tavan and the lever escapement, The work of Breguet after 1795.

The modern watch 1830-1960.

Decorative: Types of decoration, Enamel, Styles of watch cases and dials up to 1750, Some unusual forms of dial, Styles of watch cases and dials 1750-1830, Breguet's watch-cases and dials.

Part 2 Performance of early watches (4 pages).

Part 3 Technical (32 pages): Descriptions of 10 escapements: Verge, cylinder, virgule, duplex, chronometer, lever, Robin, Debaufre, Fasoldt and J.F. Cole rotary detent.

Part 4 Biographical notes (24 pages).

There is a 9-page index.

Except for the 2 colour plates, all b/w photographs are bound between pages 124 and 125.

The third edition, subtitled "a complete history of the technical and decorative development of the watch" is in three parts:

Part 1 Historical (70 pages):

Mechanical 1500-1750: The invention of watches, Fusee and stackfreed, The movement and its decoration up to 1675. Mean time regulation before the balance-spring, General characteristics and national styles, The invention of the balance-spring 1675-1700, The movement 1675-1700, The movement 1700-1750, Decoration of the movement 1675-1800.

The beginnings of the precision watch: The formative years of the precision watch (Harrison, Pierre Le Roy, Berthoud, Arnold, Mudge, Emery, Breguet, Earnshaw), The birth of the modern watch, Lepine and Breguet.

Decorative: Types of decoration, Styles of watch cases and dials up to 1750, Some unusual forms of dial, Styles of watch cases and dials 1750-1830.

Performance of early watches.

Part 2 Technical (44 pages): Introduction, Shock-proofing, Tourbillons, Escapements (Verge, cylinder, virgule, duplex, chronometer, echappement naturel, lever, Robin, Debaufre, Fasoldt and J.F. Cole rotary detent), Repeaters, Clock-watches, Self-winding watches, Stop-watches and chronographs.

Part 3 Appendix (37 pages): Biographical notes, Glossary of technical terms, Bibliography.

There is an 8-page index.

[1st edition, good?] *A photographic essay. It begins with a brief history of escapements and an examination of case and dial styles; both including significant sections on Breguet. These are followed by a short note on the performance of fine watches made pre 1800, technical notes on escapements and brief biographical notes on famous makers. Finally there is an extensive photographic gallery of museum quality pieces, most pre 1830.*

My feeling about the book can be summed up in the authors' words: "the best training of all is to see and handle as many Breguet watches as possible". I agree, if Breguet is one's only interest. However, the vast majority of repairers and collectors don't have the money, opportunity or status to do more than see such watches in books and, occasionally, through glass in display cases. So for most readers it is crucial that the illustrations are excellent and the text closely tied to them.

I feel neither is the case in this work. The text is generally good, but the lack of references seriously detracts from it, much of the technical discussion needing knowledge from other sources. Further, it can be read almost independently of the photographs and could have served a valuable function if it had been printed separately and more cheaply.

Overall, the photographs are mediocre. The problem with all photographs is the huge amount of detail in them and the difficulty of finding the specific aspect of interest. I still don't know where the bristles are in figure 91, the escapement photographs leave me confused and dissatisfied, and the famous Le Roy lever reconstruction is shown in a single, small, uninformative print. They may be satisfactory for the lucky people who have handled such watches, but not much use for me. Which is why I feel "it has not been thought necessary to include many line drawings" was a sad mistake.

I am perfectly happy with the restriction to museum pieces, and the stress on Breguet is understandable, considering the involvement of Clutton and Daniels with his watches. But I do wonder if these undoubted experts were unable to understand the needs of ordinary people and so have written a book for a select few which is of not much use to the rest of us. I sometimes wonder if English writers assume that nothing good can come out of the provinces and maybe Massey and Litherland would have been treated differently if they lived in the city.

[3rd edition 1979, good?] *Having been told the later editions are much better I was surprised to find that the third is basically the same as the first edition. The only significant (but not substantial) changes to the text are:*

(a) The history of marine chronometers and chronometer escapements has been completely rewritten.

(b) The technical notes have new material on reversed fusees, repeaters, clock watches and post 1830 developments.

(c) The photographs have been extended to cover examples post 1830 and there are now references to them in the margins of the text.

(d) A brief glossary and a peculiar bibliography have been added.

This "rewrite" shows all the same problems as the original. The history is still somewhat glib (see Morpurgo "The origin of the watch"), the technical discussion still requires access to actual watches or other books to be effective, and the post 1830 discussion is inadequate except as a brief introduction. Most importantly, the photographs are no better and there are still no diagrams.

I continue find the unjustified support for Arnold, in the sense that there are no supporting references or argument, uncomfortable. It would seem that he (like Breguet) had great business and social acumen as well as artistic skill, whereas a person like Earnshaw did not have the personality to ingratiate himself with the upper class. Just how much of Arnold's eminence is due to psychology rather than ability is hard to assess (but see Earnshaw "Longitude - an appeal to the public" where this is considered in more depth). Some things surprise me. For example, the inclusion of watches by Daniels is to be expected, but it has a sense of advertising because other modern, individual makers are not mentioned. And Hatton is described in the bibliography as "the first book in English to compare with Berthoud's great works" which I find excessive.

I may be wrong, but I get the feeling that this is a very sophisticated coffee-table book and I can't see myself referring to it.

R587 Clutton, Cecil; Quill, H**Pioneers of precision timekeeping**

London: Antiquarian Horological Society, Monograph No. 3, 1965, 25.5 x 19.0 cm, 117 pp, 82 ill.

Description, technical (English).

Foreword (14 pages by Quill) followed by six articles:

John Harrison's last timekeeper of 1770 (12 pages by Richard Good on H5).

The first lever watch made by Thomas Mudge (16 pages by Richard Good on the Queen Charlotte watch).

Did Julien Le Roy make the first detached lever escapement? (12 pages by R.H.A. Miles on the Julien Le Roy lever watch fragment).

The "Bounty" timekeeper (16 pages by P. Amis on Kendal's K2).

The Mudge marine timekeeper (18 pages by Richard Good on Mudge's first marine chronometer).

The Huber-Mudge timepiece with constant force escapement (14 pages by T.P. Camerer Cuss).

The substantial forward of 14 pages is an article in itself and provides additional information relating to the timepieces described in the rest of the book.

[1st edition, very good] H5, K2 and Queen Charlotte's watch were displayed at the exhibition British Clock and Watch Manufacturers "Five centuries of British timekeeping" in 1955 (which see) and afterwards examined and photographed.

The articles provide detailed technical descriptions of the timepieces together with some history of their "adventures". With excellent photographs it provides authoritative specifications of the designs of the movements, including the two early lever escapements.

An excellent book for those interested in these timepieces.

R588 Coates, D**Watches tell more than time**

New York: McGraw-Hill Education, 2002, 24.0 x 18.5 cm, 336 pp, b/w ills.

Design (English).

Subtitled "product design, information, and the quest for elegance".

"Drawing on aesthetics, psychology, information theory, physiology, neurophysiology, anthropology and industrial design theory, Coates unravels the secrets behind the success of many great products. He explains the basic laws of good design and explains why zeitgeists come and go."

Coates is the Professor of Design, San Jose University, USA.

R589 Cochrane, J; Plowden, Lady**The world of time and timepieces**

England: B.P.C. Publishing, 1972, 8.25 x 5.25 inch, 62 pp, about 80 ill.

Description (English, German).

Also listed under the names Zechlin and Mackert who are presumably the translators.

The history and basics of time and timepieces presented in a dictionary form.

R590 Coinon, ME**Les coqs de montres du Mont St Michel**

de la collection de M.E. Coinon

Paris: Tardy, 1982 (ca 1951), 27 x 22 cm, 32 pp, 16 b/w plates (29 pp, 61 ill).

Collection, description (French).

Two printings, the first undated and with a plain cover.

Photographs of 660 balance cocks and bridges from France, England, Germany, Switzerland, Holland and Austria covering the period 1515 to about 1850. The cocks of each country are presented in groups corresponding to different eras with some descriptive text.

[1st edition, good] The book provides a good survey of cocks and historical trends in their design. The plates are not wonderful but definitely adequate.

See also Tic-Tac "Les coqs de montres du Mont St Michel et leur classement historique", Tombelaine "Le mont-saint-michel et ses merveilles" and Imbert & Villenoisy "Les coqs de montres, leur histoire, leur decoration". Tardy lists an anonymous 19th century publication (ascribed to Coinon) with a similar title.

R591 Collins, HP**Secrets of the trade for watchmakers and jewelers**

Greenville USA: Shannon & Co., 1892 (ca 1864), 86 pp, tables.

Repair (English).

Formulas and recipes.

Stelle "American watchmaker and jeweler" refers to a circa 1864 book with a similar title but gives no author or other details. It may be an earlier edition of this work.

R592 Collins, P; Brod, G**Pastime, telling time from 1879 to 1969**

USA: Chronicle Books, 1993, 7 x 7 inch, 96 plates.

Illustration (English).

96 colour plates of clocks and clock radios.

[1st edition, mediocre] Pretty pictures with very little text. It is supposed to include watches but I could only find clocks. I found it uninteresting.

R593 Collord, GE**American Waltham Watch factory**

USA: American Watchmakers Clockmakers Institute, 2004, 1 hr 28 min, video tape.
History (English).

A live recording of a talk given to the American Watchmakers Clockmakers Institute in 2004.

After an introduction the talk consists of the presentation of slides with commentary. Most of the images are from a set of 105 photographs taken by W. A. Webster in 1893, which show the inside of the Waltham factory and a few external views. The talk finishes with photographs from other sources.

[1st edition, fair] Most of the commentary simply states what the photographs contain, but there are some explanations of machinery. Some photographs are shown without comment.

Unfortunately the reproduction of the images on the video tape is mediocre and it is often difficult or impossible to see the features being described by Collord. In part this is due to the video camera being mounted at an angle to the projection screen. The result is that the viewer is more frustrated than satisfied. The Webster photographs certainly deserve to be made available in a much better form.

R594 Cogni, F**Jaeger-LeCoultre, the story of the grande maison**

Paris: Flammarion, 2006, 30.0 x 25.5 cm, 381 pp, 600 ill, slip case.

History, illustration (English, French, German, Japanese).

Fifteen chapters:

La grande maison (8 pages); How green is my valley (26 pages); The valley of wonders (18 pages); Once upon a time there was a grande maison (34 pages); The actors I (10 pages).

Time is reversible (38 pages); Time is circular (34 pages); Time is feminine (30 pages); Time is eternal (30 pages); The actors II (10 pages).

An ordinary magical day (34 pages); Around the world in a watch (26 pages); The actors III (10 pages).

Voyage through time (38 pages); The calibres of the grande maison (18 pages).

There is a short bibliography, but there is no index.

[1st edition, mediocre] I got about half way through this book and lost interest, but I manfully struggled through the rest of it. Its purpose is to give owners of Jaeger-LeCoultre watches a warm glow of satisfaction. It certainly succeeds in doing this. The writing is very good, if sometimes too verbose, the photographs are excellent and the translation is almost flawless. The only problem is that it is superficial journalism.

There are three interesting sections: "The valley of wonders", "Once upon a time there was a grande maison", and "An ordinary magical day". The first two provide a history of the company, but it glosses over details and only provides a general summary of the company. The third is a tour of the factory and provides some information on manufacturing techniques.

The other parts of the book are rather pointless. Several describe particular models (reverso, duoplan and Atmos clocks) and one surveys round calibres. However the text never goes beyond vague generalities. The extremes are the three sections titled "The actors" which are completely pointless hotchpotches of photographs. Equally bad is the chapter "Around the world in a watch" which describes how some people in different cities wander around and then go to the local watch shop and buy a watch. Who cares?

Except for two or three drawings, which are not explained and so are unintelligible, the book is devoid of technical information.

As a result, the book is of almost no interest to anyone who does not own Jaeger-LeCoultre watches and even those people will end up putting the book aside and forgetting about it.

R595 Cogni, F**Vacheron Constantin, hallmarks of history**

Paris: Assouline, 2000, 22.0 x 16.0 cm, 80 pp, 25 2-page plates.

History (English, French).

Separate French and English editions.

A 17 page history of the company followed by 25 plates, a 2 page chronology and captions for the plates.

[1st edition, mediocre] The history is terse, self-congratulatory and superficial. The plates are excellent, beautiful and devoid of educational value.

Very pretty advertising.

R596 Cogni, F; Flechon, D**Cartier, the tank watch**

Montreal Canada, Paris: Flammarion, 1998, 29 x 26 cm, 264 pp, 530 ill.

Description, history (English, French, German, Italian, Japanese).

Separate language printings.

"Among all the timepieces created during the 20th century, the Tank watch, designed by the master jeweler Louis Cartier has remained the most coveted by glamorous people around the world. ... This elegant volume traces the story of the celebrated Tank from its inception in 1917 throughout the century, weaving history and anecdote, and linking its many variations to the other great designs for watches and jewelry from Cartier's long and distinguished production. An illustrated history in three parts covers the evolution of the design and tells the story of the famous people who wore them. This is followed by an extensively researched, comprehensive catalogue featuring more than 250 vintage models. With a catalogue of watches from 1917 to the present day, by Dominique Flechon."

With a chronology, glossary and bibliography.

R597 Cologni, F; Flechon, D**Secrets of Vacheron Constantin****Auf den Spuren von Vacheron Constantin**

250 years of continuous history

250 Jahre Schweizer Uhrmacherkunst

Paris: Flammarion, 2005, 336 pp, ill, slip case.

History (English, French, German).

Four sections: Watchmaker, Casemaker, Dialmaker and Clockmaker.

“Geneva-based Vacheron Constantin has maintained its reputation for producing exceptional timepieces, from its first watch circa 1760 to its extraordinary mechanical watches of today. Highly collectible, these prestigious timepieces are conceived as much to seduce by their elegance as to provide precision timekeeping. An unwavering commitment to excellence is the firm’s hallmark, and celebrations for its 250th anniversary include the renovation of its flagship store and opening of a new manufactory in Geneva, the creation of a magnum opus timepiece, and the publication of this book. Illustrated with specially commissioned photographs, the book traces the rich history of the manufacture and includes an informative catalog of timepieces and a guide to the watchmaker’s art that has been enriched by a unique artistic and technical expertise compiled over two and a half centuries.”

I have not read this book, but a reviewer made the following comments: “Like all other books on this maker I found it a disappointment. Something about this company inspires writers to wax poetic about everything else going on at the formative times, but this book has a small kernel of useful information. It has a lot of pictures but most lack the detail I would have liked. The pictures and text are not well integrated.”

R598 Cologni, F; Mocchetti, E**Made by Cartier**

150 years of tradition and innovation

New York: Abbeville Press (Italy:), 1993 (1992), 29 x 25 cm, 256 pp, 200 plates.

Description (English, German, Italian, French).

History of Cartier design including jewellery, watches, pens, compacts, smoking accessories, handbag purses.

“More than 200 magnificent photographs highlight this fascinating history of the ornamental art by Cartier. Divided into four distinct periods - the first collections, the classic collections, the modern and the contemporary - the book introduces each chapter with the most important historical and cultural events of the period.”

R599 Cologni, F; Negretti, G; Nencini, F**Piaget, watches and wonders since 1874****Montres et merveilles de Piaget****Piaget, mythos einer Uhrenmarke**

New York: Abbeville Press, Munich: Callwey, 1998 (1994), 28 x 24 cm, 263 pp, 356 ill.

Description, illustration (English, French, German).

Separate French and German editions, the German given as 336 pp, 1995.

The contents includes early history 1874-1945, 1945-1960 a myth develops, specially-flat calibres, 1960-1970 the years of development, use of gem stones for dials, 1970-1980 very thin electronics work, 1980-1988 coin watches, 1988 a new era begins, Piaget and Cartier co-operation.

Wrist watches and some pocket watches. Concentrating on style and appearance with a little history and technical information.

R600 Coltman, RW**A comprehensive bibliography**

of the literature pertaining to clocks and watches

Ohio:, 1939, 4to, 203 pp.

Bibliography (English).

General coverage of horological literature without remarks.

R601 Comstock, A**Frauds exposed**

or, how the people are deceived and robbed, and youth corrupted. Being a full exposure of various schemes operated through the Malls, and unearthed by the Author in a Seven Years Service as a Special Agent of the Post Office Department and Secretary and Chief Agent of the New York Society for the Suppression of Vice

USA: Kessinger Publishing (New Jersey: Paterson Smith), 2007 (1880), 23.5 x 15.5 cm, 580 pp.

Miscellany (English).

Reprinted in 1969, 1972 and 2007, but the last date is for a print-on-demand copy.

A general book on American frauds containing material on E.H. Elias relating to the United States of Marion Watch Company.

See Muir and Kraus “Marion - a history of the United States Watch Company” which refers to this book. “The New York Society for the Suppression of Vice sounds like the satirical invention of a modern wag, but it was a very real organization dedicated to policing public morality in the late 19th century. Its founder, Anthony Comstock, was notorious as a crusader for ‘decency’ and a strident advocate of censorship-so strident, in fact, that George Bernard Shaw coined the term ‘comstockery’ to refer to his zeal for the

cause. (Shaw was one of Comstock's victims; so were Theodore Dreiser and D.H. Lawrence.) Here, in this rare 1880 work, hard to find today in an elegant edition, Comstock obsessively details the results of his work as a special agent in the New York post office, which granted him the power to inspect the mail, determine what was "obscene," and harass the senders with the full power of the law behind him. A relic of American Victorian-era prudery, this makes for wickedly amusing reading today."

R602 Comtesse, JL**La crise de 1929 et l'industrie horlogère suisse**

Lausanne: Heliographia, 1952, 190 pp.

History (French).

Thesis for the School of Commerce and Economics, Neuchâtel.

R603 Comtesse, P**Discours prononcé au temple du Locle**

pour l'inauguration du monument élevé à la mémoire de Daniel Jeanrichard le 15 juillet 1888
1888, 16 pp.

History (French).

Always bound with Bachelin "L'horlogerie neuchâteloise" or perhaps simply a part of that book?

R604 Convention Patronale; Matile, F**Le rouage dégrappe**

les crises horlogères, une fatalité en voie de disparation?

Chaux-de-Fonds: Convention patronale de l'industrie horlogère suisse, 1995, 21.0 x 15.0 cm, 34 pp, no ill.

History (French).

An examination of the causes and consequences of crises in the Swiss watchmaking industry, based on a seminar held in 1990.

An introduction followed by four parts: Watchmaking crises and public opinion; Causes of crises and reactions of the industry; Twelve causes of crises, yesterday and today; and Conclusion, a successful change.

R605 Cooke, CW**Automata old and new**

USA: Kessinger Publishing (London: Chiswick Press), 2009 (1893), 9 x 6 inch, 117 pp, 26 ill.

Description (English).

The first edition is a limited edition of 255 copies. Number 29 of the privately printed opuscula issued to members of the Sette of Odd Volumes.

The reprint is a "print on demand" book.

Nothing about watches.

R606 Cooper, MA**A movement in time with Breitling and Rolex**

an unauthorized history

USA: Infinity Publishing, 2007, 10.5 x 8 inch, 151 pp, 100 ill.

History (English).

Print-on-demand book.

The author describes this book as: "The most conclusive unauthorized history ever published on quality watches. Discover how 6 year old Leon Breitling started his watch making career. How and why the Rolex name was formed. The positive impact World War I & II had on watch invention and production. The most factual guide on how to identify fake Rolex & Breitling watches. Plus the history of Ball, Cartier, IWC, Longines, Omega, Patek Philippe, and Zenith watches."

R607 Cortat, A**Contribution à une histoire des cartels en Suisse**

2010, 259 pp.

History (French).

R608 Cote, C**Montres et horloges musée de Lyon**

Lyon: Musée Lyon, 1919, 21.0 x 16.0 cm, 39 pp, 3 plates.

Collection (French).

In "Bibliothèque des Musées de Lyon."

Clocks and watches in the Lyon Museum.

R609 Coulon, P de; Mertens, H**Les Ebauches, deux siècles d'histoire horlogerie****Les Ebauches, zwei jahrhunderte uhrenindustrie**

Neuchâtel: Baconniere, 1951, 23.5 x 18.5 cm, 211 pp, 50 line drawings, 207 pp, ill.

History, makers, watch making, bibliography (French, German).

Written by P. de Coulon and translated into German by Mertens. Separate French and German "limited" editions; the French of 6300 copies (the first 300 numbered on special paper) and the German of 4800 copies with 550 numbered (the first 50 being deluxe).

The ébauches, two centuries of horological history.

A history of Swiss watch making from the 17th to the 20th century concentrating on Ebauches SA and describing the development of the manufacturing system in Switzerland.

In 13 chapters: 17th century (10 pages); 18th century (8 pages); 1800-1850 (16 pages); 1850-1870 (10 pages); 1875 (12 pages); 1876-1891 (14 pages); 1892-1900 (12 pages); 1900-1914 (14 pages); 1918-1926 (14 pages); 1926-1931 (10 pages); 1931-1936 (16 pages); 1936-1941 (16 pages); and 1941-1951 (14 pages). There is a bibliography and three appendices outlining the history of the companies and their membership of Ebauches SA.

Produced for the 25th anniversary of Ebauches SA.

R610 Couturier**Collection Augustin Seguin**

horloges anciennes, montres et garde-temps

Paris: Hôtel Druot, 1982, 4to, 108 pp, 130 ill.

Catalogue, illustration (French).

Auction catalogue of clocks, watches and precision timekeepers.

R611 Coventry Public Library**Catalogue of a collection of horological and scientific books**

Coventry:, 1876, 8vo, 36 pp, no ill.

Bibliography, collection (English).

The collection was presented to the library by the watch manufacturers of the city and was destroyed during world war II.

R612 Coventry Watch Museum**The history of the Coventry watch industry**

England: Coventry Watch Museum Project, 1999 (ca 1994), 21.0 x 14.5 cm, 50 pp, 49 ill.

History (English).

First edition, 100 copies, 1994. Second edition, 200 copies, 1995. Third edition, 800 copies, 1996. Fourth edition 1999.

Origins and growth of the trade; The peak of Coventry's watchmaking; Watch production figures; Trade advertisements; The watch movement; Bonniksen's karrusel escapement; J. Player and Son; The Coventry Watchmakers Association; Coventry trade marks; Articles relating to the watch community; The watchmaking areas of Coventry; A selection of Coventry watches; Time moves on; Bibliography.

[4th edition, mediocre] Although interesting, this booklet only gives a very general overview of Coventry watchmaking. Its contents seems to have been dictated by available illustrations, and I suspect not enough thought has gone into the purpose of the booklet and hence how it should be structured. Which is a pity as a good book on the Coventry industry would be very useful.

R613 Cowan, HJ**Time and its measurement**

from the stone age to the nuclear

New York: World Publishing Co, 1958, 28.5 x 20.5 cm, 160 pp, 73 ill.

History (English).

Fourteen chapters: The dawn of time (5 pages); Magic and religion (8 pages); The evolution of the calendar (11 pages); The nature of time (16 pages); The birth of the timepiece (12 pages); The voyages of exploration (11 pages); The pendulum (10 pages); The watch factory (13 pages); The testing of watches (7 pages); Complicated and special purpose watches (6 pages); Electricity and time (5 pages); and The future of time (9 pages).

[1st edition, fair] Fifty years ago, when this book was written, all watches were mechanical. And so there was some need to explain to the curious the history, design and manufacture of timepieces. However, now that the mechanical watch has been relegated to the past and the realm of collectors, such a book no longer has a purpose and it has largely outlived its usefulness.

Although the chapters on clocks and watches are well written, they are best described a weak and uninspiring. There are too many poor explanations (especially of technical matters) which, coupled with a few errors, mean the book would have been of dubious value. But there are also some good and interesting bits which save the book and give it some value.

In contrast I found the first chapters on the history of calendars very interesting. But I know nothing of this area and I am not sure whether my positive reaction is justified. It may be that this section is also inadequate and my enjoyment comes from ignorance. However, I will give the author the benefit of doubt. Perhaps fifty years ago I might have said this book was worth reading, but now there is not much point, except for the comment on menstrual cycles.

R614 Cramer, EA; Sternfield, J**A study of verge watchcocks and bridges**

USA: National Association of Watch and Clock Collectors, 1952, 22.5 x 15.0 cm, 16 pp, 6 plates.

History (English).

NAWCC Bulletin Supplement A

A general history of balance cock design.

[1st edition, fair] Interesting, but it does not contain a coherent study of design changes. So, although there is some discussion of features, the book is not very useful for dating or identification.

The text does not reference the illustrations and there is no bibliography.

R615 Crespe, Francois**Essay on repeater watches****Essai sur les montres a répétition**

Dans lequel on traite toutes les parties qui ont rapport a cet art, en forme de dialogue, a l'usage des horlogers", approved by the Société pour l'avancement des arts du Genève.

Australia: Richard Watkins (Genève: Paschoud), 2006 (1804), 29.5 x 21.0 cm (18.0 x 11.5 cm), 96 pp, 16 ill (xii, 284 pp, no ill).

Watch making (French, English).

The pages of the 1st edition are incorrectly numbered 1-117, 218-219, 120, 221, 122-123, 224-250, 250-254, 256-284.

The translation by Richard Watkins is a PDF file.

The French edition is available as a Google Book PDF file worldwide.

Essay on repeaters, within which is a treatise on all the parts connected with the art, in the form of a dialogue, for the use of horologists.

The first 205 pages begin with definitions of terms (22 pages) followed by three parts containing ten lessons, written as a question and answer dialogue, describing the making of repeater watches. Part 1 (lessons 1 to 5) covers the origins of horology, division of watchmaking trades, characteristics of a good watchmaker, construction of repeater work, and half-quarter repeaters and alarms. Part 2 (lessons 6 to 8) covers setting up repeater work with bells and gongs, casing, and assembly. Part 3 (lessons 9 and 10) discusses finishing, gilded assembly, friction and oiling.

The remaining 74 pages are a compendium of faults and their correction.

The English translation contains the full text of the 1st edition prefaced by an introduction (with 2 tables and 16 illustrations) which explains the action of the quarter repeater, half-quarter repeater and two alarm mechanisms.

[1st edition, very good] Crespe's book provides detailed information on how to make and repair quarter repeaters. It is difficult to read because he assumes the reader is a competent watchmaker who is familiar with repeaters and who can, at the least, make a verge movement by hand. Despite this it is a worthwhile and useful book for those who handle such watches, because it goes into more detail than most (if not all) other books on repeaters.

The introduction to the English translation provides a detailed explanation of the action of quarter repeaters. This is included because other books gloss over the finer points of the mechanism and frequently contain mistakes; without a clear understanding of repeater-work, much of Crespe's book would be obscure.

R616 Crisford, A**Abraham Louis Breguet**

masterpieces of the Asprey collection

London: Quartet Books, 1994, 4to, 88 pp, tipped in plates.

Collection, description, illustration (English).

Limited edition of 125 copies.

An opulent volume of plates and reproductions of Breguet's records describing 12 complicated clocks and watches from the Asprey collection.

R617 Crisp, WB**Prize essay on the compensation balance**

and its adjustments in chronometers and watches

London:, 1875, 8vo, 30 pp, 2 plates with 9 ill.

Repair (English).

R618 Criss, D**Collector's price guide to american pocket watches**

USA: D Criss, 1989 (1976), 8.5 x 5 inch, 384 pp, ill, 8 plates (262 pp, ill) (78 pp, 163 ill).

Price guide (English).

Several editions with various paginations; 1976 (102 pp, ill), the 3rd in 1977 (80 pp, 234 ill), the 4th in 1980 (78 pp, 163 ill), the 5th in 1982 (113 pp) and the 6th in 1985 (262 pp).

A price guide with brief histories of companies. It includes wrist watches, Canadian watches and some information on cleaning and repair.

[7th edition] Compared with the price guides of Shugart and Ehrhardt this is rather uninspiring.

R619 Crom, Theodore R**Early Lancashire horological tools and their makers**

USA: Theodore R Crom, 1994, 31.0 x 23.5 cm, 275 pp, 282 ill.

Tools, history (English).

History of Lancashire tool making; Liverpool; John Wyke and Thomas Green; Toxteth Park; Wire drawing; Daniel Mather; Thurston Lassell; The Daniel Mather catalogue (52 pages); Prescott; The Torrens hoard; Daniel Sephton; The Jones family; The Leyland family; William Whitmore; William Billings; Peter Stubs; Thewlis & Griffith; The outworkers; Some surviving Lancashire horological tools (48 pages); Lancashire tool development; Wheel cutting engines; Fusee engines; Evolution of the universal mandrel (30 pages); The horological milling machine.

With a bibliography, index, map of Lancashire and an appendix.

The bulk of the book is an historical survey of Lancashire toolmakers, including a discussion on wire

drawing and the Torrens collection of tools. A major part is the reproduction of a Daniel Mather catalogue circa 1770. The survey, concentrating on the turns, is followed by a study of existing early tools and a detailed examination of the evolution of the mandrel.

[1st edition, excellent] I really would like to give all the major tool books by Crom an "excellent" rating and I suspect, like me, once you have got one you will quickly get the rest. They are superbly produced and invaluable for understanding tool development, identification and dating. My reservation is that they tread a fine line between simply reproducing catalogues and being genuinely educational. I feel they succeed but you may not. Certainly I would have liked to see more information on tool design, construction and use included.

Crom has also produced another book "Trade catalogues" which is not included here. It is mainly non-horological but does contain some relevant material, including a biography of Wyke.

R620 Crom, Theodore R

Horological and other shop tools 1700 to 1900

USA: Theodore R Crom, 1987, 31.0 x 23.5 cm, 388 pp, 754 ill.

Dating, tools (English).

Horological Miscellany (26 pages); Fastenings (22 pages, dating tools and a classification of thumbscrew designs); Horological tools in America before 1850; The Demilts of New York City 1789-1845 (14 pages); The Bond chronometer shop tools; MacNab, Muller & Co catalogue 1815; John Hornby tool price list 1839; Harcourt Quincey's pattern book (32 pages); Fraure Freres catalogue circa 1860 (29 pages); Le Chateau des Monts circa 1863 (22 pages); Franz Wertheim, Wein 1869 (10 pages); Praktisches Handbuch für Uhrmacher, H. Grosch 1879; L. Hammel & Co catalogue 1880 (49 pages); Fratelli Bergeon circa 1890; Blanchard of Paris; French and Swiss watch factories 1908-1937 (22 pages); Prescott England; Ornamental turning decoration (24 pages); Damaskeening; Surviving tools (76 pages); Franz Wertheim catalogue.

With a bibliography and index.

It concludes with a number of photographic "essays" on watchmaking, ornamental lathes (including damaskeening) and miscellaneous surviving tools.

[1st edition, very good] Crom begins with a study of the forms of thumb screw used at different times to provide a way of dating tools. Then most of the book consists of reprints from catalogues and books followed by a number of photographic "essays" on watchmaking, ornamental lathes (including damaskeening) and miscellaneous surviving tools.

As with Crom's other books, this is largely a pictorial identification guide, but the quality and insight raises it above most similar works.

R621 Crom, Theodore R

Horological shop tools 1700 to 1900

USA: Theodore R Crom, 1980, 31.0 x 23.5 cm, 678 pp, about 1300 ill, 21 plates.

Bibliography, identification, tools (English).

Errata and additional information have been produced and were available on the internet.

After an introduction including illustrations of workshops and trade cards, there are two main sections. Part 1 (316 pages) reproduces extracts from books and catalogues in chronological order, covering tool manufacture from 1678 to 1915. This includes Diderot and d'Alambert, Berthoud, Ford, Whitmore and Brunton, Wyke, Stubs, Rees, Saunier, Boley, Otto Young, Norris, Henri Picard, Levy Dreyfus, Grimshaw & Baxter, Ezra Bowman, Buguelin Piaget, Keller and others.

Part 1 is followed an 8 page list tool makers.

Part 2 (306 pages) illustrates tools by type in alphabetical order.

The book concludes with a list of museums with horological tool displays, a bibliography and an index (somewhat short).

[1st edition, very good] A lavish, extensive, illustrated guide to tools; and very good.

Although primarily just illustrating tools, the text give historical information about the books and catalogues and some discussion of tool use. It is more a book for the tool collector than for the tool user and is a wonderful guide for identification and dating.

Better reproductions of the Wyke plates appear in Wyke "A catalogue of tools for watch and clock makers".

R622 Crom, Theodore R

Horological wheel cutting engines 1700 to 1900

USA: Theodore R Crom, 1982 (1970), 23.5 x 15.5 cm, 150 pp, 142 ill.

Tools, description, identification (English).

Eleven chapters with a bibliography and index. The chapters are:

Early engines (15 pages); French engines (22 pages); Spanish engines (3 pages); German engines (9 pages); Black Forest engines (6 pages); Swiss engines (18 pages); American engines (10 pages); English engines (14 pages); The Lancashire engine (22 pages); Engines of unknown ancestry (14 pages); Engine accessories (13 pages).

[1st edition, 3rd revised impression, very good] This book provides a history of wheel cutting engines based on photographs and descriptions of engines. It also contains illustrations from early books and notes on makers, including Hooke, Webster and some English makers.

R623 Crom, Theodore R

The art of time, the Theodore R. Crom collection

Florida: University Press of Florida, 1984, 23.0 x 18.0 cm, 52 pp, 53 ill (two on the covers).

Collection, exhibition, catalogue (English).

The description of 61 items exhibited in the University Gallery, College of Fine Arts, University of Florida. The book begins with a short introduction (showing Crom's passion for tools) and is followed by colour and monochrome illustrations of the exhibits with explanatory text. A few items (books and catalogues) are simply listed.

[1st edition, fair] All copies are unfortunately "faulty" from publisher's errors. Many photographs have poor contrast and there are some obvious mistakes in the relationships between illustrations and text. Which is a pity as the content is interesting.

R624 Crom, Theodore R; Lesemann, S

Dr Ted Crom's collection

USA: American Watchmakers Institute, 2001, 55 and 50 mins, 2 video tapes.

Collection, tools (English).

An interview with Crom and a tour of his museum and workshop, showing details of many tools. The second video includes an examination of Crom's collection of Holtzapffel lathes.

R625 Cronin, J

The marine chronometer its history and development

England: Crowood Press, 2010, 112 pp, ill.

History (English).

An introductory book on the subject with chapters on Navigation and Longitude, John Harrison, Kendal and Mudge, Developments in France and England, The Mechanism of the Chronometer, Chronometer Manufacture, Some Important Makers, and a trivial chapter on chronometer maintenance.

The book is reviewed by Jonathan Betts in Antiquarian Horology Vol 32, No 3 Vol Sept 2010.

Apparently this review is very critical of the book and points out numerous factual errors, and the fact that the book contains no new material. In addition Betts feels that Cronin inappropriately 'borrowed' the title that belongs to the classic text by Gould.

R626 Crossman, Charles S

A complete history of watch and clock making in America (1886-1891)

USA: Donald Dawes, 2002 (1885), 28.5 x 22.0 cm, viii, 125, vii pp, 19 ill.

History (English).

Limited edition of 200 copies.

Four sections: Watch making (77 pages), Watch case making (16 pages), Marine chronometers (5 pages), and Clock making (27 pages).

There is an appendix with 5 letters written to Crossman (by Aaron Dennison, C. B. Garrett, Ambrose Webster, W. J. Smith and Seth Thomas) and a biographical sketch of Crossman..

The original articles were serialized in the Jewelers' Circular and Horological Review, 1886-1891.

[1st edition, excellent] The first section, watch making, includes all the material in the Adams Brown edition "The complete history of watchmaking in America" (which see) with two obvious differences: the deletion of the duplicated pages and the addition of the Wichita Watch Company. However, there are many other additions ranging from two lines to complete paragraphs, some of which contain important information. And I was surprised to find two places where a paragraph and three lines have been omitted. As with the previous edition, this section is arguably the most important history of American watchmaking.

The second section has a large number of short (often only one paragraph) histories of case makers. This is an important addition to the other main source Niebling "History of the american watch case", although the latter is more useful.

The third section on marine chronometers is like the previous section, being short company histories. However, there is also some very interesting material on William Bond's first chronometer and on the Cambridge Observatory.

Finally, the letters in the appendix include one very important letter written by Dennison.

Unfortunately this edition, like the Adams Brown edition, does not have an index and finding specific information often requires tedious searching.

[Origin of the book by Donald Dawes] In late 1960 or early 1961, I received a reel of microfilm from a friend. He urged me to create an easily readable format of the information found on the reel. The microfilm leader identified it as a scrapbook received in 1924 from Chas. S. Crossman and filmed in 1953 by the New York Public Library. In those days, engineering firms reproduced documents on vellum, a translucent coated paper, by a process called Ozalid. I had the microfilm enlarged to page-size vellum. The document was a copy of a scrapbook composed of clippings cut from Jewelers' Circular magazine. In addition, there were copies of letters Mr. Crossman received from readers, containing their comments on the articles. In all there were 56 instalment articles printed in the Jewelers' Circular from July 1886 to July 15, 1891. (By then the Circular had become weekly.) All of the articles except the first, No. 1, were copyrighted in 1885. The first article was copyrighted in 1886, suggesting that Crossman decided to change his opening remarks just before publication.

Once I had readable "masters," I was able to survey the content. There were some missing pages and some that were totally illegible or torn in half. With a jeweler's loupe, a fine pointed pen, and India ink, I touched up what I could to make the text more legible. I ran six copies of the work on February 17, 1961. I kept one copy and gave the others to friends. One went to Ed Burt of Adams Brown Co. He then had the first section, on watches, typed and printed for sale. He was terminally ill at the time and was eager

to see it finished.

It was always my intention to do a formal job of placing all of this valuable early information in book form so it could be easily used for reference. But 40 years passed. In the meantime, computers came into the home and many new ways of manipulating documents were perfected. When I retired I decided to resume my work on Crossman. I went to an archiving house and had my copy of the microfilm placed on CD. It was my hope that we could scan the disk and make a text file that would be simple to edit. This proved impossible with the available software, so I resigned myself to typing the whole text, which gave me the chance to really examine everything in detail. I borrowed microfilms and made two trips to the NAWCC Library and Research Center. This additional research enabled me to fill in the missing material and to obtain good copies of the engravings in the original articles. I did some minimal editing to remove redundant portions and place information (on watchcases) in better chronological order. I wanted to preserve as much of the flavor of Crossman's work as possible.

I compiled copies of the letters to Crossman, with some biographical material from an early *Bulletin*, and some copies of Mr. Crossman's advertisements from the *Circular*, into an appendix for the book.

While working on the book, I learned that Chas. S. Crossman wrote three more series for the *Circular*. I have compiled these (38 pages) for a possible supplement. By the early 1890s, Mr. Crossman decided to move aggressively into sales of jewelry, watches, and diamonds. His later articles, while interesting, contain little horological information. Rather, they document his travels to Levant, Iowa, and India, in search of turquoise, pearls, and diamonds.

He discovered the camera in 1896; from then on his articles contained photographs as well as engravings. (Reprinted by permission. *Bulletin* No. 357 ©2005 by the National Association of Watch and Clock Collectors, Inc.)

[Review by Tom Spittler] For over a century, Charles Crossman has been one of the most quoted references in American clock and watch literature. The original information by Mr Crossman was presented in 56 instalments in the *Jewelers' Circular and Horological Review*, starting in 1886 and running continuously through 1891.

Crossman's work is valuable, as it is a close-to-the-period examination of nineteenth-century watch and clock trade in America. Dawes points out that many of the key individuals were still living when Crossman wrote his history. The text is easily read and presented in an easy-to-research format, with the first 77 pages covering watchmaking, the next 15 covering watchcase making, five pages on marine chronometers, and the last 24 pages on clockmaking. The table of contents reads like a "Who's Who of American Horology" before 1900.

Crossman was a young watchmaker from Ann Arbor, MI, who was only 26 when, in 1882, he began writing his history of American watch and clock making. Two years before, Crossman had opened a watch business at 25 Maiden Lane in New York City. He served a four-year apprenticeship as a watchmaker with C. Watts and Bro. of Ann Arbor, finishing when he was 19. Before arriving in New York he was in San Francisco for a year, then Virginia City, NV and finally Philadelphia. He wrote about the business of timekeeping between 1882 and 1888.

Crossman is not difficult to read and does convey some of the charm of the period, such as mention on page 104 that clockmaker Samuel Rogers "died of excessive brain-work and over study."

The reviewer had never read Crossman from cover to cover, although he had used it as a reference source. Crossman separately presents the individuals and firms that made America's clocks and watches, each in a few paragraphs. The table of contents, which also serves as an index, lists 190 of these firms and individuals.

There is a flow to the book that is completely missed unless the book is read in its entirety, or at least in major sections. Hundreds and hundreds of individuals are mentioned that are not in the table of contents. For example, watchmaker P. S. Bartlett's name appears over and over within coverage of various watch companies. Advancements in technology are presented in the same way - a piece here and a piece there. Being a watchmaker, and writing at a time when the American watch was king, Crossman provides the most information, and is at his best, covering the history of American watchmaking; 98 of 125 pages. Within watchmaking, watchcase making consumes 25 pages and must be the most thorough coverage of the topic available.

Did Crossman get it right? I feel he did. In 1882 he did not have the instant access to birth and death records we have today; he had to rely upon what relatives could tell him, and it was sometimes inaccurate. (He also covers American clockmaking without mentioning Aaron Willard, other than as Simon Willard's brother.) But he knew the subject, and taken in total, he paints an accurate history of American watch and clock making. (The book concludes with a seven-page appendix of letters from such giants as A. L. Dennison and Seth E. Thomas on the accuracy of his history. You'll love to find out what Dennison has to say in 1886 about the original name of the "Roxbury establishment" and why he chose it.)

If you consider yourself a student of American horology and have not read Crossman, you should. Get a copy. They won't last long.

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R627 Crossman, Charles S

The complete history of watchmaking in America

USA: Adams Brown Co, ca 1960 (1885), 23.5 x 16.0 cm, 213 pp, no ill.

Biography, history, makers (English).

Typescript produced from the original articles published in the Jewelers Circular and Horological Review, 1885-1887. The typescript has a number of errors (including 9 pages on Waltham which are duplicated).

Each of the 61 chapters, in chronological order, covers one manufacturer or provides a biography of a notable person. The chapters on companies provide a brief history and some discussion of the models produced (if any!).

[reprint, excellent] *The book provides a very good, contemporary account of the American watch industry with occasional glimpses of humour (as when describing Newark stem-wind watches). I find it interesting to see companies survive by going bankrupt (with shareholders loosing all) to reform with new debts, regurgitating the same equipment and management under a new name. It is hardly surprising so many failed.*

Crossman begins "while the history of the horological industry has had due attention paid to it in Great Britain ...". Although this may have been true in 1885, sadly the situation has completely reversed since then.

Unfortunately this edition does not have an index and finding specific information often requires tedious searching.

See also Abbott "The watch factories of America, past and present", but I much prefer Crossman.

[Remark] *The above review was written very early on in my involvement with horology. At that time I viewed this book as just an interesting source of information about American watchmaking. However, it is much more than that. Crossman's writing is authoritative and derived from contemporary sources, including Keith "A family tale", which has yet to be published. Thus it provides the nearest that we have to a "first hand" account of events in America, especially what happened before 1850, and it is the only source for substantive information about the Goddards, Pitkins and the early years of the Boston and Waltham watch companies. It has been the foundation upon which many of the more recent studies are built, and so is compulsory reading.*

R628 Crott, Dr H

Lange & Söhne Glashütter uhren

Germany: Dr. H Crott, 1991, 28 x 21 cm, 142 pp, 66 ill.

Catalogue, description (German).

Auction catalogue for 144 pocket and wrist watches manufactured by Lange & Söhne.

R629 Crown

Playing cards with illustrations of pocket watches

: Heiner Publishing, nd, two packs of cards.

Miscellany (English).

R630 Cuchet-Albaret, E

Au tic-tac des montres a clef

le cabinetier poète Paul Tavan la Genève horlogère de 1750 a 1850

Genève: Editions A. Julien, 1950, 22.0 x 15.5 cm, 254 pp, 17 plates.

History (French).

The ticking of key-wound watches, the craftsman poet Paul Tavan, the Genevan horologist 1750-1850. Seven chapters and a glossary of terms: Antoine Tavan and Genevan horology, political, picturesque XXVIII century (24 pages); Disturbed childhood, dazzled youth (36 pages); Loves, marriage, songs (40 pages); Joy of the verse scoffers, charms of the automata, "The Vault" (46 pages); Crown of suffering, crown of poetry, the troubadour king (46 pages); As the external man destroys himself, the interior man is built (30 pages); Good-bye to the silver or gold key, perfection of the measurement of time (17 pages); French explanation of the Genevan terms employed in this work (3 pages).

Written by Cuchet-Albaret with the collaboration of Jaquet for technical matters. Seven of the plates are of watches from the Wilsdorf collection (see also Chapuis "Montres et emaux de Geneve").

R631 Culme, J

Directory of gold and silversmiths

and allied traders 1838-1914

England: Antique Collectors Club, 1987, 2 volumes 504 pp, few ill; and 391 pp, ill.

Makers (English).

Volume 1 has biographies of about 4000 smiths. Volume 2 lists some 15,000 makers marks registered at the London Goldsmiths Hall.

R632 Cumhaill, PW

Investing in clocks & watches

England: Barrie & Jenkins (New York: Clarkson Potter) (:Corgi Books), 1971 (1967), 27.5 x 21.0 cm, 159 pp, ill, 16 plates.

Collecting, illustration, price guide (English).

At least four printings.

Cumhaill is the pseudonym of P.G. Coole.

Introduction (6 pages) and six sections: Investing in horology (16 pages), The evolution of clockwork (32 pages), The development of the watch (16 pages), The enamelled watch (18 pages), Caveat emptor (26 pages), and Areas for investment (14 pages).

With a bibliography (18 pages interspersed with illustrations) and an index.

[1st edition revised, fair] *This book is about buying timepieces as investments, to make money. The*

focus is on what is worth buying (in 1967) and how to buy, with good advice on collecting, fragments, restoration and the recognition of fakes. The book is limited to pre 1800 pieces. The prices, based on auction figures in 1967, provide an interesting basis for comparison with the present day.

The bibliography is interesting because it is one of the few where the author's opinions are given. But it is restricted to works related to assessing investment potential.

I found the book rather ponderous (partly because of poor text layout) and dated, but it is interesting.

R633 Cumming, Alexander

The elements of clock and watchwork adapted to practice

Elemente der praktischen gross und klein uhrmacherkunst

USA: Gale (London: Thames) (Leipzig: (London: Alexander Cumming), 1978 (1766), 26.0 x 21.5 cm, 4 pp dedication and preface, errata sheet, 192 pp, 13 pp index, 16 fld plates.

History, watch making (English, German).

Only a few copies include the errata sheet. It is likely that this was included partly in response to Ludlam's critique (see below) and such copies may have been printed and bound in 1767 or later.

Also produced in a German translation (Leipzig, 1802) as well as a modern reprint by Thames (1978) and print-on-demand by Gale.

The book begins with an apology to John Harrison. This is followed by the two essays "towards the improvement of" clock and watch work, the former having 24 pages on the influence of oil that is relevant to the latter. 11 plates relate to clockwork and the last 5 to watch work.

The essay on watch work (74 pages of text) discusses lubrication, the design of balances and balance springs, temperature compensation, the cylinder escapement, an escapement designed by Cumming, and air resistance.

[1st edition, fair?] The first part of the section on watches lists five problems and their solutions; mainsprings (avoid oil and make as powerful as possible), balance springs (should be tapered), watches start themselves (they shouldn't, their balances are too light), size (maintaining power and balance momentum are too small) and portability (containing details of experiments on the effect of movement, mainly related to the use of watches in ships). This examination of problems is followed by a discussion of compensation, the cylinder escapement and a note on air friction.

Much of the book concerns "theory" and Cumming is obviously out of his depth. His opinions revolve around the tenets that oil is bad, and that maintaining power and arc of vibration should be as large as possible. His reasoning is, at best, obscure and he does not even mention of the form of teeth in his consideration of the influence of the train. His supporting "experiments" are simply statements of opinion and do not present the results of research. The lengthy examination of lubrication purports to show that the effect of oil is proportional to pivot size and number of rotations, but the concept of friction is strangely absent; I suspect Cumming was unsuccessfully groping to explain a correct idea which he only understood intuitively.

William Ludlam wrote a short and damning criticism of Cumming's theory of clocks which Cumming answered, both appearing in the *Gentleman's Magazine*, June 1767 (pp 300-302). As Cumming's entire thesis is based on this (relating watches to pendulum systems) the article is pertinent.

Baillie, in "Clocks and watches: an historical bibliography", writes "the reasoning throughout is turgid and frequently wrong, and the book is without value". I largely agree with this assessment, but Cumming is good on practical matters and the descriptions of his own inventions are competent and interesting. The temperature compensation stud is clearly explained and clever. And his cylinder escapement is fascinating; a thick cylinder and plain escape wheel teeth, with all the lift on curved cylinder lips. So I get the impression that a good mechanic with an inadequate education has tried to write about matters he does not really understand.

Tardy notes that Cumming wrote two papers on roads and carriage wheels. Maybe these are more significant.

R634 Cummins, G

How the watch was worn

a fashion for 500 years

England: Antique Collectors Club, 2010, 30 x 24 cm, 272 pp, 1000 ill.

History (English).

[1st edition, review by Fortunat Mueller-Maerki] It has been about 500 years since people started carrying timekeeping devices around with them on their bodies, so it is a bit surprising that until now there has never been a publication dedicated to the question of 'How to wear a watch?'. Thanks to the Australian author Genevieve Cummins and the British publisher Antique Collectors Club that void has just been filled.

Ms. Cummins is the author of the definitive book on 'watch chains' ("Chatelaines, utility to glorious extravagance"), horological accessories which take a prominent position in this new title as well. But unlike in her first book, in her second book on the subject she takes a much broader view, going beyond just the object of the watch chain, and examining all the ways in which watches can be worn. In 13 chapters she explores all aspects of the watch as a fashion accessory, covering various watch forms and watch attachments, including various styles of chains and fobs, pouches and pockets, brooches, wristbands, rings, watch guards, watch belts, pendent watches, cufflink watches, etc.

The core of the book is made up of over 1000 images (most of them in color, many in large format) illustrating historic watches in the context of appropriate period dress. These include historic images (both

historic paintings, drawings and engravings showing people with watches, and historic photographs) as well as many newly created photographs combining historic costumes (both for ladies and gentlemen) accessorized with appropriate watches and chains. Separate chapters are dedicated to the 16th and 17th centuries, the 18th century, and the Regency and Victorian eras. There are special sections on such subjects as watches for dolls, accessories to store the watch at night, and - the last chapter - the development of the wristwatch as a fashion accessory.

While this book obviously will appeal to the horological collector with a special interest in the decorative arts aspects of watches, it also offers much new material to other, broader horological enthusiasts: By showing watches in their proper context of people and clothes over the ages it offers countless tidbits of information of the role of watches (and timekeeping) in a broader social context. Furthermore this book may, in some instances, be just the publication that triggers some interest in watch collecting from a collector's spouse, who hereto had dismissed these objects as only technical toys, oblivious to their aesthetic charms.

This book is an unusual, but most welcome addition to the horological literature, proving, once again, how multi-faceted learning and studying horology can be.

R635 Cummins, G; Taunton, N
Chatelaines

utility to glorious extravagance

London: Antique Collectors Club, 1996 (1994), 28 x 22 cm, 311 pp, 194 ill.

Description, history (English).

The contents includes: The history of waist-hung appendages, 2000 B.C. to the 16th century, the 16th and 17th centuries, the 18th century; The evolution of the chatelaine 1800-1840, Victorian chatelaines 1840 to 1870, the era of the collectable chatelaine 1870 to 1914; Specific varieties, watch (26 pages), perfume bottle, fans, aide-memoire, dress holders or porte-jupes, keys, spectacles, bags, needlework, nurses, sport and recreation; Symbolic, sentimental and religious chatelaines; Oriental chatelaines; Glossary, bibliography and index.

[Review by Eileen Doudna] This is a wonderful book on a subject about which little has been written. It is lavishly illustrated with 300 color and 190 black and white photographs. The first section of the book (Chapters 1 - 6) covers in detail the history of waisthung appendages (the term chatelaine was not used with its modern meaning until 1828) from 2000 BC to 1914. The last, and largest, section covers the wide variety of types of chatelaines beginning with a twenty-six page chapter on the best known type of chatelaine - the watch chatelaine.

The authors acknowledge that for most watch collectors it is the mechanism of the watch that has the greatest appeal. They go on to add, "but the decoration of the watch and its way of wearing is nevertheless its first and public presentation." In 1773 a watch chatelaine received by Comtesse d'Artois is noted to have cost 16,350 francs while the watch cost only 6,000 francs!

The chapter on watch chatelaines illustrates well the depth of research and knowledge shown throughout the book. The basic structure of the watch chatelaine is discussed; the materials from which they were made; the styles popular at different times and finally the reasons why the watch chatelaine was phased out at the end of the nineteenth century. All of these points are beautifully illustrated with stunning photographs of chatelaines, illustrations from period catalogs, advertisements and publications and portraits of women in which chatelaines are prominently seen.

A brief glossary, a nine-page bibliography and a thorough index conclude this volume that will be of great interest to watch collectors as well as costume and social historians.

Having tried to find information on chatelaines before, I know how little information has heretofore been available on the subject. The authors (one a world-renowned expert and dealer of chatelaines and the other an ardent collector) have written a scholarly, well-researched book that will be a classic for many years. The authors are to be commended for their depth of research and for the stunning presentation of the material.

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R636 Curtis, T
Antiques and their value, clocks and watches
Antiquitäten uhren und ihre preise

England: Lyle publications, 1993 (1976), 19 x 12 cm, 447 pp, ill, 78 plates (126 pp, ill).

Price guide (English, German).

A number of editions including 1976, 1978, 1980, 1981, 1988 and 1993.

Prices realised in auction houses.

R637 Cutmore, M
Collecting and repairing watches

London: David and Charles, 2001 (1999), 22.0 x 14.5 cm, 191 pp, 39 fig, 38 ill.

Collecting, history, repair (English).

Reprinted in 2001.

Five chapters: Historical survey (40 pages); Technical survey (32 pages); Watchmaking (26 pages); Collecting (24 pages); and Repairing (35 pages).

These are followed by a glossary, useful information (hallmarks, a short list of makers, watch sizes, weights and measures, where to see watches, where to buy watches, where to buy watch materials, and

societies and institutions), and a bibliography. There is a short index.

[1st edition, fair] This is the second edition of Cutmore "The watch collector's handbook" (which see); it is very similar with the addition of new material on watch making. As before, the historical overview and collecting notes are interesting, and the technical survey is all right for novices. But I still find the repair notes dangerous and unsatisfactory because they expect far too much of a beginner.

These parts have not been significantly updated. This is notable when he says collecting American watches would involve "lengthy correspondence" which ignores the many excellent books published in the intervening 23 years and the advent of email.

The new chapter on machine watchmaking contains a large section on English manufacture which has some very interesting material. Unfortunately the remainder, on American and European developments, is too superficial.

Although the book has some merit for beginners, I think Cutmore should have spent more time on the bibliography. The inclusion of Billeter, Rawlings, Marsh ("Watches by automatic machinery") and Glasgow is strange, as such books are likely to turn off newcomers. A more thoughtful selection together with some notes on what the books offer would do much to provide some useful guidance for learners.

R638 Cutmore, M

Pin lever watches

England: D. H. Bacon, 1991, 20.5 x 14.0 cm, 146 pp, ill.

History, dating, identification, makers (English).

Said to be a limited edition of 200 copies.

A survey of pin lever watches in 9 chapters and an appendix: The pin lever watch (9 pages); The Roskopf watch (8 pages); American pin lever watches (9 pages); German pin lever watches (11 pages); Swiss pin lever watches (10 pages); Pin lever watches from other countries (10 pages); Timex pin lever watches (7 pages); Other inexpensive watches (9 pages); Identification of watches (24 pages); Appendix (41 pages). Chapter 9 and the appendix contain movement diagrams and other identification material.

There is an index.

[1st edition, very good] If importance were measured by economic benefit then Roskopf would be more widely recognised as a great innovator. But "dollar" watches have relatively little appeal to serious collectors, which is a pity.

This is a very useful book, giving a valuable history and detailed analysis of pin lever production.

Quite a bit, but not all of the text is repeated in Cutmore "Watches 1830 to 1980".

R639 Cutmore, M

The pocket watch handbook

London: Bracken Books (London: David and Charles, USA: Arco Publishers), 2002 (1985), 24.0 x 16.5 cm, 208 pp, 47 ill, 36 plates.

Collecting, description, history, repair (English).

Reprinted in 1989 and 2002.

An historical and technical survey of pocket watches between 1750 and 1900. There are 12 chapters, glossary, appendix, references, bibliography and index.

The 12 chapters are: The birth of the watch (7 pages); The verge watch (18 pages); The lever watch (19 pages); Inexpensive watches (12 pages); Watchmaking (7 pages); Alternative escapements (9 pages); Mechanisms (11 pages); Timekeeping (15 pages); Collecting (11 pages); Repairs (29 pages); Investigation and research (28 pages); and Museums (9 pages).

There is a very good set of references to source articles in journals.

[1st edition reprint, excellent] An excellent introductory book for the collector with a good historical study and sensible, unpretentious advice. There are very few practical, useful books for collectors and this is one of that select group.

The first 4 chapters provide a good history centered on the main types of escapements and ending with late nineteenth century "dollar" watches. The next 3 chapters give a very brief summary of the development of mechanised watchmaking, escapements and complications, and chapter 8 covers calendars and precision watches.

I especially like the chapters on collecting and research which make it clear to the new collector that there is much that can be done with and learnt from even a modest collection.

My only criticism is that the chapter on repair is inadequate, even though it contains some good, clear information.

R640 Cutmore, M

The watch collector's handbook

London: David and Charles, 1976, 22 x 15 cm, 159 pp, 84 ill.

Collecting, history, repair, description (English).

This book consists of an introductory history, a technical survey, some notes on collecting and a discussion of repair techniques for the amateur.

See Cutmore "Collecting and repairing watches" for the second edition.

[1st edition, mediocre] The historical overview and collecting notes (although dated) are interesting. And the technical survey is all right for novices.

However I find the repair notes both dangerous and unacceptable. Despite Cutmore repeatedly warning the amateur never to do anything that is permanent, he suggests methods that do just that. Further, unless the author is willing to spend enough care and space on describing techniques he will produce

inadequate and misleading instructions that may well cause novices to do irreparable damage. Thus remarks such as those on pinning and vibrating balance springs are far too vague to be of practical use, and to suggest beginners make their own fusee chain hooks, fusee clicks and enamel dials is a bit optimistic. Likewise, replacing impulse jewels with steel rod cannot be seen as acceptable.

My main objection is to the use of glue. Some watch "dealers" happily sell watches that seem to be in reasonable condition but which are, in fact, rubbish held together by glue. If a watch cannot or does not deserve to be repaired properly it should be left non-functional, rather than to risk misleading future owners.

Cutmore's other books are, on the whole, excellent; maybe I have been too severe on this one?

R641 Cutmore, M

Watches 1850 to 1980

Newton Abbot: David & Charles, 2002 (1989), 25.0x 19.5 cm, 235 pp, ill (240 pp, 160 ill, 20 fig).

History, identification, makers (English).

Thirteen chapters: Watches and watchmaking before 1850 (10 pages); The changing scene (8 pages); Developments in America (18 pages); English conservatism (7 pages); Swiss reactions (15 pages); The modern watch (13 pages); English watchmaking (53 pages); Swiss watchmaking (28 pages); Watchmaking in other countries (14 pages); Manufacturing principles (21 pages); Electrical and electronic watches (11 pages); and Collecting and repair (10 pages).

There is an appendix (watch sizes), bibliography, references and index.

[1st edition, excellent] This is a very good, concise history of watch manufacture by machinery, outlining developments in America and the responses of England and Switzerland. The book is especially important because of the substantial chapter providing detailed information about English manufacturers which have not been documented elsewhere, other than in journals. This includes the English Watch Co, Ehrhardt, Rotherham & Sons, Coventry Cooperative, Coventry Watch Movement, Lancashire Watch Co, P & A Guye, Nicole Nielson, J.W. Benson, Williamson, Smith & Sons and Newmark. The chapters on the Swiss and American industries are less detailed but well written introductions.

The short notes on collecting and repair could be ignored in favour of his much better coverage in "The pocket watch handbook".

The text is supported by a very good set of references to the source articles in journals.

Even though I don't like a couple of Cutmore's books, I must say he is one of the best writers I have come across and I unhesitatingly recommend him to collectors.

R642 Cutten, GB

The silversmiths of Georgia

together with watchmakers and jewelers 1733-1850

Georgia: Pigeonhole Press (Georgia: Oglethorpe Press), 1988 (1958), 9 x 6 inch, 174 pp, 139 ill.

Makers (English).

Reprinted in 1979, 1988 and 1998.

"The smiths are listed by locality, and the names are then listed alphabetically in the Index. The 1998 edition has new material in the form of Katharine Farnham & Callie Efir's 1971 Magazine Antiques article "Early Silversmiths and the Silver Trade in Georgia", and previously unpublished marks."

Cutten has also produced "The silversmiths of North Carolina", "The silversmiths of South Carolina", "Ten silversmith families of New York State", "The silversmiths of Poughkeepsie, New York" and "The silversmiths of Utica with illustrations of their silver and their marks", but I do not know if these include watchmakers.

R643 Cutten, GB

The silversmiths of Virginia

together with watchmakers and jewelers 1694-1850

Richmond USA: Dietz Press, 1975 (1952), 9 x 6 inch, 257 pp, ill.

Makers (English).

R644 Cutten, GB

The silversmiths, watchmakers and jewelers of the state of New York

outside of New York City

Hamilton NY: GB Cutten, 1939, 23.0 x 15.5 cm, 47 pp.

Makers (English).

A checklist, by city and town, with birth and/or death dates, if known, or the date when an advertisement by the smith was noted to have been published.

R645 Czapek, Francois

Slow kilka o zegarmistrzowie

ku uzytku zegarmistrow i publicznosci

1860.

Watch making (Polish).

"Some observations on the craft of watch construction for the watch maker and of general interest".

R646 Dale, R

Timekeeping

discoveries and inventions

London: British Library, Oxford: Oxford University Press, 1992, 24.5 x 19.0 cm, 64 pp, ill.

History, children? (English).

Introduction followed by 7 chapters covering calendars, non-mechanical timekeeping, clocks, the pendulum and watches. The chapter "Portable timepieces" (12 pages) covers clocks and marine chronometers.

[1st edition, poor] I skimmed through this book in a local library, concentrating on the few pages on watches (which were mainly illustrations). From its style I presume it was written for older children, but perhaps it is an introductory book for adults.

Being so short and covering the whole history of horology, it is necessarily somewhat superficial. However it is also stunningly crass and certainly does no honour to the publishers. Strangely, the list of "further reading" is good (and not suitable for children).

In amongst mediocre illustrations is a superficial overview of watches. This would have been acceptable if it wasn't for a few astounding errors. The stackfreed is mentioned by name, but there is an accompanying illustration of a 1764 patent for one (Kehlhoff patent number 819) implying an inventor and date of first use which is ridiculous; this illustration would be useful in an advanced book but its inclusion here is idiotic. Then Dale says the "first self-winding watch, patented by John Harwood in 1924 ..." in a section on wrist watches which includes the Waterbury dollar watch! Not to mention that the section on marine chronometers begins with a discussion of how to determine a ship's speed.

I have no idea why this book was written, but it should not have been.

R647 Dalrymple, A

Longitude

a full answer to the advertisement concerning Mr Earnshaw's timekeeper in the Morning Chronicle and Times 4th Feb. and 13th Feb. 1806

London: Sold by F. Wingrave, successor to Mr. Nourse, 1806, 23 cm, vi, 88 pp.

History (English).

See Earnshaw "Longitude - an appeal".

R648 Daly, A

Ormskirk clockmakers and watchmakers

England: Mayfield Books, 2006, 25 x 20 cm, 142 pp, 176 ill.

Makers (English).

Six chapters: Introduction; Ormskirk clock cases; The Ormskirk verge watch; Ormskirk clockmakers and watchmakers; Notes of interest on Ormskirk clocks and watches; and Prices of Ormskirk clocks, pocket watches, and balance scales. With a bibliography and index.

Described as: "A comprehensive horological history of the area and detailed information about its clock and watchmakers. The book includes the surrounding villages of Aughton, Bickerstaffe, Parbold, Skelmersdale and Scarisbrick and has a chapter on local clock case makers."

R649 Danblon, P

La mesure du temps dans les collections Belges

les temps des dieux et les temps des hommes.

Brussels: Société générale de banque, 1984, 21 x 24 cm, 320 pp, 448 ill.

Collection, description, exhibition (French).

Time measurement from Belgian collections, the times of the gods and the times of man.

Exhibition catalogue of watches etc., mainly from private collections in Belgium. Part 1 covers non-mechanical timepieces (astrolabes, sundials, etc.) and Part 2 covers clocks and watches. 448 items catalogued.

R650 Dane, E Surrey

Peter Stubs and the Lancashire hand tool industry

England: John Sherratt, 1973, 22.0 x 14.5 cm, 291 pp, 4 ill, 19 plates.

History, tools (English).

E. Surrey Dane was a director of Peter Stubs Ltd.

A history of the Stubs family firm of toolmakers from about 1800 until 1840, with biographies of the main characters.

Seventeen chapters: The products and their making (5 pages); The backcloth (14 pages); The characters (27 pages); The Lancashire tool makers and Peter Stubs (10 pages); The new workshop (26 pages); The country hands (18 pages); Some customs of the trade and practices of the firm (16 pages); Communications (8 pages); Prices and pricing policy (7 pages); Distribution (26 pages); Settlement (9 pages); Hazardous journeys (4 pages); The imitators (4 pages); Wire (6 pages); The Rotherham steel works (3 pages); The sidelines (15 pages); and The White Beare Inn (7 pages)

There are four appendices: Country hands (27 pages, list of outworkers including many watch tool and watch parts makers); Value of sales of files and tools (1 page); List prices of Lancashire saw-files (1 page); and bibliography (8 pages).

With notes (40 pages) and index (9 pages).

[1st edition, very good] Primarily a general social history based on the records of the P.S. Stubs company, a major manufacturer of files and a supplier of horological tools. There is very little information on actual tool manufacturing methods (for which see Weiss "Watch-making in England 1760-1820"), but it provides a well written and enlightening insight into working conditions and trading in the early 1800s. I am reminded of a book on lead mining which noted that, in the not too distant past, the thief of lead could have his hand fixed to a windlass and be given a knife; he either died or cut himself free. Histories, such as of the Stubs family, provide an insight into circumstances and conditions essential to understand

the development of watchmaking.

See also Ashton "An eighteenth century industrialist - Peter Stubs of Warrington, 1756-1806".

R651 Daniell, JA

Clock and watch making in Leicestershire

The making of clocks and watches in Leicestershire and Rutland

England: Leicestershire Archaeological Society, 1972 (1952), 26.0 x 16.0 cm, 36 pp, 13 ill.

Makers (English).

The 1952 edition is an offprint from the Transactions of the Leicestershire Archaeological Society, 1951. The 1972 edition (a reprint?) is titled "Clock and watch making in Leicestershire".

A list of clockmakers working in Leicestershire from 1680 and a catalogue of clocks and watches in the Department of Antiquities City of Leicester Museums in 1951.

R652 Daniell, JA

Leicestershire clockmakers

directory of watch and clock makers working in Leicestershire

England: Leicestershire Museums, 1975, 8vo, 44 pp and 10 plates.

Makers (English).

Makers working in the area before 1900.

R653 Daniels, George

All in good time

reflections of a watchmaker

: Premier Print Press (Isle of Man: George Daniels), 2006 (2000), 10 x 7.5 inch, 159 pp, ill.

Biography (English).

The first edition is a limited edition of 750 copies.

Autobiography of George Daniels including his childhood, becoming a watch maker and his attempts to get the co-axial escapement adopted by Swiss watch companies.

[1st edition, review by Fortunat Mueller-Maerki] While many readers will be familiar with this author, a few introductory remarks for the others: George Daniels is one of the few people alive today who rightfully carries the title "watchmaker" because he makes complicated, original watches of his own design completely by himself from scratch, including the case, dial, hands and movement down to every single screw. One of his previous books, "Watchmaking", is the superbly illustrated, only - and very readable - modern text describing step-by-step how to make a watch using craft - rather than industrial - methods.

Now, at age 76, George Daniels has published his autobiography. I always enjoy autobiographies of people I presume to know because I have read their writings, have heard them lecture a few times, and read about them continually in the press. Of course it usually turns out that one does not know the individual at all until one learns about the more private elements of his life, his childhood, his pastimes, his passions. This book is a case in point, the public George Daniels is a most creative watchmaker combining superb horological craft skills, with extraordinary creativity, and with a excellent sense for aesthetics. He appeared to me as driven maybe even obsessed with his ideas, as aloof or even somewhat arrogant in style. The autobiography does not necessarily change that perception, but it explains it: Few people know that Mr. Daniels had a very difficult childhood and youth, and that the man labeled "a national treasure" in a British TV special, and recipient of a honorary Doctorate in Science, is completely self-taught, as he could not afford an education. He had to fight all the way from abysmal poverty and ignorance to his present, highly respected role in both the horological profession and in British society, and unless you develop a certain "obsessiveness and combativeness" you will just not make it.

A substantial portion of the book is devoted to Mr. Daniels' big passion: classic motor cars, especially Bentley race cars. He describes the cars he owned and restored lovingly, but - like most of what he did in his life - he also used this sphere of his life to make friends who would prove useful to climb up the professional and social hierarchy.

The centerpiece of the book is the chronicle of his epic 25 year struggle to convince the worlds' manufacturers of high grade mechanical watches - i.e. the Swiss watch industry - that the lever escapement that has dominated watchmaking for 200 years was inherently flawed, due to its need for lubrication, and the resulting change in performance over time as the oil degrades. The Daniels co-axial escapement, invented in 1976, overcomes that handicap. However inventing and improving his escapement was easy compared with the struggle of Mr. Daniels to get the engineers and businessmen at the helm of huge companies to accept that a lonely, self-taught, single watchmaker had achieved the single most important horological breakthrough of the century. As watch-enthusiasts know that struggle is now over, Omega launched in 2000 its first wristwatch with the Daniels co-axial escapement, which, by the way, is described and illustrated very nicely in the text of the book.

"All in good time" will provide fascinating reading for all those who want to understand better what has been driving one of the greatest horological minds and craftsman of the late 20th century.

[Remark] Another reviewer described the book as "an enlightening and occasionally humorous narrative ... truly a delight to read".

The sad thing about Daniels is that he lived 180 years too late. If he had invented his co-axial escapement around 1800 he probably would have had a significant impact on the history of chronometers. As it is, his novel idea has no role to play, except as a curiosity in a modern wrist watch.

R654 Daniels, George

English and american watches

London: Abelard-Schuman, 1967, 22.5 x 18.5 cm, 128 pp, 7 ill, 23 plates.

History, illustration (English).

Nine chapters: The beginning (3 pages); English watchmaking in the seventeenth century (3 pages); The balance spring (5 pages); Pioneer precision work (7 pages); The emergence of the precision watch (4 pages); The early lever and duplex escapements (4 pages); The English watch, final development and decline (5 pages); American watchmaking (9 pages); Post-war developments in America (4 pages).

Five appendixes (all 2 pages): The verge, Cylinder, Duplex, Chronometer and Lever.

Followed by Biographical notes (8 pages); Plates (47 pages); Index (4 pages); and a bibliography listing 5 books.

[1st edition, fair] *A general history of English watchmaking and American manufacturing followed by notes on the main escapements and a number of short biographies. The book concludes with photographs of 34 English and 16 American watches.*

A well-written introductory book which is marred by the mediocrity of the photographs; there are 50 watches illustrated, each with usually two views. Also, the lack of an adequate bibliography is disappointing.

For the newcomer, Daniels tends to slip into obscure technical detail (such as his description of Mudge's escapement). His discussion of the lever escapement is interesting when he argues that it was ignored because London makers preferred the duplex and "... regarded the Liverpool product with contempt". I have yet to read a convincing account of Litherland, Massey and this fascinating period.

The main problem with this book is that it has been superseded by much better works. It may have been very good when first published, but it is now of much less value.

R655 Daniels, George

Freemen of the Worshipful Company of Clockmakers

1631-1984

Isle of Man: George Daniels, 1984, 8vo, 131 pp, 1 plate.

Makers (English).

A list of freemen, masters, clerks and apprentices.

R656 Daniels, George

The art of Breguet**L'art de Breguet**

London: Sotheby Parke Bernet (Lausanne: Scriptor), 1986 (1975), 33.5 x 25 cm, 394 pp, 109 ill, 925 plates.

Description, technical, illustration (English, French).

Produced in a French edition in 1977.

Three chapters (about 44 pp) providing a biography and a general discussion of watch design and manufacture. These are followed by a detailed examination of timepiece styles and 202 pages of black and white plates. The book concludes with a 64 page study of mechanical techniques, a glossary, facsimiles of two patents (tourbillon and constant force escapement) and indexes by subject and timepiece serial number.

[1st edition, very good] *The first three chapters provide an excellent biography of Breguet and his manufacturing techniques. Then the bulk of the book looks at his production, firstly by type (souscriptions, repeaters, etc) and then by series. Unfortunately the photographs are only fair (presumably from archives) and I find this catalogue of his work whets my appetite but doesn't satisfy it.*

The final, technical section provides excellent drawings and descriptions of mechanisms used and developed by Breguet. It shows the genius of the man more clearly than the preceding photographs.

See also Antiquorum "Art of Breguet" and Chapuis & Jaquet "The history of the self-winding watch".

[Remark] *I find it very hard to come to grips with Breguet. He is described as "kindly and benevolent", but he created a totally elitist product and perhaps only showered benevolence on some in order to advance his own status and wealth. He is said to have made "many improvements ... which are directly responsible for advancing the progress of the watch to a point where, for ordinary use, it could hardly be improved". But his designs had little impact on what so soon followed; his watches were deliberately totally unique and without interchangeability, the exact converse of the objectives of most other makers. That he was a great artist, indeed a genius, who produced the most superb watches there is no doubt. But of what significance is he to the vast majority of us who are not kings or millionaires?*

I think my uneasiness stems from my belief that importance should be related, to some extent, to usefulness. I do not decry magnificent art for its own sake, but in the span of history such gems often have negligible effect on progress. Indeed, occasional hesitations suggest some authors also have subconscious concerns along this line. As Brearley says in "Time telling through the ages", the "most important development in any affair is naturally the one which concerns the greatest number of people" whereas Daniels notes that "Breguet enjoyed his self-imposed task of delighting the fancies of the wealthy".

Earnshaw, Mudge (or maybe I should say Emery and Lecroix), Roskopf, Dennison, these people are great even though their important contributions are mundane. But Harrison? Well, we have his fusee maintaining power, but his other inventions were largely dead ends and we owe successful navigation to Arnold and Earnshaw. Breguet? We have shock proofing, if the 20th century wrist watch actually derives from his parachute. But his balance spring was probably derived from Arnold and his tourbillons

and other designs have had negligible impact. We owe the modern watch to Aaron Dennison, American toolmakers and Massey.

I make these points because I have read about a genius and his work, and then felt a bit sad. Sad because other people who have made more lasting contributions to the advancement of horology have not been feted in similarly luxurious and adulatory books. But they didn't produce works of art; they manufactured watches.

R657 Daniels, George

The practical watch escapement

Isle of Man: George Daniels, 1997 (1994), 27.0 x 19.5 cm, 81 pp, 63 ill, 6 plates (1 fld).

Technical, watch making (English).

Said to be revised and reprinted in 1997, but one source suggests no revisions.

Descriptions of the verge, cylinder, virgule, lever, Robin, Howell and Breguet "naturel" escapements, followed by details of the author's radial impulse escapements.

[1st edition, good] This is not a general escapement book. The emphasis is on demonstrating the need for detachment and avoiding escapement lubrication, and this basis is then used to explain the approach of radial impulse adopted in the author's co-axial escapements.

This book is fundamentally the same as the chapter on escapements in Daniels "Watchmaking" (which see). Much of the text and many figures are identical, although there are major differences. In particular, additional "old" escapements are described (virgule, Howell's, Robin and a Breguet) and there are some differences in the descriptions of his own escapements.

Although clear and concise, it is largely redundant because his major text "Watchmaking" is superior and more readily available.

R658 Daniels, George

Watchmaking

Montre, principes et méthodes de fabrication

London: Philip Wilson (London: Sotheby), 2009 (1981), 27.0 x 19.5 cm (27.0 x 20.0 cm), 420 pp, 784 ill, fld ill, 22 plates (472 pp, 777 ill, 100 colour ill) (416 pp, 777 ill, 8 plates).

Repair, watch making (English, French).

Second and third English editions were printed in 1985 and 1999 (reprinted 2002 and 2009), and a French translation in 1993.

The first edition has a Preface, 8 pages of colour photographs (1 of his workshop and the rest of his watches), 13 chapters, a bibliography (listing 7 books) and an 11 page index.

The chapters are: Workshop and equipment (26 pages); Hand tools (24 pages, including screw making); Finishing steel and brass (18 pages); Turning (32 pages, including making a balance staff); Wheels and pinions (46 pages); Making small components (28 pages, including barrels, stop work, levers and chronometer detents); Jewelling (20 pages, including making jewels); Escapements (58 pages); Mainsprings and accessories (26 pages); Movement design (40 pages, including making a tourbillon); The balance and spring (36 pages); Casemaking (16 pages); Engine-turned cases and dials (34 pages, including cleaning watch parts).

The third edition is the same as the first with the addition of 3 appendices (4 pages and 1 folding plate).

[1st edition, excellent] Generally assuming a high level of skill and knowledge, Daniels provides precise, practical information, including topics such as jewel and case making which rarely appear in print. His work methods are clear and include excellent descriptions of polishing steel, turning, jewel making (including detailed instructions for ruby cylinders) and case making.

The focus of the work is the chapter on escapements (published separately in a slightly different form in Daniels "The practical watch escapement"). This describes the coaxial escapement, his major contribution to horology, demonstrating the need for detachment and avoiding escapement lubrication, which are the bases for his radial impulse approach. A second focal point is the detailed description of making a tourbillon watch. This forms the bulk of a chapter titled "Movement Design" which, unfortunately says very little about design (although there are some useful remarks).

No book is perfect. It is disappointing that the bibliography is startlingly irrelevant and inadequate, and the colour plates are rather unhelpful; considering the high quality of the rest one wonders if these features were rushed afterthoughts. In several places the text is a bit too general. For example, the use of an automatic pinion cutting machine is included without adequate description or any illustration, and the discussion of gearing is incomplete. In other places Daniels is justifiably terse. I am sure many readers would have appreciated a bibliography that filled in the gaps and gave pointers to alternative approaches. After all, Daniels is at the end of a long list of valuable books on watch construction and repair, and much of what he writes has been said before (although often not as well).

This is a book of great value, being one of the very few which discusses watch making in detail, and the only significant English work since Glasgow, a hundred years earlier. Although written for the small band of people actually wanting to hand make watches, it is of considerable value to repairers. Also, I feel that collectors who do not learn about the mechanism cannot fully appreciate watches. At least some knowledge of their construction and repair is as necessary as knowledge of case styles and social context. And so I think this book (and Tarasov) should be compulsory reading for everyone interested in small horology.

[3rd edition] This edition is a facsimile of the first (having identical text, figures and page numbering) except for the following changes: pages 236-252, describing Daniels's own escapements, have been

rewritten and appendices added relating to this section (done so that later figure numbers are kept the same as in the first edition); 15 new plates (some are diagrams) have been added; and the index has been revised.

Being primarily an update of the “work in progress” on escapements, this edition is better than the first but not significantly. However, the reprinting makes it much cheaper and more accessible, for which we must all be very pleased.

Again the photographs and bibliography are, sadly, mediocre.

[Remark] Some time after reviewing this book it occurred to me that I hadn't asked the obvious question: what does watchmaking involve that watch repairing does not? I would include calibre design, making plates and cocks, making escapements and balances, and making and decorating cases. Perhaps other things can be added (and cases are not really in the province of the watchmaker), but nearly everything else is also done by repairers and, with a very few exceptions, by the same tools.

This answer is important because the shared activities are frequently and well described in repair books. Consequently I should judge Daniels and other books on watch making by how well they cover the specific making aspects and not how well the shared processes are described.

There are about 37 pages in this book on making activities: tools, wheels, pinions, escapements, hands and balances. Most of the 300 pages describe activities also undertaken by repairers. Of the remainder there is one page on calibre design (followed by a long example including some information on plate and cock making) and 48 pages on cases and dials.

For me the crucial point is that the major watch making activities of design and calibre making are glossed over, except for the detailed example of a tourbillon watch which is purely practical and contains no discussion of principles; an example which is not a sensible choice for teaching purposes. So I feel this is not really a watch making book and it is more valuable for its repair content.

R659 Daniels, George; Markarian, O

The art of time

the Sir David Salomons collection of watches and clocks

Jerusalem: L.A. Mayer Museum for Islamic Art, 2009, 30.0 x 16.5 cm, 168 pp, 185 ill, 6 fig .

Catalogue (English, Hebrew).

Catalogue illustrating 76 clocks, watches and other items.

Preface. Introductory text by George Daniels: Introduction (9 pages); Abraham-Louis Breguet (7 pages); Boxes and automata (2 pages); and Glossary (4 pages). These sections appear twice, in English and Hebrew.

The catalogue: Breguet watches and clocks (36 pages); Exceptional works of art (14 pages); Ornamented and musical watches and boxes (16 pages); Watches for the Turkish market (8 pages); Automata (28 pages); and Clocks (11 pages).

There is no index.

With the exception of the English introductory text, the book is organised by the Hebrew reading direction from last page to first.

[1st edition, good] The preface provides a detailed history of the theft of the pieces which were stolen from the museum in 1983 and their recovery in 2006. 13 items have not been recovered and so the collection now has 178 of the original 191 objects (but there is no information about which pieces are still missing).

Written in 1979, the introductory text is clearly derived from that in the 1980 book “Watches and clocks of the Sir David Salomons collection” by the same authors. The main changes are the deletion of references to illustrations in that book.

The introduction is a semi-technical explanation of watch and clock mechanisms. This is a bit obscure because of the lack of illustrations, despite a few references to them. And Daniels attempt to explain escapements to the uninitiated is poor.

The second part has a short biography of Breguet and describes his work, referencing the watches illustrated in this book. It is almost identical to that in the 1980 book.

The two pages on boxes and automata has been copied from the 1980 book.

The glossary is new, but poor. Presumably provided for the novice, the terse definitions explain very little; for example, a watch is defined as “a pocket timekeeper”, so I wonder what the things on wrists are called. And the descriptions of escapements, some accompanied by ridiculous drawings, are hopelessly inadequate.

The catalogue has high quality photographs of the items with captions copied from the 1980 book. Again, most probably show the watches actual size, but it would have been better if they were more enlargements, as most fine detail is hard to see. In this respect I feel too much emphasis has been placed on the aesthetics of the book to the detriment of its value to the serious reader. The most important problem is that only part of the collection has been included, and in that respect the 1980 book is to be preferred.

[Remark] The same portrait of Salomons appears in both books on the collection, but one is a mirror image of the other.

R660 Daniels, George; Markarian, O

Watches and clocks of the Sir David Salomons collection

including scientific instruments, boxes and automata

London: Sotheby, 1983 (1980), 29.0 x 23.0 cm, 318 pp, 191 multi-part b/w ill, 16 col plates.

Collection, illustration (English).

Catalogue for the exhibition of 191 pieces on display in the Meyer Memorial Institution, Jerusalem. A foreword followed by 6 chapters: Introduction (24 pages); Breguet (77 pages); Other makers, watches (106 pages); Other makers, clocks (48 pages); Scientific instruments (13 pages); and Boxes & automata (40 pages).

The book concludes with a list of colour plates, concordance for Breguet watches, an index of makers.

[1st edition, good] The introduction begins with an eleven-page history of watches and the reasons why early watches were inaccurate, followed by a general overview of escapements, temperature compensation and complications. It is written for the uninformed. The second part of the introduction begins with a short biography of Breguet and describes his work, referencing the watches illustrated in the book.

The remainder of the book consists of photographs of the 191 objects with descriptions. The photographs are adequate, but often important details are hard to distinguish. They probably show the watches actual size, but it would have been better if they were enlargements. However, the colour plates are very good.

Overall, the book serves as a catalogue for the collection, but is otherwise rather uninspiring.

Part of the collection was stolen; see Kurzweil "The grand complication". The watches were recovered in 2006.

R661 Daoust, R

British made goods for the watchmaker and jeweller

ca 1960, 71 pp, ill.

Catalogue (English).

Catalogue of lathes, tools and materials as supplied by a Clerkenwell dealer.

R662 Dash, Joan

The longitude prize

the race between the moon and the watch-machine

New York: Farrar, Straus & Giroux, 2000, 8 x 6.5 inch, 208 pp, ill.

History (English).

Black and white illustrations. With a glossary, timeline, bibliography, and index.

Described (probably on the dust jacket) as: "By the start of the eighteenth century, many thousands of sailors had perished at sea because their captains had no way of knowing longitude, their east-west location. Latitude, the north-south position, was easy enough, but once out of sight of land not even the most experienced navigator had a sure method of fixing longitude. So the British Parliament offered a substantial monetary prize to whoever could invent a device to determine exact longitude at sea. Many of the world's greatest minds tried - and failed - to come up with a solution. Instead, it was a country clockmaker named John Harrison who would invent a clock that could survive wild seas and be used to calculate longitude accurately. But in an aristocratic society, the road to acceptance was not a smooth one, and even when Harrison produced not one but five elegant, seaworthy timekeepers, each an improvement on the one that preceded it, claiming the prize was another battle. Set in an exciting historical framework - telling of shipwrecks and politics - this is the story of one man's creative vision, his persistence against great odds, and his lifelong fight for recognition of a brilliant invention."

R663 Daveau, S

Les régions frontalières de la montagne jurassienne

étude de géographie humaine

Lyons: J.Patissier, 1959, 8vo, 536 pp, ill.

History (French).

Referenced in Landes.

The frontier regions of the Jura mountains, geographic study.

R664 David, Jacques

American and swiss watchmaking in 1876

Rapport a la Société Intercantonale des Industries du Jura

reports to the International Committee of Jura Industries on the manufacture of watches in the United States

sur la fabrication de l'horlogerie aux Etats-Unis

Australia: Richard Watkins (Saint-Imier: Compagnie des Montres Longines Francillon), 2003 (1877), 29.5 x 20.5 cm (34.5 x 22.5 cm), 82 pp, 47 ill (12 pp, 120 pp, ill, 8 plates, slip case).

History, tools, watch making (English, French).

The original reports were never printed and the only copies were hand-written manuscripts.

The 1992 facsimile of the manuscript is a limited edition of 1000 copies.

The 2003 translation is a limited edition of 300 copies.

Manuscript of two reports on the American watchmaking industry by Jacques David, following his visit in 1876.

The first report (108 pages, 8 plates) was written in late 1856 and early 1877 and delivered as a lecture on 22 January 1877. It contains a summary of the American watch factories existing in 1876 and then a detailed description of the organisation, financial conditions, products, sales and manufacturing methods. The focus is on Waltham with many remarks about Elgin. The report concludes with a summary of the problems facing the Swiss industry and ten recommendations for reorganising the industry to meet the competition from America.

The second report (12 pages) was delivered as a lecture in March 1877. In it David aggressively criticises Swiss makers for failing to act on the warnings of himself, Favre-Perret and Theodore Gribi. Quoting

from an article by A. Lange & Sons, he re-affirms the arguments in the previous report and supplies additional evidence.

The Longines facsimile also contains a foreword (by W. Von Kanel, under whose name it is sometimes listed), a biography of David (by J.H. Bedat) and a history of the manuscript (by J.M. Barrelet).

[Translation, 2003, excellent] *I admit I am perhaps biased, but I think this is the most important document in the history of modern watchmaking.*

First, it is the only book I have read that describes coherently and in detail how Waltham and other American companies manufactured watches, from the raw plates to the finished, cased movement. David focuses on those aspects of watchmaking that were new to him and so he glosses over some operations (which are described in other books). Otherwise his descriptions and illustrations provide a wealth of information. One of the most fascinating aspects is that in doing this David precisely defines the degree of interchangeability that America had achieved and how lack of interchangeability was overcome; in particular the extremely ingenious method of jewel setting used to compensate for variations in pivot diameters and lengths. He also describes the system used to record details of all movements so that a spare parts service could be provided.

Another stunning point is that the companies used epicycloid gearing and David gives details of how epicycloid cutters were made. Other books either ignore the problem or approximate epicycloidal addenda by circular addenda. For example, Charles Higginbotham "Precision time measures", Louis & Samuel Levin "Practical benchwork for horologists", and George Daniels "Watchmaking" all avoid the problem, while Tarasov "Technology of watch production" admits that the "reason for the replacement of the epicycloids by circular arcs in gear-wheel teeth lies in the difficulty of producing milling cutters of epicycloidal contour". Indeed, this description by David is the only "practical" method for making epicycloidal cutters that I have read and it is perfectly understandable why watchmakers used to make teeth in the shape of a bay leaf or a thumb (the difference depending on whether the tooth drove or was driven).

In addition, the two reports give a fascinating insight into the state of Swiss horology and the problems it faced. David's analysis of the situation is masterly and his list of recommendations show that he was a true visionary; looking back we can see that almost all were implemented and it is not far fetched to regard the creation of Ebauches SA as an outcome of his efforts. Indeed, I have no doubt that this watchmaker-engineer with an acute business sense should be considered the father of modern Swiss watchmaking in the same way that Dennison is considered the father of American watchmaking. Both men had profound insights and were determined, forceful personalities. Without them it is likely that history would be very different. This analysis also gives us a better understanding of why England failed. English watchmakers went to Philadelphia and saw the same exhibits, and they probably could have toured the watch factories as David did. But there was not one Englishman who had the foresight and power to see what David found so obvious; that England and Switzerland were doomed unless they copied the Americans. David forced Switzerland to change and it became the greatest watchmaking country in the world. The English ignored the warning and died because of their lethargy and inability to see the inevitable.

See also Favre-Perret "Rapport présente au haut conseil fédéral sur l'industrie de l'horlogerie, Exposition de Philadelphie 1876" and Watkins "Jacques David".

R665 Davis, WO

Gears for small mechanisms

(London: NAG Press), 1993 (1953), 22.0 x 14.5 cm, 344 pp, ill (157 pp, 76 ill).

Technical, theory (English).

The first edition was reprinted in 1956. The modern reprint is of the 2nd edition, which was published in 1970.

A technical study of gears for watches, clocks and instruments and their manufacture. It has 20 chapters on theoretical forms (12 pages), watch and clock gears (12 pages), friction (11 pages), load capacity (2 pages), gear cutting (18 pages), polishing (3 pages), addenda correction (10 pages), helical worm and bevel gears (10 pages), scale effect in gearing (4 pages), precision (10 pages), miscellaneous problems (4 pages), and testing (11 pages). There are 10 data sheets giving specifications for different forms of gearing.

[1st edition, very good] *Davis, an engineer with Smith and Sons, provides a detailed analysis of gearing oriented towards manufacture and mass production. He begins with the theory of involute and cycloidal gears and then examines the practical problems of machine manufacture of real gears.*

R666 Dawes, WM

A familiar treatise on horology

being a sketch of the history of the watch and clock

London:, 1862, 30 pp.

History (English).

R667 DCN

DCN stock catalogue (balance staffs)

: DCN, ca 1950, 21.0 x 15.0 cm, 207 pp, ill, with 42 pp supplement.

Identification, repair (English, French, German, Italian, Spanish).

In four sections: Alphabetical list of watch names and manufacturers; Alphabetical list of manufacturers, models and DCN staff numbers; Numerical list of DCN staff numbers, manufacturer, model and staff

dimensions; List of staffs in order of overall length, DCN number and other dimensions. The book and its supplement list 4000 staffs.

[ca 1950, very good] *Although originally used to order replacement staffs, this book contains a comprehensive listing of balance staff dimensions. Given a watch you can find the staff dimensions or given a staff determine what watch it came from, or you can order a DCN staff.*

The book also, incidentally, identifies the manufacturers of many watches by cross referencing watch names to their manufacturers.

DCN also produced stock catalogues of stems in the same format.

See also Ronda "Ronda stock catalogue (balance staffs)".

R668 de Carle, Donald

Clock and watch repairing

London: Robert Hale (London: Isaac Pitman), 1996 (1959), 22.5 x 14.5 cm, 309 pp, 251 ill.

Repair, tools (English).

First edition in 1959 (reprinted in 1969 and 1981) and second edition in 1981 (reprinted at least in 1983, 1988, 1991 and 1996).

In three parts: clocks (162 pages), watches (96 pages) and complicated watches (31 pages). Followed by a glossary and an appendix on timing machines. The section on watches covers the workshop, movement, escapement, balance, train and mainspring, cleaning and cleaning machines, assembly, repairs, fitting a new balance spring, and oiling.

[2nd edition, good?] *Unlike some books, in this one de Carle recognises something of educational needs by dealing "with the repair of clocks first, so that the beginner will be 'broken in' as it were". These chapters provide a coherent, well organised introduction to clock repair and, if they have been read, provide much of the basic ideas and experience relevant to watch work.*

However, I feel the watch sections are unsatisfactory. De Carle is not a good teacher, beginning with information for novices and jumping to very sophisticated repairs. Also, the text is often either purely descriptive or makes statements without explanation. So, early on he tells us to remove the winding shaft without telling us how it is fixed, and then gives detailed methods for lever escapement repair without providing any adequate understanding of why.

Much of what he writes is well explained and well illustrated, and the discussion of lever escapement examination is detailed and thorough. But the book needs to be read in conjunction with other works to make satisfactory sense.

The section on complications is descriptive with some remarks on assembly and testing.

His previous book "Practical watch repair" is much better.

R669 de Carle, Donald

Complicated watches and their repair

London: NAG Press (New York: Bonanza Books), 1978 (1956), 23.5 x 16.0 cm, 174 pp, 217 ill.

Repair (English, Russian).

There is also a Russian translation (158 pp, 1960).

Nine sections; automatic watches (66 pages), chronographs (30 pages), timers (6 pages), 24 hour dials (3 pages), alarms (4 pages), calendars (12 pages), repeaters (34 pages), independent seconds (3 pages) and more automatic watches (11 pages).

[1st edition, very good] *Unlike most repair books, this concentrates on giving information for particular watch calibres. For each model there are diagrams and detailed instructions for disassembly, inspection, repair and assembly.*

The bulk of the book (the first and last sections) is on automatic watches, beginning with 7 pages of general remarks and then providing specific details for 27 models. The other sections focus more on general principles and repair techniques with less stress on particular makers.

Although de Carle provides information for specific watches, the wealth of excellent detail provides ideas and guidelines for the repair of any complicated watch.

R670 de Carle, Donald

Horology

England: Teach Yourself Books, English Universities Press, 1973 (1965), 18.0 x 11.5 cm, 136 pp, 14 ill, 8 plates.

Description, history (English).

An introduction to horology, including a short glossary and bibliography. There are 10 chapters: The earth as timekeeper; Early methods of ascertaining time; Early mechanical clocks; Horology in the 17th and 18th centuries; Greenwich Observatory, the centre of time; Horology in the 18th and 19th centuries; Time signals; The watch trade in Switzerland; Electric and electronic clocks and watches; and Summer time, daylight saving.

[1st edition, mediocre] *Simple and at times inaccurate. It contains some interesting anecdotal information about Greenwich and the Swiss industry.*

[Remark] *The above review was written many years ago. I have just re-read this book and I have decided I was far too kind, and too brief. De Carle is at his best when he writes for experienced watchmakers or he uses a cookery-book approach. And he is hopelessly inadequate when trying to teach beginners. He is unable to organise his thoughts so that they progress from the simple to the complex, and he uses technical terms without explanation; both failings occur throughout "Horology".*

More importantly, in this book he dramatically distorts the truth, but I don't know if this is through

ignorance or poor writing. The most obvious cases are when he describes the history of the discovery of longitude, and his complete omission of American watchmaking. Also, de Carle firmly believes that only the English are capable of inventing anything, although he is, of course, forced to mention Breguet and, rather surprisingly, Ingold.

The only interesting chapters are those which give anecdotal information about Greenwich and his description of the organisation of the Swiss watch trade. Indeed, as often happens, it seems the author has created a book as a vehicle for something he wanted to write and the other chapters are necessary padding.

Fortunately there are many, far better books available today.

R671 de Carle, Donald

Practical watch adjusting and springing

London: NAG Press, 1999 (1964), 22.0 x 14.0 cm, 150 pp, 186 ill (including 8 plates), 4 plates.

Repair (English).

Printed in 1964, 1973, 1977, 1987 and 1999. The book includes the 8 plates from Bossart "Phillips terminal curves for Breguet hairsprings".

Ten chapters: Condition of the movement (10 pages); Cleaning and oiling (16 pages); Balance pivots (15 pages); Fitting flat balance springs (17 pages); Fitting Breguet springs (31 pages); Positional timing (14 pages); Further considerations (8 pages); General notes (3 pages); Other methods of positional timing (6 pages); and Timing machines (22 pages). These are followed by 3 appendixes (main points, factory methods and cementing balance springs to collets and studs).

There is no theory and it is a practical manual for positional adjustment by repairers. It is solely concerned with lever escapement watches.

[1st edition, good?] In this book de Carle's writing is "specially directed to the ordinary repairer". Unlike some of his other books, it is an advanced work and his assumptions about knowledge and ability are acceptable.

The first half of the book is preparatory. Chapters 1 to 3 discuss the need to get the train in excellent condition, oiling and preparing the balance and its pivots. These include an explanation of burnishing lever notches, cleaning, oiling (a Chronax product description), the use of epilame, balance pivot polishing and balance poisoning. There are also peculiar and rather meaningless discussions of ultrasonic cleaners and the technical properties of oils.

Chapters 4 and 5 explain flat and overcoil balance spring fitting, providing precise instructions for selecting a suitable overcoil from Bossart's plates of springs. Overcoils are the only aspect of isochronism considered and de Carle notes the practical difficulty of forming curves which match the theoretical curves. Actually, he ignores isochronism by saying that long thin mainsprings and automatic watches ensure little variation in balance arc will occur, and so it need not be considered.

Chapter 6, positional adjustment, begins with a general discussion of which positions should be adjusted and then gives detailed instructions for setting the balance spring pinning point of a wrist watch. It concludes with instructions for reducing balance screw weights in case the rate of the watch has changed. The instructions are quite clear, but I wonder why setting the pinning point was not included as a basic part of the instructions for balance spring fitting rather than a later re-manipulation.

Chapters 7, 8 and 9 contain additional notes. Chapter 7 begins by discussing problems with curb pins and then has some notes on centre of gravity and fitting overcoil springs with regard to the pinning point. Chapter 8 has further remarks on curb pins, air resistance, inner terminal curves, regulator index scales and poisoning levers. Chapter 9 briefly looks at positional adjustment by varying balance poise, balance pivots and curb pins. All three chapters are general information with not enough detail to be particularly useful.

The last chapter has a description of timing machines and their traces, some general remarks on temperature compensation and a summary of the adjustment process.

The majority of the book is similar to other works and only the 14 pages on positional timing give specific and very clear instructions on adjustment. But this is a cookery book where the reader is expected to follow the recipes provided by de Carle, primarily those for pinning points, and other problems and other methods of timing are glossed over; the reader is not expected to understand, but simply to blindly follow instructions. Such a mechanistic approach has been roundly condemned in the case of banking to drop, so should we mindlessly accept de Carle's prescriptions?

R672 de Carle, Donald

Practical watch repairing

Manual del relojero

L'orologiaio riparatore

London: NAG Press; USA: Henry Paulson; Barcelona: Editorial J. Monteso, 1995 (1946), 21.5 x 14.0 cm, 299 pp, 553 ill.

Repair, tools (English, Italian, Spanish, Russian).

Three editions. Originally published as a series of articles in the Horological Journal, 1943-45. The early printings contain advertisements which are now historically interesting.

The Spanish translation of 1980 has 487 pp, 555 ill and there is a Russian translation (223 pp, ill). The first edition has 23 chapters: Workshop and workbench (4 pages); Essential tools (7 pages); Case, dial and hands (7 pages); The movement, components and dismantling (10 pages); Lever escapement, examination and correction (25 pages); Pin pallet escapement (8 pages); The train, gears and tooth

forms (19 pages); The barrel and mainspring (13 pages); Hand cleaning and oiling (13 pages); The cleaning machine (3 pages); Keyless work (7 pages); Springing and timing (21 pages); Breguet overcoil (8 pages); Timing in positions (17 pages); Making new parts (15 pages); Turning (15 pages); The lathe and its use (42 pages); The English lever (17 pages); Friction jewellery (10 pages); Shock-resistant jewellery (4 pages); Magnetism and demagnetising (7 pages); Water-resistant cases (10 pages); and Timing machines (6 pages).

There are 2 appendixes: Some of the 101 reasons likely to cause a watch to stop (3 pages) and A standard of workmanship, fourteen points of horological service (3 pages).

[1st edition, very good] *This book is purely practical with no theory or technical explanations.*

Chapter 1 begins "this book is specially written for the beginner ... it will describe the first steps of the work in a manner which may appear too simple". In which case I must be especially dumb.

Surely a book for beginners should start with simple tasks and gradually build up to complex repairs, even if this means topics such as the escapement have to be covered in several separate sections? But after describing a basic set of tools and disassembly, de Carle embarks on complex operations, involving lathes and rounding up tools, in the order carried out by an experienced professional. Further, the illustrations show things like minute gravers turning two inch long balance staffs!

But don't be misled, the book is extremely good. The descriptions of techniques are clear and the illustrations excellent. It just isn't good for beginners or the person who needs a more gentle and explanatory approach. After reading it I feel it is rewarding, but very heavy going with too much covered too briefly, albeit precisely. In other words, a fine book for the more experienced.

R673 de Carle, Donald

Watch and clock encyclopedia

London: NAG Press, 1995 (1950), 24.0 x 16.0 cm, 331 pp, 1400 ill.

Dictionary, terminology (English).

4 editions.

A dictionary of terms (220 pages) followed by 33 appendixes.

[3rd edition revised, good] *Originally this work was called "Watchmaker's and Clockmaker's Encyclopaedic Dictionary" which is a much better name. It is more dictionary than encyclopaedia as the vast majority of it consists of an alphabetical listing of terms.*

The dictionary covers most words I am likely to meet. These give what I call an "external view"; that is, briefly describing what something is without explanation of why or how. As with other dictionaries, I often want more explanation; but that is my problem, not de Carle's. There are oversights, naturally. I wanted to know what a "chevee" watch glass is and was directed to "lentille", which mentioned longcase clocks, and an appendix which didn't mention anything! Even less luck with "punaise" (but Berner helped). This is an exclusively English language book, but the interchange of technical terms and the oft met little packages from Switzerland and France make the omission of some foreign words a little unsatisfactory, although others like "chaton" appear.

The appendixes are much more encyclopaedic in nature and very useful. They provide, in a convenient form and place, definitions of case, hand and crown styles, Swiss official part nomenclature, etc.

One problem I have with this book is that I almost never open it. I think this is because it defines rather than explains and consequently gives me facts without any understanding of them. Also, I often want to find the correct word for something, the reverse of a dictionary.

R674 de Carle, Donald

Watch and clock repairing

a short course

England: TEE Publishing, 1994 (1934), 17.5 x 12.0 cm (7 x 4.75 inch), 28 pp, 11 ill.

Repair (English).

Six lessons: Repairing English pendulum clocks (6 pages), French clocks (4 pages), Foreign clocks (4 pages), Electric clocks (2 pages), Portable or travelling clocks (3 pages), and Watches (4 pages). Each lesson ends with self test questions with answers being provided at the end of the book.

[1st edition reprint, fair] *As the title suggests, this is presumably the text for an introductory, non-professional course on clock and watch repair. Each section describes the type of movement and explains how to disassemble, clean and assemble it. There are no repair instructions in the first 5 lessons, except how to replace a mainspring in a travelling clock.*

Lesson 6 on watches has one illustration showing the train of a watch. Again it explains how to disassemble, clean and assemble a watch, and there are no repair instructions except for a couple of sentences on straightening bent teeth with a penknife.

Compared to other introductory repair books, this is of not much interest or use.

R675 de Carle, Donald

Watch repairing in war-time

no publisher (England: Omega Watch Company), nd (1943), 21.0 x 14.5 cm (14 x 11 cm), 56 pp, 46 ill.

Repair (English).

First published as a series of articles in "Watchwords" and then as a book.

The modern reprint has no publisher or date.

In two sections:

Watch repairing in wartime (27 pages): Watch examination during disassembly, Checking and adjusting the lever escapement, Making a center-wheel arbor, Finishing rusty winding wheels, Cleaning by hand.

Notes on the balance and balance spring (26 pages): Adjusting to temperature, Fitting a new balance spring, Forming overcoils, and Adjusting to positions.

Although published by Omega, the instructions are generally applicable.

[1st edition reprint, mediocre] The introduction notes that the skills in the art of positional adjusting were lost before World War II, but the war introduced the need for very accurate watches. So the aim of the booklet is to revive those skills.

I have never liked de Carle's books because he has no grasp of the needs of the reader and does not write with those in mind. Although he is much better when writing for professional repairers, this booklet clearly shows his faults.

In contrast to the introduction, de Carle states that he is providing a "running commentary" on repairing a watch requiring new parts. In this context what he writes is very good, but lacking balance. For example, he spends about 6 pages giving a detailed, clear explanation of cleaning by hand, but only 7 pages on the much more difficult topic of positional adjustment, which he handles badly. There are 4 pages on making a center arbor from a "rough" pinion, during which he spends more than a page on undercutting and facing the pinion. But he does not mention how to adjust the leaves of the rough pinion. And some space is wasted explaining how to remove rust from winding wheels. So it seems that the reader is skilled with the turns and has no trouble selecting and replacing balance springs, but needs to be carefully guided through much simpler tasks. And my impression is that de Carle is describing what he wants rather than what the reader needs.

As there are far better books available, this booklet is now merely a curiosity for the collector.

R676 de Carle, Donald

Watches and their value

London: NAG Press, 1978, 22 x 14 cm, 160 pp, 200 ill.

Description, price guide (English).

The first half of the book is an alphabetical listing of watch types. The second half is a pictorial glossary of terminology with a short list of notable makers.

[1st edition, fair] The alphabetical listing of watch types mixes up styles of cases, dials and movements, but it provides a useful, informative summary. Many entries have 1978 auction prices. One review suggested "prices useless but general information helpful". This is a little unfair, as comparisons of prices with inflation can be interesting and helpful.

Unfortunately the black and white photographs are mediocre and the book is of little value in this respect. The majority of entries in the pictorial glossary are very good for the novice, but "semi-tangential escapement" is one which is definitely out of place.

A useful book for the beginner.

R677 de Carle, Donald

With the watchmaker at the bench

London and New York: Isaac Pitman & Sons, 1946 (1933), 19.0 x 13.0 cm, 243 pp, 165 ill (1 fld), 1 pp book list (201 pp inc 4 pp ads, 97 ill (1 fld), 3 pp ads, 22 pp book list).

Repair, tools (English).

5 editions:

1933, 1st edition, 201 pp, 97 ill, 24 pp ads.

1935, 2nd edition, 208 pp, 24 pp ads.

1938, 3rd edition, reprinted in 1939.

1942, 4th edition, 239 pp, reprinted twice in 1943 and again in 1944.

1945, 5th edition, 243 pp, 165 ill, 1 fld ill, reprinted in 1946.

The early editions contained physical exercises for the watchmaker's health.

The first edition has 12 chapters: Introductory (6 pages); The workshop (13 pages); General survey of the trade (6 pages); Training methods (37 pages); Examining the movement (18 pages); The mainspring and barrel; (16 pages); The train (17 pages); The lever escapement (16 pages); The balance and balance spring (23 pages); Types of movements (16 pages); Various forms of escapements (12 pages); and Complicated work (14 pages).

The fifth edition has 11 chapters: The workshop (9 pages); Training methods (49 pages); Examining the movement (19 pages); The mainspring and barrel (17 pages); The train (19 pages); The lever escapement (18 pages); The balance and balance spring (39 pages); Various forms of escapements (11 pages); Complicated work (13 pages); A method of cleaning the watch (6 pages); and The watchmaker at the lathe (40 pages).

[1st edition, very good] As stated by de Carle in the first chapter, this book is written for the master watchmaker to guide the way he trains apprentices in his repair shop. It is deeply rooted in the apprenticeship system and the responsibilities of the master to care for and educate his "lads".

In the first 3 chapters de Carle discusses how to choose a suitable boy to be a watch maker's apprentice, how to look after his health, workshop organisation and alternative methods for paying workers, the English and Swiss methods of education and standards of workmanship. The focus is on his belief that, at least in some cases, English apprentices are not being treated satisfactorily, and the master and his student need to strive for a general training with high standards of workmanship.

Chapters 4 to 9 then provide detailed instruction, beginning with filing and ending with escapement work. The descriptions of methods are terse, precise and assume guidance. They are purely practical with no theory or technical explanations.

The remaining 3 chapters are almost entirely descriptive. Chapter 10 (types of movements) is very interesting, particularly for the biography of Lange and the description of Glashütte movements.

Although largely superseded by his later book "Practical watch repairing" (which see), this is a clear, authoritative book on watch repair. It has the virtue of being somewhat "old-fashioned" and so including techniques and information usually omitted from later books. It is also interesting for de Carle's personal opinions.

I am hesitant to make comparisons, but I think this is de Carle's best book. I feel he fails in his other books because he doesn't seem to comprehend the teaching process and the problems faced by students. This doesn't matter here; he is not training beginners, he is training teachers.

[5th edition] The fifth edition contains substantial changes. The most obvious are the omission of 3 chapters (1, 3 and 10 in the 1st edition) and the addition of 2 new chapters on cleaning and lathe work. There are also many other major changes (such as the omission of commercial methods and the inclusion of involute gearing), revisions and many more illustrations. Most of the technical instruction in the new chapters 2 to 9 is the same as in the first edition, but re-arranged, clarified and significantly augmented. Thus a good practical manual has been updated and made even better.

The main change between these editions has been the watering down of de Carle's opinions. Whereas the first is full of "affectionate advice" to "boys" the latter is much more neutral in tone and less tied to the apprenticeship system (although it still remains at the core).

R678 de Carle, Donald; Restall, E

The watchmaker's lathe and how to use it

The watchmaker's and model engineer's lathe

London: Robert Hale (London: NAG Press), 1998 (1952), 22.0 x 14.0 cm (21.5 x 14.0 cm), 220 pp, 290 ill (208 pp, 276 ill) (154 pp, 229 ill).

Repair, tools (English).

5 editions with 9 printings have appeared. The 4th and 5th editions were revised by Restall.

Ten chapters forming three parts: General description of lathes and accessories (62 pages); Using the lathe (34 pages); and Alphabetical list of lathe makers with details of their products (56 pages).

The editions edited by Restall have eleven chapters. The first ten are a reprint of the first edition (with a very few changes) and these are followed by a new chapter "Lathes today" (52 pages). This is an alphabetical list with information about more modern lathes by Cowells, Unimat, Hobbymat, Myford, Schaublin, Sherline, Levin and others. There is also a list of suppliers supplementing the original list of manufacturers' addresses.

[1st edition, very good] The first part gives excellent descriptions of lathe design, choosing one and maintenance. This is followed by detailed descriptions of tooling and a separate section on dead centre lathes. Part 2 describes cutting tools, including their sharpening and use, a brief but precise discussion of how to use a lathe, and an examination of electric motors. The third part is an alphabetical list of lathe makers and their products, detailing each lathe and giving specifications and provided accessories. An excellent book which every watchmaker's lathe owner should read. The first part is the best introduction to lathe choice and maintenance I have read, including very useful tables of chuck sizes. And the list of lathes, although it may seem to be only of historical interest, is extremely valuable because most of these lathes are still in use and can be bought second hand today. Many are so well made they will probably be in use a hundred years from now.

However I found the second section less satisfactory. The details of lathe use has some very good information, but it is too short and assumes too much. The chapter on electric motors is naturally out of date.

[5th edition] The new lathe list is quite different to the original. First, a wider range of lathes is covered which fall roughly equally into 3 classes: large (small machine shop lathes suitable for clock work), watchmakers and small (hobby lathes about the size of a watchmakers lathe). Second, the additional material is descriptive and does not give the details of specifications and accessories that de Carle's original list contains. This is a pity because one day these "modern" lathes will be old and owners (and collectors?) will want such details.

The title is misleading because it is not a user's manual for model engineers. De Carle's text is specifically for watchmakers and, other than general descriptions of some lathes, there is little in the book for model makers.

R679 Dean, J

Helpful hints on watch repairing

Florida: Dean Co, 1952, 21.0 x 14.0 cm, 63 pp, ill.

Repair (English).

Dean was a watch material supplier in Florida USA.

Three pages with names of parts and illustrations of movements, followed by short notes on watch repair and a 5 page index.

[1st edition, fair] An assortment of tips and hints, well illustrated by rough but good hand drawings. The topics covered are in random order and often only a few lines. Some are too superficial to be of any use; for example, making a balance staff is covered by just 5 diagrams and no explanatory text!

Some of the ideas are useful, but there is nothing outstanding.

The book is worth reading if you have it.

R680 Dean, J**Self-winding watches**

Florida: Dean Company, 1956, 22.0 x 14.5 cm, 48 pp, about 109 ill.
Repair (English).

The card cover on my copy is oversize: 22.5 x 15.0 cm.

A brief history of automatic wrist watches followed by details of self-winding mechanisms for specific calibres.

[1st edition, fair] The booklet begins with a brief and uninteresting history, followed by a general description of self-winding mechanisms. Then for some 32 calibres there are step-by-step instructions to take apart and reassemble the self winding mechanism; there is no repair information. An index links watch makers to the ebauches they use.

The photographs are poor and the line drawings crude. But if you have one of the included calibres to repair then the instructions are probably useful. Much better books exist; for example Humbert "Swiss self-winding watches" and Pipe "The automatic watch".

R681 Dean, J**What makes it tick**

a study of watches

New York: Dean Co, 1949, 21.0 x 13.5 cm, 64 pp, 95 ill.

Repair (English).

Not all illustrations are numbered and 95 is a rough count.

Repair instructions with the focus on American watches. The first 52 pages cover cleaning, escapements, balance staffs, poisoning, balance springs, jewelers and mainsprings. Then there are short sections on chronograph, sweep seconds and automatic mechanisms, finishing with lubrication.

[1st edition, mediocre] This is a good example of a book where the author has not bothered to ask "why am I writing this book and who do I want to read it?" Some sections, such as the general description of a watch and cleaning, are clearly for beginners, but at the same time Dean glosses over or totally omits necessary instructions, like how to let down a mainspring. Consequently it is next to useless for such a person. However, other topics are more relevant to someone with at least some experience and such people will be annoyed by the simple parts.

In addition, the way topics are covered is largely "recipe book" in style. There is no attempt to explain or develop the reader's understanding, and information and repair methods are presented as bald facts. The most startling of these is when Dean gives the train count for a chronometer, an utterly useless bit of information!

Finally the writing is poor (verging on illiterate in places), some illustrations useless and much of the advice valueless.

R682 Decaux, B**La mesure précise du temps**

en fonction des exigences nouvelles de la science

France: Masson et Cie, 1959, 23 x 14 cm, 126 pp, 22 ill.

Technical (French).

Qu'est-ce que le temps; Rôle du temps; Nécessité des hautes précisions dans les mesures de temps; Techniques des mesures de temps et de fréquence; Et après ?

Probably irrelevant.

R683 Decaux, B**Le temps et sa mesure**

France: Ferce sur Sarthe, 1963, small 4to, 96 pp, ill.

Technical (French).

Review Diagrammes No. 76.

Le temps et ses définitions; Les domaines d'application du temps; La détermination du temps des astres à l'atome; Garde-temps étalons et étalons de fréquence; Chronomètres, pendules, montres; Le transport du temps; Les mesures de temps et de fréquence; E.D.F., téléphone, radar.

R684 Decaux, B; Guinot, B**La mesure du temps**

France: Presses Universitaires de France, 1969, 17 x 11 cm, 125 pp, ill.

Collection?, technical (French).

Number 97 in the series "Que sais-je?"

See also Grainer "La mesure du temps".

R685 DeCorte, R**Watch and clock repivoting**

nd, 90 minutes, video tape.

Repair (English).

Video tape showing techniques for repivoting clock and watch wheels.

R686 Defossez, L**Cours d'horlogerie, technologie**

écoles suisse d'horlogerie

(Le Locle: Technicum), 1945 (1927), 27.0 x 21.5 cm, 2 volumes 104 pp, 119 ill and 82 pp, 105 ill.

Repair, technical (French).

- 4 editions, 1927, 1930, 1945 and ?. Tardy gives Jaquet as the co-author of Volume 1.
Volume 1 (1930) includes time measurement, power sources, trains and wheels.
Volume 2 (1932) covers elementary operations, measuring, metals, jewels, polishing, etc.
- R687 Defossez, L**
Les savants du 17eme siècle
et la mesure du temps
Lausanne: Journal Suisse d'Horlogerie, 1946, 24.5 x 17.5 cm, 341 pp, 118 figs, 44 plates.
History, theory (French).
Scientists of the 17th century and the measurement of time.
There are 17 chapters: Introduction, Mechanics before Galileo, Jost Burgi clockmaker, astronomer and mathematician, Galileo, Christian Huygens and the pendulum clock, Disputes on the invention of the pendulum clock, The cycloidal pendulum, The centre of oscillation, The pendulum and the universal measure, The conical pendulum, The balance spring, Robert Hooke, The isochronism of oscillations and the perfect marine balance, The influence of temperature on going of timepieces, The watch of Leibnitz and some improvements in clocks and watches, and The evolution of mechanics during the 17th century. There are 3 appendices; a glossary of terms, bibliography and index of proper names.
- R688 Defossez, L**
Recueil de problèmes destine aux techniciens-horlogers
solutions et réponses
Le Locle: Technicum, 1924, 42 pp, ill.
Technical (French).
- R689 Defossez, L**
The interpretation of timing machine traces
Lausanne: Scriptar, 1955, 16.5 x 11.5 cm, 77 pp, 27 ill.
Repair (English).
An introduction followed by 28 short chapters, beginning with a description of timing machines and basic definitions. The other chapters cover: The timing machine trace; How valid is the extrapolation from the instantaneous rate?; The rate of the watch as it affects the wearer; The sound comprised in the ticking of the watch; Selection of sounds; The double trace normally obtained; Half-cycles of different durations; Recording the various sounds; The instantaneous rate when a double trace is obtained; Detection of isochronal errors; For what purposes can the repairer use a timing machine?; Observations of the isochronal errors of the balance spring; The source of stored energy; Wheel train defects; Escapement faults; Pose errors in the balance and spring; Difference of rate, hanging and lying; Should one ignore the performance in the other vertical positions?; The trace obtained on passing rapidly from the lying to the hanging position; Knocking; Magnetism; Some further defects of the movement which may be discovered with the timing machine; How is the timing machine used for odd-train watches?; Rate of feed of the paper; and Is the timing machine an economic proposition for the repairer?
[1st edition, very good] Defossez clearly explains what the machine can detect and how it does it, with some emphasis on the difference between instantaneous information and watch rating. In particular, he notes that two distinct sounds can be detected; the impulse pin acting in the fork and the drop of the pallet stones onto escape wheel teeth. The choice of which sound to use significantly affects what can be detected. He then shows why certain situations produce their characteristic traces and how this information can be put to practical use. In doing so, he makes it clear that some defects are difficult, if not impossible, to detect from traces.
Unlike Lewis and Lee "Better watchmaking faster", Defossez does not go into very detailed and complex analyses. But he avoids the confusion and "fantasy" of that book and has produced a more useful, if simpler, description.
(See Lewis and Lee "Better watchmaking faster!" for a discussion of timing machine traces.)
- R690 Defossez, L**
Théorie générale de l'horlogerie
La Chaux-de-Fonds: Chambre Suisse de l'Horlogerie, 1952 (1950), 24 x 16 cm, two volumes 316 pp, 197 ill and 577 pp, 465 ill, separate 27 pp index.
Theory, bibliography (French).
Limited edition of 2000 copies.
It is available on CD ROM as part of Vermot "Theorie de la construction horlogere pour ingenieurs".
General theory of horology; a mathematical treatise.
Volume 1, six chapters:
Sizes, units, symbols (38 pages): Measurements; Errors; Tolerances; The metric system; Secondary units; Tabular comparison of the main units; The Giorgi system of units.
Time (26 pages): Measuring time; Coordinate systems; Time units; Sidereal, true solar and mean solar days; The equation of time; Transformations between time systems and angular measurements; Decimal notation; The Julian, Gregorian and reform calendars.
General functions of clocks and watches (34 pages): The ways of measuring time; Periodic phenomena; Oscillations and various functions of the clock; Clock regulating mechanism; The watch regulating mechanism; The escapement; The train; The motive force; Winding mechanisms.
The motive force (66 pages);
The train (40 pages);

Transmission of energy by toothed wheels (125 pages).

Volume 2, eight chapters:

Oscillatory movement of the balance and spring (92 pages).

Calculation of the moment of inertia (32 pages).

Escapements (36 pages): Functions; Classification; Evolution; The verge escapement; Influence on isochronism.

Escapements a repos (32 pages): Cylinder escapement; The duplex escapement; The Jacot escapement.

The lever escapement for watches (76 pages).

The detente escapement (26 pages).

Perturbations of the period of the balance and spring (150 pages): Friction; Center of gravity; The tourbillon; Phillips' curves; Temperature compensation; Centrifugal force; Inertia; Barometric pressure; Magnetism.

Clocks (104 pages).

R691 Defossez, L; Pellaton, James C; Jaquet, E
Fachkunde für uhrmacher

Biel, 1950, 30 x 21 cm, 261 pp, 495 ill, 25 pp ads.

Technical (German).

Translated and revised by M. Bossart (director of the Uhrmacherschule Solothurn).

Technical instruction for watchmakers.

In four parts: Time, pinions, wheels, gearing; Escapements; Regulating organs; and Adjustment.

From the contents I presume this is a translation of Defossez "Cours d'horlogerie, technologie" and Pellaton "Watch escapements."

R692 Degallier, E

Evaluation de la qualité d'une montre

le balancier et le ressort-moteur

Bienne: Magron, 1922, 20 x 13.5 cm, 55 pp, 3 ill.

Technical (French).

Evaluation of the quality of a watch; the balance and the mainspring.

R693 Degallier, E

Le balancier et le ressort-moteur

comment déterminer leurs dimensions réciproquement dépendantes

Bienne: Journal Suisse d'Horlogerie & Inventions-Revue, 1920, 8vo, 25 pp, 5 ill.

Technical (French).

The balance and the main spring, comment on determining their reciprocally dependent dimensions.

R694 Degallier, E

Le ressort de montre a point de vue de ses dimensions

avec graphique contenant deux tables de calculs

Bienne: Magron, 1928 (1918), 8vo, 17 pp and advertisements, few ill.

Repair (French).

The watch mainspring from the point of view of its dimensions with graphs and two tables.

R695 Degallier, E

Les engrenages droits cycloïdaux et a développante

Besançon, 1923, 23 x 14 cm, 175 pp, 7 fld plates with 34 ill.

Technical (French).

"Etude des relations mathématiques fondamentales, dimensions, rendement, signification des normes industrielles de construction".

Straight cycloidal gears and their development. Studies of fundamental mathematical formulae, dimensions, production and industrial standards of construction.

R696 Degallier, E

Tables des ressorts-moteurs

augmentée d'un résumé de le balancier et le ressort-moteur

Bienne: Magron, 1930 (1928), 21 x 13 cm, 23 pp, 1 table, 1 fld table.

Repair (French).

Tables of mainsprings with a summary of the balance and mainspring.

R697 Delarue, JJ

Notice sur la manière de gouverner et de régler les montres

conseils relatifs à leur acquisition

Paris: JJ Delarue, nd, 8vo, 62 pp, 1 plate.

Description (French).

Notice on the way to handle and regulate watches relative to their acquisition.

History of horology, tables comparing real and mean time, the times in the principal cities of the world, etc.

R698 Demole, JH

Montres et montres bijoux

Genève: Journal Suisse d'Horlogerie, 1915, 24 x 16 cm, 18 pp, 29 ill.

Illustration (French).

Illustrations of early decorative and form watches.

- R699 Denis, H**
Von der sonnenuhr zur atomuhr
 Munich: Grieben-Verlag, 1980, 16 x 16 cm, 49 pp, 36 ill.
 History (German).
- R700 [Denmark]**
Laerebog for den danske urmagerskole
 Copenhagen: Pabegyndt, 1957, 22.5 x 18.0 cm, ill.
 Repair (Danish).
 In parts.
 Text book for the Danish horology school.
- R701 Dennaud, J**
Les Lepaute célèbres horlogers des rois de l'empire
 jusqu'au XXe siècle, maison la plus ancienne du monde, plus de 200 ans d'existence
 nd.
 History (French).
 Offprint?
 The Lepautes, famous horologers of kings and the empire to the 20th century.
- R702 Dennison, F**
Catalogue of english and continental watches
 formed by Franklin Dennison
 London: Christie, 1961, 24 x 19 cm, 48 pp, 10 b/w plates.
 Collection, catalogue (English).
 Catalogue of the sale of the Dennison collection including 253 items. Nearly all the watches had been stripped of their balance cocks (see Jagger "Artistry of the english watch").
A list of some 371 watches in the collection is given in the NAWCC Bulletin, March 1948, whole number 22, pages 388-395.
- R703 Dennison, F**
Historic horology
 being a catalogue of a collection of antique watches belonging to the Franklin Dennison collection
 Chicago, 1913 to 1914, 6.5 x 4.75 inch, 68 pp and supplement of 9 pp, 1 ill.
 Collection, catalogue (English).
 Tardy gives the title as "Historical horology exposition". See also Roberts, E "The Roberts' collection of antique watches" which may be the same work.
 Displayed by the Dennison Watch Case Company at the Jewellers' Exhibition in 1913. The catalogue describes 506 items. There are no illustrations of watches.
Franklin Dennison was the son of Aaron Dennison. He bequeathed the collection to the Waltham Watch Company in 1934 and it was exhibited by the company. The collection was sold by Christie's in 1961. A list of some 371 watches in the collection is given in the NAWCC Bulletin, March 1948, whole number 22, pages 388-395.
- R704 Dent, Edward John**
An abstract from two lectures
Über die einrichtung und behandlung von chronometer, pendel und federuhren
 on the construction and management of chronometers, watches and clocks
 USA: Roberts Publishing Co (USA: Adams Brown Co) (London: E. Dent), ca 1970 (1842), 21.5 x 14.0 cm (8vo), 36 pp (31 pp, 15 ill) (31 pp, 12 ill).
 Miscellany (English, German).
 There are actually 15 (misnumbered) illustrations in the 1842 edition and its reprint.
 Later editions in 1846 and 1854 include a table for the equation of time. The German translation was printed in 1843.
 The reprints are of the first edition and undated; 1970 is a guess.
 An abstract from two lectures delivered to the United Service Institution, May 1841.
 In 3 sections. The first gives general remarks on buying a watch, a comparison of Swiss and English watches, descriptions of Dent's products (astronomical clocks, marine chronometer and his patent chronometer with four mainsprings) and descriptions of watches with prices. The second part explains how to care for and regulate clocks, chronometers and watches with the focus on the effects of temperature change. The final section explains longitude and gives a table of local times in England.
[Adams Brown reprint, fair] This is an inconsequential pamphlet, a guide for purchasers with some advertising. I find it hard to imagine what the original lectures could have contained, as I don't feel it would be worth sitting in a room to hear these words. It is mainly interesting for Dent's opinions, the explanation of temperature effects and his incorrect belief that English manufacture would never be harmed by foreign watches. As with all his advertising, he bases his claim to fame on chronometer number 114, made circa 1827.
[Remark] Breguet used 4 barrels in chronometers before Dent (see Chapuis and Jaquet "The history of the self-winding watch 1770-1931"). As Frederick Dent visited Paris there must be some doubt over Dent's patent for a chronometer with four barrels.

- R705 Dent, Edward John**
On the errors of chronometers
 and explanation of a new construction of the compensation balance, plus chronometrical thermometers
 1843 (1842), 8vo, 15 pp, ill (12 pp, 6 ill).
 Description (English).
 Originally printed in the Nautical Magazine in 1842.
 It contains descriptions of the compensation balances covered by his third patent (see Mercer "The life and letters of Edward John Dent").
- R706 Dent, Frederick**
Treatise on clock and watch work
 with an appendix on the diploidscope
 Edinburgh: Adam & Charles Black, 1855, 144 pp, 37 ill.
 History, description (English).
 See *Encyclopedia Britannica* "Clock and watch work from the eighth edition of the *Encyclopedia Britannica*".
- R707 Dent, G**
Clock and watchmakers of the old parish of Halifax
 1624 to 1850
 Halifax UK : Halifax Printing Co., 1947, 8vo, 26 pp, 15 ill.
 Makers (English).
- R708 Dent, G**
Local clock and watch makers
 England: Halifax Antiquarian Society, 1955, 14 pp.
 Makers (English).
 Offprint from journal.
 Lists 125 Halifax makers.
- R709 Deonna, W**
Les arts a Genève
 des origines a la fin du XVIII siècle
 Genève: Musée d'Art et d'Histoire, 1942, 4to, 500 pp.
 History (French).
 Referenced by Boeckh.
 The arts in Geneva from their origins to the end of the 18th century, including clocks and watches.
- R710 Depew, CM**
One hundred years of American commerce
 One hundred original articles on commercial topics describing the practical development of the various branches of trade in the United States within the past century and showing the present magnitude of our financial and commercial institutions.
 New York: D. O. Haynes, 1895, 29.5 x 21.5 cm, 2 vols: 336 pp, ill, 1 col portrait, 47 portraits, and 342 pp, ill, 1 col portrait, 51 portraits.
 History (English).
 A 14 page chronology of American commerce and invention followed by 100 chapters. 98 chapters describing individual aspects of trade, followed by one chapter on other industries and one chapter on "the next one hundred years".
 The 100 portraits are of the 100 authors.
 [1st edition, mediocre] Chapter 82 (volume 2, pages 540-543) is "American clocks and watches" by Edward Howard.
 It is a superficial, at times inaccurate, autobiography of Howard. He states that watchmaking did not start in America until 1850, ignoring Goddard and the Pitkin brothers. And the following summary of events adds nothing useful to our knowledge. But there is a good portrait of Howard and a copy of his signature.
- R711 Derham, William**
The artificial clockmaker
Traite d'horlogerie pour les montres et les pendules
 a treatise of watch and clock-work
 London: Thames (London: J. Knapton), 1962 (1696), 17.0 x 10.5 cm (12mo), 160 pp, 3 fld plates, (132 pp, 2 plates).
 Watch making, history, technical (English, French, German).
 Five editions in 1696 (xii, 132 pp, 1 plate), 1700 (119+28 pp, 2 plates, 4 folding tables), 1714 (140 pp, 2 plates, 4 folding tables), 1734 (140 pp, 3 plates, the same as the 3rd edition) and 1759 (xvi, 160 pp, 3 plates, tables). The numbers of plates and tables are given inconsistently.
 The first edition has been reproduced in a modern limited edition.
 French translations in 1731 and 1746 (188 pp, 3 plates) and a German translation.
 Those who can't afford this book will find part of it regurgitated in Imison "The school of arts".
 "Wherein the art of calculating numbers for most sorts of movements is explained to the capacity of the unlearned. Also the history of watch and clock-work both ancient and modern. With other useful matters never before published."

The first edition has eleven chapters: Terms of the art; The art of calculation; To alter clockwork; To size wheels and pinions; Of pendulums; The antiquity and general history of clockwork; The invention of pendulum watches; The invention of pocket pendulum watches; The invention of repeating clocks; Numbers for various movements; and Tables of time.

The fifth edition (corrected 4th edition) also has eleven chapters; the structure and content is fundamentally the same with some additional material.

The prefaces in both editions are almost identical, with some minor re-wording and the omission of a sentence regarding Oughtred's "Opusc. Mathem."

[1st edition, fair] *This is primarily a book about how to calculate trains, including very simplistic methods for determining the sizes of wheels and pinions and equally simplistic calculations for celestial motion trains. Included is a short history of not much merit other than being written by a contemporary of Hooke. Consequently, the main value of the book is that it is one of the first tracts written in English, and so is very collectable.*

[4th edition corrected, 1759] *The above was written after a cursory look at the first edition. The 5th edition is the same with additions.*

Derham begins with a chapter giving terminology which simply defines words without meaningful explanation. This mixes and confuses clock and watch terms, partly because Derham indiscriminately uses "watch" in two senses, for the going train of a clock and for a pocket watch. To this the later edition adds a description of a clock with accompanying plate full of errors. But this is merely a listing of the parts without useful explanation.

The bulk of the book (110 pages being the first 90 pages and chapter 10) concerns trains. Derham begins by explaining how to calculate trains and then gives copious examples for the going and striking trains of clocks, celestial movements and pocket watches. These parts centre on single-hand foliot pieces, but include a discussion of converting foliot clock trains to suit a pendulum and adding a minute hand to them.

Besides being tedious and using an inconvenient notation, Derham also approaches the subject somewhat abstractly; this is clearly indicated when he specifies a train including a pinion with one leaf (although later he remarks on endless screws, perhaps justifying this gaff). This section is based on cited rules with little explanation. The approach is to guess a desired number of beats, work out the nearest practical train and, from that, calculate the actual number of beats. Although it may be suspected that this method was used in practice, Derham fails to consider how decisions are made, other than the obvious arithmetical ones.

After explaining going trains, he uses the same methods to describe count-wheel striking trains and then explains how to transfer a tune to a chime barrel. The most interesting parts of this section are those on trains for celestial motions and the explanation of calculating the size of a pinion to mesh with a given wheel. These are noteworthy because of the simplistic crudity of the methods. In the former, the problem of prime numbers is ignored, a near rough approximation being the goal. As the exercise is one of intellectual futility it doesn't really matter; including a train for Saturn in a 16 hour foliot watch is merely a matter of gratifying a whim. In the latter the concept of pitch circle is, naturally, absent and the pinion is based on ratios of teeth to full diameters. Assuming Derham is following actual practice, these give some insight into the methods of the late 17th century.

This part of the book concludes with a chapter on determining the lengths of pendulums and is supplemented by a later chapter listing common trains for clocks, including a few watches and celestial motions.

About 28 pages are then devoted to the history of horology. This is of little importance other than for the discussion of the invention of the balance spring and a few remarks on repeaters. The book concludes with descriptions of Romer's orrery and the Hampton Court clock, methods for finding a meridian, and tables for the equation of time, solar and sidereal days, refraction (for sun dials), and so on.

[Remark] *Derham also wrote "Astro-theology or a description of the being and attributes of God from a survey of the heavens", "Physico-theology ..." (a survey of terrestrial science) and a summary of the work of Hooke and his contemporaries. Although a divine, he was a fellow of the Royal Society and very interested in science, and the religious overtones in his books are not intrusive. Clearly he was a general scientist and primarily chronicler. This is noted by Aked ("William Derham and the Artificial Clockmaker") when he says that Derham "made no really serious or fundamental contribution to any of the sciences ... he was essentially an observer and writer of observations, both of his own and those of others."*

Baillie, in his bibliography, describes "The artificial clockmaker" as "the most famous of all early books on horology" and extracts from it as "of no interest" (see Imison "The school of arts"). Elsewhere it is noted that the schematic of a clock is horrendously wrong (something I haven't bothered to check). Which proves that fame and quality are unrelated.

Derham writes in his preface to the 1st edition "Among some of the courser sort of (persons of quality), if this book shall find some acceptance, it may be a means to compose their loose spirits ... it may hinder their commission of many sins, which are the effects of idleness"; which is to say, Derham was writing for the upper-class amateur. He was also writing on a topic about which he knew very little. Being a dilettante amateur scientist himself and lacking mechanic skills he chronicled what he felt competent to write about, the simple, arithmetical aspect of trains, padded out with a few necessary notes on clocks and watches in general, and a rather inadequate history.

Seen in this light, the fame of the book and its many printings are natural. It is famous and popular

because it titillates the amateur and collector; the large numbers of wealthy, educated, idle gentlemen. In contrast, the later book by Hatton and the article by Philo Chronos are vastly more competent and far more useful, but they were written to instruct and so were printed only once, being uninteresting (and probably unintelligible) to the masses.

R712 Deschanalet, C**Manuel d'horlogerie pratique mis a la portée de tout le monde**

renfermant les éléments de cet art, la construction et la réparation des montres et des pendules, ainsi que la manière d'établir des tableaux mécaniques et automates et l'art de tracer une méridienne pouvant servir a régler les montres.

Paris: Desloges, 1861, 8vo, 71 pp, 8 plates.

Repair, tools (French).

Practical pocket manual of horology, containing the elements of the art, the construction and repair of clocks and watches.

Gardner in "Catalogue of the Torrens collection" says "of no real importance, although a rare item in terms of collecting horological books".

See also Robert "Manuel d'horlogerie pratique mis a la portée de tout le monde" which I presume is the first edition, although I have not combined the two entries. I have come across enough cases of French and American revisionists (such as Pignet and Seibel) who eliminate the original author's name, to be reasonably confident that these two are related.

R713 Dessay, A**Cours élémentaire de réglage**

Besançon: Millot frères, 1941, 8vo, 230 pp, ill.

Repair (French).

Also given as 1940, 262 pp.

Elementary course of adjusting.

R714 Detent**Repairing american watches**

USA: Adams Brown (Chicago: Hazlitt & Walker), 1971 (ca 1895), 19.5 x 13.5 cm (18.5 x 13.5 cm), 30 pp, no ill (46 pp, no ill).

Repair (English).

Originally published before 1900, but most copies seen are the 1909 printing. Reprinted in 1971.

"Detent" is WJ van Keuren; a book by him with the same title (Chicago: Geo. Hazlitt & Co, 48 pp) is listed in Milham "Time and timekeepers" and Robertson "The evolution of clockwork".

An essay written for the tenth "American Jeweller" prize essay contest.

It describes the taking apart, examining and fixing of an American full plate watch, written from the standpoint of an observer.

[1909 printing, fair] It is well-written and a good example of explaining repairs without illustrations. But this booklet doesn't contain anything that is not more easily available elsewhere. A collector's item.

[1st edition?] An earlier (the first?) printing is undated but before 1900. It is identical except for pagination.

R715 DeTice, Louie**1889 illustrated catalogue**

USA: Warner D. Bundens (USA: Louie DeTice), ca 1974 (1889), 10 x 6.5 inch, 471 pp, 4000 ill.

Catalogue (English).

[Review by Henry B. Fried] This is a collector's catalogue. A very good quality reproduction in facsimile with good quality paper and cover; It contains a variety of items including clocks, watches and many others that one would see in a large, fine jewelry store of the last decade of the 19th century. Illustrated are diamonds, canes with precious metal heads, cosmetic jewelry, silverware of all types, lockets, rings, chains, earrings, brooches and so on. Thus, aside from its attraction to watch and clock buffs, the cataloguing of many other, "now antique" items makes this a valuable source of reference to any such "antique" and to those who operate jewelry stores as well or collect such niceties.

The illustrations are all in black and white, fine engravings which characterized the fine details of each pictured item, These engravings were an art form in themselves and are something to behold; a pity not seen much at all today.

The clocks and watches occupy about 220 pages alone. Mantle clocks from various American makers are shown including Seth Thomas, Waterbury, Ithaca calendar clocks of many designs, Gilbert regulators and one clock, the Waterbury, 11-inch one-day spring, time only, is advertised for but one dollar.

Waltham watches, chronographs, and movements are pictured. One Elgin, nickel movement, 21 ruby jewels in raised gold (jewel) settings, patent regulator and adjusted with Breguet hairspring is priced at \$170, about the highest we've seen. Illinois, Columbus, Cheshire, Seth Thomas are listed as well. The great variety of items covered makes this a reference book for anyone!

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R716 Deutsche Gesellschaft Chronometrie**Jahrbuch**

2009 (nd), 160 pp, ill.

History, makers (German).

The 2009 issue has 13 illustrated articles:

Clocks: Watchman control clocks; Clocks inside north German churches; The description of a complex Swedish astronomical clock; and The theory of compound pendulums.

Wristwatches: The history of the LACO brand.

Pocket watches: The history of E. Howard.

Tower clocks: There are three articles describing specific historic tower clocks.

Electric clocks: One article on the maker C.T. Wagner.

Sundials: Three articles.

The German "sister organisation" of the NAWCC, the Deutsche Gesellschaft für Chronometrie, publishes scholarly papers only once a year in a hardcover "Yearbook".

R717 Develle, E

Les horlogers Blésois aux XVI et XVII siècles

France: Librairie des Arts et Métiers (Blois: Librairie des Arts et Métiers), 1978 (1905), 11 x 9 inch, 460 pp, 30 plates (374 pp, 18 plates).

History, makers (French).

One source states that it was originally produced in 1905 as a single volume with fewer plates and revised in 1917 in two volumes, with the plates in a separate album. Other sources do not give the 1905 date but lists two editions in 1913 and 1917 (both 2 volumes). Robertson says the 2nd edition of 1917 had the plates interleaved in a single volume.

The reprint of the 2nd 1918 edition also contains "Peintres en email de Blois et de Châteaudun au XVII siècle".

Only 155 copies of the second edition were printed.

The watchmakers of Blois in the 16th and 17th centuries.

R718 Develle, E

Peintres en email de Blois et de Châteaudun au XVII siècle

Blois:, 1978 (1894), 8vo, 45 pp.

History, makers (French).

Pertuch gives 95 pp for the 1894 edition. Landes suggests that in the reprint this is bound with "Les horlogers Blesois aux XVI et XVII siècles".

Enamel painters of Blois and Châteaudun in the 17th century.

R719 Dick, O

Die feile und ihre entwicklungsgeschichte

Berlin: Springer, 1925, 4to, 251 pp, 278 ill.

History, tools (German).

A history of files and their manufacture.

R720 Diderot and d'Alambert

Diderot and d'Alambert encyclopaedia section devoted to horology

first english language version

Lausanne: Scriptar Swiss Watch and Jewelry Journal, 1980, 29.5 x 21.0 cm, 71 pp typescript.

Tools, description, history (English).

This typescript text was distributed with the Franco Maria Ricci edition of extracts from the Encyclopedie and appears not to have been sold separately.

English translation of the descriptions of the horology plates.

[1st edition, fair] English readers will be dissatisfied with this text. It only translates the descriptions of the plates and omits the introductory text published with the plates and all the articles. This leaves the reader feeling somewhat frustrated and misled by the title. However, together with Weiss "Watch-making in England 1760-1820" it makes some of the work accessible.

There are some interesting sections, such as Romilly's "advertisement" for his seconds beating, year going watch and other "toys".

R721 Diderot and d'Alambert

Diderot pictorial encyclopedia of trades and industry

USA: Dover, 1959, 31.0 x 24.0 cm, 2 volumes of about 920 pp, 485 plates, slip case.

Description, history (English).

A selection of plates from the "Encyclopedie ou dictionnaire raisonne". The plates are presented in groups with a general introduction as well as a description of each plate. The whole is preceded by a stimulating history of the encyclopedia.

[1st edition, good if irrelevant] A very interesting and well produced book which unfortunately contains almost no material relevant to horology. The vaguely related prints are of glass making, gut making, the jeweler, silver plating, gilding and enamelling.

R722 Diderot and d'Alambert

Encyclopédie

ou dictionnaire raisonne des sciences, des arts et des métiers, horlogerie et orfèvrerie

Milan: Franco Maria Ricci, 1978 (1765), 40.5 x 26.5 cm, 64 pp, 64 plates; 14 pp, 18 plates.

Tools, description, history (French, Dutch, English).

The Encyclopédie was published over a number of years with a major revision under the title "Encyclopédie méthodique" (see Panckoucke). Original sets of plates appear now and then, and several other reprints of parts of the Encyclopédie have been produced, including:

“Encyclopedia: the complete illustrations 1762-1777”, Abrams, New York, 1978, octavo, five volumes. This is a facsimile of the plates only, in a reduced format.

“Encyclopédie”, Milan, 1971, quarto. Limited edition of 150 copies of the horology portion.

“L'encyclopédie Diderot: horlogerie”, Paris: Inter-livres, 1990, 12 x 9 inch, 25 pp, 56 plates. The horology plates and their text.

“Horlogerie”, Amsterdam, 1975 (first printed 1951), 25 x 17 cm, 63 pp, 65 plates.

“Encyclopedia of science, art and technology”, New York: Readex Microprint, 1969. 5 volumes, 16 x 10.5 inch; 4 with the full text and one containing reduced images of all plates.

Some editions in a slip case.

The Franco Maria Ricci facsimile includes the text published under the head “Horology” (Horloge, Horloger and Horlogerie), the description of the plates and the plates themselves. Likewise with the goldsmithing section.

[1st edition facsimile, very good] There are several articles on horology (by Berthoud, Le Roy and Romilly) together with the plates and their own text. The plates are simply superb.

Unfortunately many relevant articles in other sections of the encyclopedia (including descriptions of several plates) have not been reprinted here or elsewhere.

Franco Maria Ricci has produced a beautiful volume. About the only way to distinguish the original from this copy, other than the covers and information pages, is by the watermarks in the hand made paper; having compared it to my original I would be very wary of buying framed prints!

It is a pity that, just as with the reproduction of Rees' encyclopaedia, related articles and plates are not included; for the horologist, articles such as those on chain making, spring making and cutting engines would be more useful than the section on goldsmithing. Fortunately Weiss "Watch-making in England 1760-1820" includes some of the missing material in a readily accessible form.

There is an inadequate (but better than nothing) English translation of part of the text which is listed separately.

See also Baillie "Clocks and watches: an historical bibliography" (pages 226-228) which lists the main horological articles. A related work that should be considered is Darnton, R.: "The business of enlightenment, a publishing history of the encyclopedie 1775-1800", Harvard University Press, Massachusetts, 1979, octavo, 624 pp, 17 ill.

R723 Diebeners

Diebeners monogrammwerk

(Leipzig:), nd (1924), 30 x 22 cm, 20 pp and 136 plates, slip case.

Illustration (German).

The modern reprint is of the 7th (1924) edition.

Monograms and decorations for cases.

R724 Dienstag, P

Die deutsche uhrenindustrie

Leipzig: Werner Klinkhardt, 1913 (1889), 240 pp.

(German).

At least 3 editions in 1889, 1910 and 1913.

The German horological industry.

R725 Dietzschold, C

Abriss der getriebelehre

mit besonderer anwendung auf die uhrmacherei und feinmechanik

Krems: , 1905, 8vo, 219 pp, 139 ill.

Watch making (German).

A sketch of kinetics with particular application to the watchmaker and fine mechanic.

Gardner in the Torrens catalogue describes this as a general horological treatise, but the title suggests otherwise.

R726 Dietzschold, C

Die hemmung der uhren

ihre entwicklung, konstruktion, reparatur und behandlung vor der reglage

Munich: Callwey (Krems:), 1985 (1905), 23 x 16 cm, 240 pp, 84 ill (6 plates).

Technical (German).

The escapements of timepieces, their evolution, construction, repair and adjustment.

Includes some watch escapements.

R727 Dietzschold, C

Die raderuhr

Bautzen: , 1915, 23 x 16 cm, 470 pp, 157 ill, 4 portraits.

Theory (German).

Volume 4 of Saunier "Lehrbuch der uhrmacherei in theorie und praxis".

Mechanical timepieces. Theory of horology.

R728 Dietzschold, C

Die verzahnungen der uhren und mechanischen apparate

und die berechnung der raderwerke, praktisches handbuch für uhrmacher, mechaniker, techniker und zum gebrauch der gewerblichen lehranstalten

Bautzen: , 1895, 8vo, 190 pp, 38 ill, ads.

(German).

Robertson also lists this with Gelcich as co-author.

Gearing of timepieces and mechanical apparatus and the calculation of trains, practical handbook for horologists, mechanics, technicians and for the use of technical apprenticeships.

R729 Dietzschold, C

Vorlegen für das uhrmachergewerbe

Vienna: U. Hartlegbens; Leipzig, 1919 (1895), 31 x 23 cm, 160 pp, 21 ill, 33 plates.

Education? (German).

Three editions 1895, 1910 and 1919?

Proposal for the horology profession.

R730 Dike, C

Cane curiosa, from gun to gadget

U.S.A. Cane Curiosa, Paris: Les Editions de L'Amateur, 1983, 11 x 8.5 inch, 374 pp, 1650 ill.

Description (English, French?).

90 col ill, 170 period drawings, 120 patents.

Detailed photos of over 1600 canes with every conceivable object hidden inside: weapons, musical instruments, watches, telescopes, eyeglasses, scientific instruments, smoking kits, games and more. Items selected from 75 private collections, 100 museums, and US and European patents.

[1st edition, review by Henry B. Fried] This elegantly encyclopedic book on canes deserves its place among reviews of horological interest through its chapter on horological canes which shows photographs of 56 canes with horological attachments and uses.

In this chapter there is shown a cane made about 1550 with sundials and belonging to Duke Albert of Augsburg and listed in the court inventory of 1698. Canes with their handles of silver engraved in the form of cylindrical shepherd's dial are shown with horological gnomons from the 17th Century. A metal sundial with hinged gnomon and used by Denmark's King Christian IV (1577-1648) was incorporated in his walking stick. King Christian V (1646-1699) had a curved-end walking stick engraved with a shepherd's dial as well. A Nepalese shepherd's stick is also unusual in that its otherwise cylindrical shape is carved with eight flat sides into which are engraved Nagari characters for the eight months or two seasons. A patented walking stick-top by Mathey Doret in 1853 shows a more modern dial with hinged gnomon and ivory ring with an engraved equation of time table for meantime correction.

Other canes contain period watches by Cabrier (1697-1724), Carus of Paris, dated 1735, another belonging to Prince Karl Theodor (1743-1799) not only contains a contemporary front-wind watch but writing material as well.

One 18th century watch atop a cane is a tower turret in form with three dials equally positioned around the stick and each set to a different local time, reminiscent of days before standard time, incidentally first instituted 100 years ago. There are cane watches with alarms, enamel scenes, bezel wind and set, watches with pedometers as well, so that with each step of the cane, the pedometer counts and advances its own hands upon the pedometer dial, thus allowing comparison with elapsed time and obtaining relative speed of the walker.

A watch cane patented by Holuska in Vienna in 1885 allows a sturdy rectangular watch to be wound by turning the cane's knob-head. Patent drawings show some of these intriguing systems in draftsman's detail.

A skull watch cast in silver as an integral part of the cane head and fastened to it by a neck protrusion of the skull's lower jaw is of the 17th century style but created in the late 1800's. Cane watches with powder and pill box compartments show the vanity of the contemporary 'dandy.'

Other photographs show hatchet canes whose sides contain ornate carvings in metal of ancient German runic calendars. One dates from 1743. Others with runic calendars are shown dating back to 1605. Another, belonging to King Frederick III of Denmark, dated 1663, is made of silver and clearly has engravings of the runic calendar but with modern type Roman letters and strongly incised. This cane strangely also has the Hebrew letters for God engraved at its head.

Miss Dike's dedication to her hobby has resulted in a scholarly book with almost 2,000 photographs of canes, which during the 19th and early part of this century, were ordered from and designed by well-known jewelers. The text reveals the result of dedicated and intense research coupled with the skill of a professional photographer.

Covered elsewhere in this volume are canes for climbing, drinking, golf, fishing, hunting, sitting, smoking, various optical and optical voyeurism, musical, automaton, lighting, writing and artwork, games, and tricks of magic. There are pictures of canes for ladies and gentlemen, canes for warming the hands, necessaries, umbrellas, and even a scooter unfolded from a walking stick.

Canes for ceremonial occasions other than the verge of old, canes designed and carved for religious and official medical use, mystery canes, and a section on fakes are also included.

The largest section one might guess correctly is for the canes designed as walking sticks and quickly converted to weaponry. The uses and variety of these cane-weapons staggers the imagination in the variety of methods and extent to which these were designed for both defensive and offensive purposes.

Although this reviewer's main interest was horological, his interest was arrested throughout the complete book savoring each page in this charming exposition.

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R731 *Disney, Walt***R731 Disney, Walt****Life and times of Mickey Mouse**

USA: Walt Disney, 2000, 7 x 6 inch, 9 pp, ill, wristwatch.
Miscellany (English).

Limited edition of 3000 copies.

Information about Mickey Mouse from 1928 to 1997. The book is a box containing a Mickey Mouse wristwatch and 9 pages.

The watch is presumably quartz and so this "book" shouldn't appear here.

R732 Ditisheim, H**Exécution pratique d'un échappement a ancre suisse**

Manuel de l'horloger praticien

Lausanne: Journal Suisse d'Horlogerie, 1907 (1895), 24 x 15 cm, 17 pp, 12 ill.
Technical, watch making (French).

2 editions. May have also been revised and printed in 1908.

Practical manual of horology, practical execution of a Swiss lever escapement.

Details of how to make a lever escapement from scratch.

There are four booklets under the general title "Manuel de horloger praticien". One is by Ditisheim, two by Dubois-Sandoz and one without an author (listed under Switzerland). All were probably produced by the Journal Suisse d'Horlogerie.

R733 Ditisheim, Paul**Description des chronométrie et montres d'art**

construits par les ateliers Paul Ditisheim a la Chaux-de-Fonds

La Chaux-de-Fonds: Ditisheim, 1915, 8vo, 90 pp, ill.

Catalogue (French).

Deluxe catalogue of Ditisheim watches including complicated and tourbillon pieces.

R734 Ditisheim, Paul**Le progrès du réglage des chronomètres et des montres**

Paris: J.B. Bailliere et Fils, 1925, 13 pp, ill.

Technical (French).

Progress in the adjusting of watches and chronometers.

"Good study with many interesting illustrations of testing at La Chaux de Fonds, balances etc."

R735 Ditisheim, Paul**Le spiral réglant et le balancier**

depuis Huygens jusqu'a nos jours

Lausanne: Journal Suisse d'Horlogerie, 1945, 4to, 117 pp, 110 ill, plates.

History (French).

The balance spring and balance from Huygens to today. A collection of papers by Ditisheim: Huygens and the balance spring, Temperature tests of chronometers at observatories, Phillips and the final curve of the balance spring, Guillaume and timekeeping, A balance with auxiliary compensation, Recording barometric pressure on chronometer certificates, and The influence of barometric pressure on chronometers.

R736 Ditisheim, Paul**Lubrification des montres et autres appareils**

fonctionnant aux bases températures

Besançon: Annales Françaises de Chronométrie, 1935, 8vo, 46 pp, 41 ill.

Technical (French).

Offprint from Des Annales Françaises de Chronométrie

Lubrication of watches and other apparatus functioning at low temperatures.

R737 Ditisheim, Paul**Sur l'emploi des huiles d'horlogerie**

naturelles et artificielles

Paris: Editions de la Revue d'Optique théorique et instrumentale, 1938, 21 pp, 15 ill.

Technical (French).

On the use of natural and artificial horological oils.

R738 Ditisheim, Paul**The timing of chronometers and watches**

a review of the history and progress of adjusting

England: English Mechanics, 1926, 14 pp, 25 ill.

History, technical (English).

Journal extract?

The history of adjusting.

English translation of "Le progres du réglage des chronometres et des montres"?

R739 Ditisheim, Paul; Lallier, R; Reverchon, L; Vivielle, Commandant**Pierre Le Roy et la chronométrie**

Paris: Editions Tardy, 1940, 4to, 146 pp, 73 ill, 32 plates.

Biography, history (French).

Limited edition of 450 copies.

R740 Dittrich, H**Inventors and visionaries**

the pioneers of precision watchmaking in Dresden and Glashütte
 Glashütte: Stiftung Deutsches Uhrenmuseum Glashütte, 2010, 26 x 26 cm, 160 pp, ill.
 History (English, German).

Volume 3 of a series of books on the history of timekeeping and watchmaking in Glashütte in Saxonia.
 Parallel German and English text.

See Dittrich "Measuring the moment, how precise time came to Glashütte" for a review.

R741 Dittrich, H**Measuring the moment**

how precise time came to Glashütte
 Glashütte: Stiftung Deutsches Uhrenmuseum Glashütte, 2009, 26 x 26 cm, 120 pp, ill.
 History (English, German).

Volume 1 of a series of books on the history of timekeeping and watchmaking in Glashütte in Saxonia.
 Parallel German and English text.

[1st edition, reviewed by Fortunat Mueller-Maerki] The small town of Glashütte, some 15 miles south of the city of Dresden (the capital of the Saxonia region of Germany), has had a significant horological history since 1845, and has been the center of high-grade watchmaking in Germany ever since. While Dresden always had a marvellous horological museum (the Mathematisch-Physikalischer Salon, successor to the private collection of the Dukes of Saxonia) until recently Glashütte lacked a watch museum. Thanks to the generosity of the Nicolas G. Hayek Foundation that changed a few years ago. The Deutsches Uhrenmuseum Glashütte has now produced its first major publication, a series of, so far, four books dealing with the early history of timekeeping and watchmaking in the region. The most unusual feature about them is the chosen format: Firstly they are unusual in that their text is fully bilingual, each page featuring the German original text on the top half of the page, and a full English translation (in a different font) on the bottom half. Secondly, the material is presented in a highly structured manner. For instance, volume 1, of 120 pages, is divided into 9 sections, which together are made up of 49 'mini-chapters'. As there are also over 100 illustrations in the volume, some 'chapters' consist of barely a short paragraph.

The overriding theme of the whole series is "precision": The first volume deals with the concept of 'precise time' and time standards. The second summarizes the worldwide quest for precise timekeeping up to about 1870, with an emphasis on regional contributions from Saxonia. The third book focuses on the contributions of the regional early precision pioneers J.G. Koehler 1745-1800, J.H. Seyffert 1751-1818, and J.C.F. Gutkaes 1785-1845. The fourth volume examines the first 50 years (1845-1895) of watchmaking in Glashütte, particularly the contributions of F.A. Lange. While never stated explicitly, it can be assumed that the series will be continued to cover the 20th century, as well as possibly the present production of high grade watches in Glashütte.

The whole series highlights timekeepers (and other objects, and documents) which are in the collection of the Museum in Glashütte (and in other regional museums), many of which have never appeared in publications before. Just browsing through the books, looking at the images and reading a paragraph here and there is a most pleasant and rewarding experience for any enthusiast interested in high grade watches or precision timekeeping. Reading the books cover-to-cover (especially the first two volumes) however was less satisfying, at least for this reviewer, as much of the material has been presented in other publications before, and the efforts to tie it to Saxonia at times seemed somewhat contrived.

Studying volumes 3 and 4 felt much more rewarding, as much less has previously been published on the precision clock and chronometer makers of Dresden. Admittedly much of what volume 4 covers is described in Meis "A Lange & Söhne, the watchmakers of Dresden", but that book is hard to find for prices under \$300, and offers more detail on Lange history than most non-specialist readers would want. Dittrich's text offers some of the human history, but focuses on the early technical history of the Lange brand of watches, giving significant details on the development of the chronometer grade escapements using both detent escapements and lever escapements. That section is particularly rich in illustrations, including ultra close-up photography and schematics clearly explaining the finer points of developing improvements in watch escapement technology. "Beginning of a Tradition" (volume 4) is a 'must-buy' for any serious collector of pocket chronometers, as well as for students of horological history who focus on high grade watches.

This reviewer looks forward to future volumes of the series, which hopefully will cover products from Glashütte which were made in the early 20th century. And congratulations to the Foundation Deutsches Uhrenmuseum Glashütte on their first publishing venture. We can only hope that more museums find the funding to publish this kind reasonably priced, but scholarly sound horological literature.

R742 Dittrich, H**The art of precision**

the roots of precision watchmaking in Saxony
 Glashütte: Stiftung Deutsches Uhrenmuseum Glashütte, 2009, 26 x 26 cm, 120 pp, ill.
 History (English, German).

Volume 2 of a series of books on the history of timekeeping and watchmaking in Glashütte in Saxonia.
 Parallel German and English text.

[1st edition] See Dittrich "Measuring the moment, how precise time came to Glashütte" for a review.

R743 Dittrich, H**The beginning of a tradition**

the first 50 years of precision watchmaking in Glashütte from 1845 to 1895

Glashütte: Stiftung Deutsches Uhrenmuseum Glashütte, 2010, 26 x 26 cm, 176 pp, ill.

History (English, German).

Volume 4 of a series of books on the history of timekeeping and watchmaking in Glashutte in Saxonia.

Parallel German and English text.

See Dittrich "Measuring the moment, how precise time came to Glashütte" for a review.

R744 Dixon, JC**Watch companies of America, a history**

USA: Arlington Book Co (USA: Granbury Printing Co.), nd (1978), 28.0 x 22.0 cm, 156 pp, no ill.

History (English).

Spiral bound typescript. The book may have been reprinted.

A foreword (hints to the beginning collector) followed by brief histories of American companies in alphabetical order. There are no illustrations.

[1st edition, good] Dixon provides brief notes on the histories of 72 makers, a few of which are simply signatures used by other companies (such as the Home Watch Company) and others are the various reincarnations of the one business.

Some of this book appears to be a condensed version of parts of Crossman, however the text of other parts is quite different. Unfortunately Dixon only gives sources for some of the company information (including NAWCC Bulletin articles, Crossmann, Fuller and Townsend), and I suspect all of it is a compilation from other works. However, I think the book is a useful adjunct to the other, more comprehensive, histories.

R745 Dodd, G**British manufacturers metals**

London: Charles Knight, 1848, 12mo, 218 pp, ill.

History (English).

Several volumes

Part IV contains diverse manufactures which the author finds defy clear classification, and hence no title. It contains marble and stone work, glass manufacture, carpet manufacture, floor cloth manufacture, piano forte manufacture, watch and clock manufacture and cabinet manufacture.

Each subject has a self-contained chapter distilled from material first offered in Supplements to The Penny Magazine.

"Includes Swiss smuggling of watches and trade practices in Clerkenwell."

R746 Doensen, P**History of the modern wristwatch**

Belgium: P. Doensen, 1994, 250 pp, ill.

Description, history, makers (English).

Description and history of post 1950 electro-mechanical and electronic watches.

Not relevant to this bibliography, but included because the title is ambiguous.

R747 Doerr, E; Baumgarten, R**Twelve faces of time, horological virtuosos**

Germany: TeNeues, 2010, 34 x 26 cm, 208 pp, 196 b/w ill.

Description, biography (English).

A book that celebrates twelve independent masters of contemporary watch-making: Philippe Dufour, Thomas Prescher, F.P Journe, Vianney Halter, Kari Voutilainen, Felix Baumgartner, Volker Vyskocil, Roger Smith, Beat Haldimann, Paul Gerber, Ludwig Oechslin and Kenji Shiohara.

See also Clerizo "Masters of contemporary watchmaking".

[1st edition review by Jon Weber, poor] I found the book to have some worthwhile material but overall I found it infuriating. If you are a watch person this book will be a profound disappointment. The book is testament to the photographer's Ralf Baumgarten's ego. Each chapter begins with a long view, in one case of a microbus which presumably has the watchmaker in it. It has very few pictures of watches, and these are very generic, small views of movements.

The text is moderately interesting but very poorly thought out. For example the interview with Paul Gerber features a reference to a new escapement he says he invented. No pictures diagrams or any other technical detail are offered.

Obviously providing information to watch enthusiasts takes a back seat to showing Baumgarten's "lyrical" photography. The good stuff is the material on Seiko's Credor division.

In my view this book is not a companion of Clerizo "Masters of Contemporary Watch Making" and definitely not worth buying.

[Remark] In contrast, the book is described as: "This 208-page visual delight, comprising insightful texts by international horology-specialized journalist Elizabeth Doerr and original photography by German photographer Ralf Baumgarten, will allow readers to see well-known horological figures as they've never been seen before. Their stories are separately told in masterful English giving an impression of the history, concepts, and technical ideas behind the watchmakers. The black-and-white visuals atmospherically depict the technical magicians in their environments, displaying plenty of their mechanical wizardry alongside impressions of what makes them unique."

[Review by Fortunat Mueller-Maerki] The most fascinating sector of contemporary watchmaking

- even if numerically insignificant - is made up of the watch brands that are purely the expression of the values, style and thoughts of an individual watchmaker. The book under review introduces us to twelve such individuals; they come from seven different nations (although nine now practice their art in Switzerland). In twelve chapters of 16 pages each we meet (in order of their age):

- Philippe Dufour (*1948, Switzerland), the pioneer in the rebirth of the independent artisanal watchmaker.
- Paul Gerber (*1950, Switzerland), who started adding unique complications to individualize high grade watches in the 1980s before that became fashionable.
- Ludwig Oechslin (*1952, Italy), the scholar who after getting degrees in archeology, classics, physics, the history of science and astronomy started an apprenticeship as a watchmaker.
- François-Paul Journe (*1957, France), the Geneva based fan of Antide Janvier and dual oscillator timepieces.
- Kenji Shiohara (*1958, Japan), who created a small 'haute horlogerie', individual pieces workshop, within the giant Seiko conglomerate.
- Kari Voutilainen (*1962, Finland), who started out as a teacher of watchmaking skills and found his calling in creating one-of-a-kind watches only at age 40.
- Vianney Halter (*1963, France), considered a genius in the world of horological mechanics, who insists that he just "creates the watches that he dreams of".
- Beat Haldimann (*1964, Switzerland), with his central axis visible tourbillion wristwatches and the flying dual balance Resonance H2.
- Volker Vyskocil (*1964, Germany), the completely self-taught watchmaker and programming wizard who makes watches on his self-designed, self-built CNC machine.
- Thomas Prescher (*1966, Germany), a boyish looking former navy captain turned watchmaker enamored with triple axis tourbillions.
- Roger Smith (*1970, United Kingdom), the only watchmaker having been personally trained by the great George Daniels, who goes on building masterpieces in the tradition of Breguet and Daniels.
- Felix Baumgartner (*1975, Switzerland), the 35 year old newcomer to this select group who embodies the perfect marriage between high-tech and individualism.

The chapters, both in their text and in their photographic images, don't attempt to deliver copious amounts of hard facts, but strive to create an impression about the artisan, about his style, on how he works, about what motivates and excites him. Of course there are some images of these individualistic masterpieces, but the focus is on showing these masters in their environment, as people, in the landscapes they live in, the workshops where they create. The texts are sparse; the pages have much empty space.

This is not a technical book on how technological wonders are built, but a human interest story of what drives these geniuses to create and what inspires them to make unusual watches. It is a book that encourages the reader's mind to wander and to contemplate what accounts for high quality horology.

This reviewer has been fortunate over the years to personally meet several of the characters described in the book and feels that the two authors - both in the text and through the images - captured the essence of what each person is about rather well.

"Twelve Faces of Time" is an unusual but useful addition to a horological library if the reader has an interest in the human story behind the recent resurgence of artisanal watchmaking at the highest levels.

R748 Doggett, Rachel (ed)

Time the greatest innovator

timekeeping and time consciousness in early modern Europe

Washington, D.C.: Folger Shakespeare Library, 1986, 4to, 116 pp, b/w ill.
(English).

Published for an exhibition at the Folger Shakespeare Library, October 1986 - March 1987

R749 Dominck, H

Das ewige herz, meister Peter Henleins Nürnberger oerlein

Het eeuwige hart de neurenbergsche eitjes van meester Peter Henlein

Berlin:, 1942, 20 x 13 cm, 152 pp, 15 ill, 8 plates (145 pp, ill).

History (Dutch, German).

"The perpetual heart, Master Peter Henlein's Nurnberg watch."

Includes a chapter on Lange.

R750 Donat

Technique du réglage des appareils horaires

système balancier spiral

Paris: Dunod, 1931, 20 x 13 cm, 202 pp, 56 ill, 6 plates.

Repair (French).

The technique of regulation by matching time signals.

R751 Donath, A

Psychologie des kunstsammelns

Berlin:, 1917, 24 x 16 cm, 188 pp, 58 ill.

Collecting (German).

Volume 9 of the series "Bibliothek fur kunst- und antiquitätensammler".

The psychology of collecting is something many should know more about! See also Muensterberger "Collecting an unruly passion, psychological perspectives".

R752 Donath, A

R752 Donath, A

Technik des kunstsammelns

Berlin: Schmidt Verlag, 1925, 24 x 16 cm, 234 pp, 120 ill.
(German).

Volume 28 of the series "Bibliothek für kunst- und antiquitätensammler".

The book includes the story of how Carl Marfels sold his collection to Pierpont Morgan, with illustrations of the collection.

R753 Donauer

Unserer modernen drehstühle und ihre anwendung

reprint (Berlin:), nd (1922), 21 x 15 cm, 48 pp, 50 ill.

Tools (German).

One source gives 45 pp and another 56 pp, perhaps including advertisements. There is a modern reprint.

Our modern lathes and their application.

R754 Donzé, P-Y

Formation professionnelle et développement industriel dans le district de Porrentruy

aux 19e et 20e siècles

Porrentruy: Société jurassienne d'émulation, 2004, 205 pp, ill, plates.

History (French).

R755 Donzé, P-Y

Histoire d'un syndicat patronal horloger

l'association cantonale bernoise des fabricants d'horlogerie (ACBFH), association patronale de l'horlogerie et de la microtechnique (APHM) - 1916-2006

Neuchâtel: Éditions Alphil, 2006, 2 volumes, 107 pp.

History (French).

French text on the history of the Employers Organization, an anti-union alliance, in the canton of Bern, Switzerland, from 1916 to 2006. With a separate 32-page companion booklet titled "Témoignages" that offers first person accounts on the same subject at the same period of time.

R756 Donzé, P-Y

Histoire de l'industrie horlogère suisse**History of the Swiss watch industry**

de Jacques David à Nicolas Hayek, 1850-2000

Neuchâtel: Editions Alphil (Presses Universitaires Suisses), 2009, 21.0 x 14.0 cm, 208 pp, 19 figs, 24 tables.

History (French, English?).

There is an English translation in preparation.

History of the Swiss watch industry from Jacques David to Nicolas Hayek.

An introduction followed by four chapters:

The Swiss watchmaking industry during the first part of the 19th century, 1800-1870 (27 pages): The triumph of *établissage*; The technical evolution of products; The outlets of the Swiss watch industry, the global market; and Rival nations.

The challenge of industrialization, 1870-1918 (62 pages): The shock of Philadelphia, the American competitors; The structural modernization of Swiss watchmaking; Selling, evolution of products and markets; Towards organized capitalism; and The Swiss watch industry during World War I.

The watchmaking cartel, 1920-1960 (48 pages): The problem of *chablonnage* and the struggle against industrial transplantation; The maintenance of an industrial district structure; The setting up of the cartel; The consequences of the cartel; and New products, new markets.

Liberalization and globalization, 1960-2000 (42 pages): Decartelization; The quartz revolution; The origins of the watchmaking crisis; Industrial concentration and the appearance of watchmakers groups; The globalization of ownership and manufacturing; and Towards luxury.

There is a conclusion (4 pages) and an 8 page bibliography.

[1st edition, very good] General histories of Swiss watchmaking are not common. Most books focus on an individual company and some on particular regions, and the majority are beautiful photographic essays with relatively little useful content. In contrast, this book is a serious study of the development of watchmaking in Switzerland.

Each of the four chapters cover a different phase in the structural organisation of the industry.

*Chapter 1, after some historical background, examines the *établissage* system, in which manufacture was subdivided amongst many small, independent workshops and home workers. This system, with modifications, continued to be used throughout the 19th century.*

Chapter 2 looks at the consequences of the Philadelphia exhibition, the slow mechanisation of production and the emergence of factories.

Chapter 3 then explains why and how watchmaking cartels and a legal framework developed in the 20th century to protect the industry from competition, both internal and external. This led to the establishment of large groups of related companies and the control of prices and exports.

Finally, chapter 4 examines the collapse of the cartel system and the restructuring of the industry after the quartz crisis.

Throughout, Donzé provides a clear and careful analysis of the various factors which led the watchmaking

industry to follow a particular path of reorganisation, and the influence of American, and later Japanese competition.

The book is a well written, very interesting study.

R757 Donzé, P-Y

Les patrons horlogers de la Chaux-de-Fonds

dynamique sociale d'une élite industrielle 1840-1920

Neuchâtel: Éditions Alphil, 2007, 20 x 13 cm, 234 pp.

History (French).

A panorama of the industrial families in la Chaux-de-Fonds, on the sociology of the horological industrialists from 1840 to 1920 in the city.

R758 Dowler, HG

Clockmakers and watchmakers of Gloucestershire

Chichester: Phillimore, 1984, 4to, 230 pp, 37 ill, 2 maps.

Makers (English).

Also given as 192 pp.

Lists about 650 makers with some histories.

R759 Dowling, JM; Hess, JP

The best of times - Rolex wristwatches

an unauthorised history

USA: Schiffer, 2001 (1996), 31 x 24 cm (31.0 x 23.5 cm), 399 pp, 107 b/w ill, 1052 col ill (392 pp, ill, plates).

Description, history, identification, illustration (English).

Two editions in 1996 and 2001. There is an errata for the first edition on the internet (at Dowling's web site).

24 chapters followed by 3 appendices, notes and questions, bibliography, price guide, subject index and indexes to Rolex model numbers.

The chapters are: Forty years on (32 pages); Oyster (36 pages); The perpetual (34 pages); Someday my Prince will come (24 pages); They also serve, other models (16 pages); Chronometers (8 pages); The 1940s, out of the empire into the fire (32 pages); The 1950s, 250,000 chronometers can't be wrong (24 pages); The chronograph, stopping time (18 pages); A Date(just) with destiny (8 pages); The Submariner and the Sea-dweller: the stock car, the diver and the gas escape valve (16 pages); The Kew "A", the rarest Rolex (6 pages); The GMT Master, the correct time times two (4 pages); The President or Day-Date, attaining a new summit (4 pages); The quartz revolution (4 pages); The lady's Rolex (14 pages); Bracelets, around the wrists and around the world (12 pages); Movements, under the covers (12 pages); From merchant to market leader (4 pages); Oddities, WSH (10 pages); Patents, patently superior (10 pages); Collecting Rolex watches (14 pages); and Fakes, imitation is the nastiest form of flattery (10 pages).

The appendixes contain: A 1932 visit to the Rolex factory (5 pages); List of names and trademarks (2 pages); and Oyster case numbers (1 page).

[1st edition, good] *This book provides a lavishly illustrated history of Rolex and its products. The first 16 chapters provide a roughly chronological study, although some chapters focus on particular products. Chapters 17 to 22 then examine specific areas: lady's watches, bracelets, movements, marketing, oddities and patents. The last two chapters provide advice for collectors and the problem of fakes. The 3 main appendixes reproduce a 1932 article on the Rolex factory, list names and trademarks, and give a table of Oyster case numbers. Of these 371 pages, about 62 pages are text, 9 pages are tables and 300 pages are illustrations.*

The most obvious aspect of this book is that it is for collectors and, to a lesser extent, dealers. Although patents and movements are discussed they are merely glossed over with inadequate detail. More attention is paid to cases, but again the writing is basically descriptive and non technical.

The second noteworthy aspect is that Rolex is considered in isolation and the book is almost totally devoid of any comments about the company's place in the history of Swiss, let alone global, watchmaking. So the aim is quite simply to educate Rolex watch collectors, people who Dowling and Hess believe will rarely have the knowledge or skills to look inside a watch and will collect on the basis of external appearance and rarity.

In this context it is a very good book; the writing is lively, the history is detailed and well told, and the illustrations are adequate; I can see why a reviewer would say that the book "will undoubtedly take pride of place on library shelves".

But I don't think a discerning collector would be completely happy. The most obvious limitation is that many illustrations are unsatisfactory and not cross referenced in the text. In some instances the colourful, artistic backgrounds blend in with the watches and obscure necessary detail. In other cases the pictures are simply too small or not good enough for important detail to be seen. And the seemingly endless views of dials and rotors often don't serve a useful purpose, other than to catalogue the vast array of minor variants that Rolex has generated.

Despite this, the book is definitely worth reading and I am sure Rolex collectors are delighted by it. It is vastly superior to Gordon "Rolex 1905-1989, timeless elegance".

[2nd edition] *I have not seen the second edition and so I do not know to what extent the revisions affect my comments. I have been told by one of the authors that "we made a lot of changes but the publisher*

chose not to include them all". A reviewer wrote "The second edition is a slight disappointment because it has not been radically altered or updated. The additional material is largely confined to the new models that Rolex produce ... it is a shame that some of the books original mistakes have carried through into the second edition."

[Remark] Although the history of Rolex is very good, I feel that some points deserve further examination. First, although the authors acknowledge that Rolex was initially merely a marketing organisation, which manufactured nothing, they have glossed over the main implications of this. The crucial point about Rolex is the Oyster case and without it the company almost certainly would not have survived the quartz revolution; its other products are quite ordinary. But two patents, Aaron Dennison's English patent 356 of February 1872 and his grandson's patent 1390 of January 1915, embody the principles of the Oyster case (screwed bezel, screwed back and screw-down crown) and neither is mentioned in this book. It is simply not credible to pretend that Wilsdorf was not aware of these patents (or others relating to sealing watch cases); after all, he used Dennison screw cases and Dowling and Hess illustrate one and particularly note the milled edge which was copied by Rolex. The interesting question is whether Wilsdorf was aware of their importance and consequently that they effectively prevented him developing the Oyster case. That is, when he took out patent 197,208 in 1922 (for the double cased watch actually designed by Baumgartner) was this done in the belief that it would be better than Dennison's "oyster" or did the realisation only strike him in 1925 when Perregaux and Peret took out a Swiss patent for their version of the screw-down crown (English patent 260,554 of 1926)? And had the Dennison patent expired? For the crucial point about both is the thread; the way of linking the stem is necessarily different because Dennison's patent clearly refers to a negative set mechanism whose two-part stem and pendant sleeve can have the necessary slack built in. This immediately raises another question: was Wilsdorf, an English citizen, unable to "invent" the screw-down crown because of patent law restrictions? I don't know, and Dowling and Hess have not researched these questions, but it seems more credible that Wilsdorf paid Perregaux and Peret to patent the idea on his behalf for some reason than that these two unknowns came up with the idea all by themselves.

Second, the success of the Oyster case depended on the owners almost never unscrewing the crown because, as Dowling and Hess note, many forgot to screw it back down and so negated the whole purpose of the design. But to achieve this the movement had to be accurate enough not to require frequent hand setting and it had to have an automatic winding mechanism. The first of these conditions was about the only thing that Rolex actually did; it finished the movements provided by Aegler to a very high standard. The second condition once again involves patents. This time Dowling and Hess discuss the patent of Harwood and Cutts (English patent 218,487 of July 1923) and the fact that it inhibited developments until after 1929 when Harwood's manufacturing collapsed. It then took until 1933 for Aegler to develop and patent a bolt-on automatic mechanism for their current range of movements; a delay that presumably was caused by Aegler seeing no reason to undertake research which would be pointless if Harwood had continued manufacturing.

At this point the Rolex Oyster became a practical, useful and unique watch; a watch actually designed by Dennison, Aegler and Harwood but patented by Rolex and Aegler (which was controlled by Wilsdorf). In a sense it is irrelevant who designed the Oyster. Dowling and Hess quite rightly point out that it was Wilsdorf who had the vision to exploit the idea. But in another sense it is very relevant. Who should we applaud the most, Einstein for creating the special theory of relativity or the people who later manufactured atomic bombs? The researchers who discovered teflon or the manufacturers of frypans? The many people who had significant ideas or the others who exploited those ideas? Which group contributed most to human development? (See also my remarks about Earnshaw "Longitude - an appeal".)

Wilsdorf is not alone in successfully developing the ideas of others. A long time earlier Edward John Dent purchased patents and sold the ideas as his own. And he and virtually every so-called watch maker from before 1800 simply finished and assembled bits made by other people (or purchased complete watches and put their names on the dials). But nearly all these people, no matter how good their business sense was, actually contributed little of significance to horology. Their success lies, as Dowling and Hess note, in marketing a desirable product invented by someone else.

Third, why has Rolex not only survived but flourished? How can one explain why so many people want an anachronism, an expensive mechanical watch in times of throw-away quartz watches that are far more accurate at much lower prices? And how can one explain why Rolex quartz watches, although they are still manufactured, basically failed and are not a major contributor to the company's success? Rolex would not have survived on practical applications alone and the company needed many more sales to a much wider audience. Large numbers of new watches are manufactured each year and there is a plentiful supply of second hand ones; on the day I am writing this there were nearly 1,800 Rolex items on the Ebay internet auction site, indicating that something like 50,000 second hand Rolex watches are sold each year through that outlet alone. So Rolex watches are common and easy to buy, and there are vastly more of them than companies (such as COMEX) or private users (divers and climbers) could ever use. Dowling and Hess are aware of these questions, but they don't examine them.

The fundamental point is that the undoubtedly useful and very distinctive Oyster manufactured in large numbers, the majority at affordable prices, has established a cult following (in the same way that many people buy four-wheel drive vehicles that never see dirt roads let alone rough tracks). Although many Rolex buyers are collectors (exemplified by the Daytona craze discussed in the book), many others own and wear an Oyster even though they have no use at all for its special features. Both groups are aligned to

a single company and, to a large extent, to a single product. If we view Rolex ownership as based on a cult following then much of the company advertising makes sense. Rolex has deliberately created a mystique of affordable exclusiveness quite divorced from practicality, and satisfied the resultant demand with a very good, visually unique product based on archaic technology. And so it is hardly surprising that "it is a company's failures that became the most desirable and valuable".

R760 Downing, A**Voyage to the end of time**

Geneva: Patek Philippe SA, 1998 (1989), 131 pp, ill, slip case.

Description, history (English).

The first edition was limited.

An analysis of the Patek Philippe calibre 89.

R761 Drexler, J**The Drexler simplified system of clock and watch repairing**

Milwaukee USA: Drexler School of Watch Repairing, 1915 (1914), 23.0 x 15.5 cm, 152 pp, 48 plates, 1 fld plate.

Repair (English).

Also produced with all parts bound in a book.

A home study course consisting of 11 booklets and instruction cards. There is also a prospectus booklet.

Book 1: Basic tools, filing, making hands, the lathe, hardening and tempering.

Book 2: Turning, making screws, grinding and polishing, making drills, clock going train, dial train, the escapement, repair tools and materials, disassembling and repairing a clock.

Book 3: Clock cleaning, oiling, regulating, American striking train, French striking train, making keys, disassembling a French clock.

Book 4: Making a barrel hook, stop work, polishing pivots, bushing, depthing, soft soldering, wheel teeth repair, clock escapements, assembling a French clock.

Book 5: Bringing a clock to time, pendulums, balance clocks, alarm attachment, the lever escapement, watch repairing, staff making.

Book 6: Jewels, setting jewels, the slide rest and face plate, broken screws, demagnetising, watch disassembly, watch cleaning.

Book 7: Watch cleaning and assembly, keyless mechanisms, winding stems,.

Book 8: Hairspring truing, mainsprings, roller jewels, balance staff replacement.

Book 9: The compensation balance, pinions, gearing, depthing, depthing tool, rounding up tool.

Book 10: Hairspring vibrating, adjustments, overcoils, the lever escapement.

Book 11: Pallet jewels, cylinder escapement, cylinder repair, dial repair, case repair, examining a watch.

[1st edition, very good] This is a very interesting course, but with a strange feature. It begins sensibly by developing basic, necessary skills: filing, sawing, turning and screw making. Even how to hold a loupe in an eye is explained, something that other writers incorrectly assume everyone can do without being told how. The course then examines clocks, their cleaning and repair, so that the student develops his skills on large timepieces before venturing into watch repair in book 5. But at this point strange things happen. The student is taught how to make a balance staff and how to set bezel-set jewels before being shown how to disassemble and clean a watch! Even stranger, fault finding is not mentioned until the end of the last book, and then it is covered in one page! What is going on?

What is taught is covered very well; the major topics being balance staff making, jewelery, balance and balance spring work, train depthing, lever escapement adjusting and case work. The instructions are clear, precise and well illustrated, although a bit too "cookery-book" in a few places. And some topics are covered better than in other books. But there are obvious omissions, like the staking tool, which is not described and only mentioned in a few places. So the course is not really suitable for home study and a beginner would find it very hard to use without support from other sources.

But the approach does make sense ...

I quite often eat at a restaurant which is near an art gallery, and I always have a look at what is on offer. Most of the time the paintings are uninteresting and I suspect the artist will quickly fade away and be forgotten. But sometimes I see work that has something extra. What is it?

Inevitably it is that the artist has mastered his craft and is capable of producing photographic images. He or she has put in the years of hard work necessary to learn to handle the medium with great skill. And it shows.

Of course photographic images are not art, and the works I like are in no way sterile copies of reality; indeed many are abstracts. They are expressions of the artist's ideas and carry meanings which cannot be found in slavish copying. Compared to the frequent examples of poor workmanship, more akin to a child's crude finger-painting, they stand out.

Learning a skill is an essential basis for many activities. Because it is only when the skill is mastered that the person is liberated from mechanistic copying and can imbue the work with personality and purpose. When a painter can copy perfectly and with ease, then he or she can use that skill creatively in a multitude of different ways. But without that ability the result will almost always be clumsy and unsuccessful.

Watch repair is just such a skill. It used to take seven years to master it. Years of filing and turning. Years of boring practice polishing. But without these skills the repairer will inevitably be a botcher, a person who does his best perhaps, but who simply cannot do work that is good enough.

Which is why I admire Bulova "Training units", which commence with exercises on using tweezers and screwdrivers. and why I admire Drexler for beginning with filing and screw making. Both recognise the need to develop basic skills and dexterity, without which the student will never succeed. And both implicitly stress the need for patience and thoroughness, without which more harm than good will be done.

Viewed in this light, Drexler's course makes sense. It is not a complete course on watch repair and it certainly isn't "simplified". But it is a course on skill development. With few exceptions, the course teaches skills and depends heavily on the student undertaking extensive, thorough practical work. In contrast, it does not teach knowledge, and information about clocks and watches (such as terminology, trains, designs and descriptions of tools) is almost completely absent and needs to be learned from elsewhere.

So the course is very good, provided the learner puts in the required hard work; in which case he will emerge as a competent watch repairer. But there are other good books which cover the same areas and this course is fairly rare. So I expect most learners will use other courses, but if they happen on a copy of this one, it is worth reading.

R762 Dreyfus, V**La défense d'une industrie nationale**

la fabrique d'horlogerie de Besançon

Besançon: Millot, 1890, 24.0 x 16.0 cm, 67 pp.

History (French).

R763 Drost, WE**Clocks and watches of New Jersey**

New Jersey: Engineering Publishers, 1966, 10 x 7 inch, xi, 291 pp, b/w ill.

Description, illustration, makers (English).

Produced in a standard edition and a limited edition of 500 copies.

"The standard reference on the subject, with a wealth of horological and some genealogical history. It includes: A discussion of the first torsion clock, later know as the 400 day or Anniversary clock, made by Aaron Crane (active in NJ from 1842-1848); An invaluable biographical directory of clock and watchmakers (among them are: Isaac Brokaw, John Brokaw, Calculograph Company, Aaron D. Crane, Lebbeus Dod, Matthew Egerton (Jr. and Sr.), Joakim Hill, Joseph Hollinshead (Jr. and Sr.), Morgan Hollinshead, Aaron Lane, Leslie & Williams, Aaron Miller, John Tappen, Oliver Parcell, John Scudder, John Nicholl, Isaac Mickle Cooper, Isaac Pearson, Henry S. Prentiss, Moses Stiles, Stephen Tichenor, United States Watch Company, Ichabod Williams, etc.)."

There is a glossary, bibliography and index.

[Review by Edwin A. Battison] *A most important feature of this book is the elaborate use of illustrations. These photographs were chiefly taken by the author and are unique to this book. A few are disfigured and details obscured by disturbing reflections. Most of the plates, however, are admirable for their clarity. A large portion of the total illustrates details of hands, dials, signatures, labels, and manuscripts, a feature which greatly supplements the text.*

Makers are listed in alphabetical order so that the book is easily used for ready reference. In order to make it easy to locate other names occurring in the text as well as other entries than the primary one for each maker a regular index of four and a half pages concludes the volume. There is also an illustrated four page glossary of clock terms and a reference bibliography of between two and three pages.

It is to be regretted that the author seems not to have extracted the maximum benefit from his own bibliography. The first entry here is "Abbott's The Watch Factories of America", yet examination of this book and Palmer's "Book of American Clocks", also listed, should have served to prevent the error of illustrating, on page 253, two products of the New Haven Clock Company as products of the New Haven Watch Company which moved to Chambersburg near Trenton within less than two years after its founding in New Haven, Connecticut. The name New Haven had been dropped from Trenton products over twenty years before Ingersol bought the company. The watches on page 253 were rivals of the Ingersol product as made in Waterbury, Connecticut, but not of those made at the Trenton plant.

Seven pages are devoted to New Jersey watch papers, just enough, perhaps, to whet the collector's appetite. A very interesting watch paper is shown together with two different contemporary bank notes to show that the same engraving appears on each of the three, a shrewd bit of observation.

The makers' list contains numerous names not previously recorded. The majority have, of course, been known but here much supplementary information about them has been assembled from such responsible sources as newspaper advertisements and public records.

The illustrations alone of both clocks and watches are memorable and will retain their value even after the research of future years may have rendered the text somewhat obsolete. This is a book which everyone interested in the clock and watch makers of New Jersey will want to have.

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R764 Drover**George III directions for mounting and unmounting a watch**

London: Antiquarian Horological Society, 1975, 25 x 19 cm, 4 pp, 4 ill.

History (English).

Offprint from the journal of the society.

The directions are reproduced in Weiss "Watch-making in England 1760-1820".

R765 Droz, Y**Montre a une roue**

ou les complications du simplifie

Villers-Le-Lac: Musée de la Montre, 1998, 30 x 21 cm, 128 pp, ill.

Description (French).

“Etude historique, descriptive, technique et photographique.”

Watch with one wheel.

R766 Droz, Y; Flores, J**Leroy 01**

la montre plus compliquée du monde

Besançon: Association Française des Amateurs d’Horlogerie Ancienne, 1986, 111 pp, ill, 5 fid plates.

Description (French).

A description of the Leroy complicated watch including its design, technical details and case.

R767 Droz, Y; Flores, J; Cardinal, Catherine**Les heures révolutionnaires**

Paris: AFAHA (Association Française des Amateurs d’Horlogerie Ancienne) , 1989, 9.5 x 6.5 inch, 431 pp, 140 ill, 80 plates; 172 pp, ill.

History, technical (French).

Two separate publications with the same title and possibly different authors. The first is issue number 24 of “Horlogerie Ancienne”. The second replaces issues 25 and 26 of “Horlogerie Ancienne”. Published for the 200th anniversary of the French Revolution. History of the decimal watch 1789-1989. The styles of watches and clocks, especially dials, during the French Revolution.

[Review by Henry B. Fried] France celebrated the 200th anniversary of their revolution with many notable events. The revolution of 1789 had an effect on all areas of French life: the political, social, religious, and scientific, and certainly not the least was clock and watch making.

Among the many “reforms” was the abandonment of the Gregorian calendar which was declared as archaic, influenced by religious superstitions, inaccurate, and bearing the names of pagan gods and emperors. The months of the year were of unequal length and the biblically oriented week of seven days was illogical to them.

The revolutionary council would change all this to a decimal system. Included was the calendar which, while retaining the 12 monthly divisions of the year, would have months of the same length of 30 days. Months would be renamed appropriately for their seasonal characteristics. The year was to start at the Autumnal equinox, that is, from September 22 to October 22. The extra five days of the year would be national holidays with patriotic names.

The first month would be called. “Venemaire” (harvest); the second, Brumaire (blustery); the third month, Frimaire (frosty); the fourth Nivase (snowy) the fifth month would be Pluviose (rainy); the sixth Ventose (windy), and on to the remaining 30-day months of Germinal, Floreal, Prairial, Messidor, Thermidor, and finally, Fructidor (fruition, August 22 to September 16). There would be no more weeks but ten-day periods called “decades” with simple names as Primedi (1); Duodi (2); followed by Tridi, Quantidi, Quintidi, Sextidi, Septidi, Octidi, Novidi and Decadi. Thus three decades of ten days each would make up a month. Incidentally, the leap-year day once every four years would also be a national holiday with revolutionary connotations and celebrations to suit.

The 24-hour day was also converted to 10 new decimal hours. Each of these ten hours would contain 100 minutes and the minutes would contain 100 seconds. New watches were made with dials, symbolically shaped hands, all necessitating new going and dial train wheel counts and tooth numbers. The colored enamel dials were painted to depict symbolic events in the revolution. Many of these subjects were fervent, bizarre, or to some even revolting.

This book is a detailed account of the events leading to the revolution of time and is encyclopedic in its pictorial and historic coverage of this unusual period of French horology.

“Les Heures Révolutionnaires” was published as a special issue of the Besançon-based watch and clock collectors’ association. The two principal authors, Flores and Droz, are well-respected horological researchers, best known for their compilation and expositions of unusual escapements.

With hundreds of photos, many in color, this treatise appears to cover every facet of this era including some elegant clocks made during this period, obeying the directions issued to watch and clock makers. Many of the watches pictured indicate that a good proportion of makers had reservations with these new principles and whether their customers would accept this new method of telling time. Therefore aside from the mandatory decimal divisions, they also included a traditional (“ancienne”) ring of the 12-hour system encircling the five hours on the dials or the 24 hours when the dial could accommodate the full 10 daily hours. Other watches had dials with sub-dialettes, indicating a decimal day, decimal month, as well as dialletes with traditional hours, days, and months. The book also shows a few erotic dial scenes aimed at embarrassing the clergy in light of the new revolutionary republic.

The revolution and its effect on the horological industry was severe. The unsold stocks of traditional watches and clocks were devastating to many in the trade.

Regulating tables of names, dimensions, and wheel tooth counts are also included in this book. There are many fold-out pages of numerous tables and charts of mathematical tables of the various wheel and pinion combinations needed to correctly convert existing watches or produce new ones. The authors also show vibration rates. dial trains, differential of the 12-hour versus the 10-hour-24-hour wheel-pinion

combinations. Also included are instructions for the dial painter; proper names of the days and months. The authors further have included reproductions of the official concordances as well as methods of calculating the various combinations and conversion tables, showing both the new and the "anciennes." Symbols of the revolution and what they represent aid the reader in understanding the many dials and special hands. For example: the figure of a rooster depicts vigilance; crossed swords indicate the nobility; the tricolor ribbon or pennant the emblem of the patriots; and the guillotine, revolutionary justice. The broken chain meant abolition of enslavement.

Of special interest to the horologist is the chapter devoted to Robert Robin and his special escapement and the watches which he made during this period. Included as well is the pin-pallet escapement and its evolution during those revolutionary years.

There are listings of watch and clock makers who were actively involved in the revolution as well as some who succumbed as a result of it. It might be reported that the name of Breguet was not observed in this reading as he wisely sojourned in Switzerland, returning later.

A few special chapters by other contributors mention a few clocks of the Bastille. An extra-fine chapter by Catherine Cardinale shows in beautiful color some fine revolutionary clocks, including an elegant skeletonized clock with Harrison gridiron pendulum with five dials, all with the decimal indications and compliant, new names.

The victories and conquests of Napoleon made him a popular hero. However, the general public had ingrained habits of timetelling. The almost impossible cost and task of the conversion of existing timepieces of all types (church, public, tower, private and domestic timepieces), and the unsold watches and clocks added to the pressures to retain the old system. Despite some concessions made in 1795, it was more than a decade later that Napoleon, yielding to continued pressure and a papal promise of recognition as an emperor caused him to order an official return to the Gregorian calendar as of January 1, 1806.

To those fluent in the French language, this book makes an important contribution to the better understanding of French horological history, especially this period in the generation of revolutionary activity. Those not familiar with the French language, the abundance of photographs, drawings, charts and tables are easily understood. The use of a bilingual dictionary makes this more easily understood and rewarding to the avid reader.

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R768 Dubois-Sandoz, U

L'achevage de la boîte de montre

Manuel de l'horloger praticien

Genève: Journal Suisse de l'Horlogerie, 1901, 8vo, 19 pp, 17 ill.

(French).

Manual of practical horology, making the watch case.

There are four booklets under the general title "Manuel de horloger praticien". One is by Ditisheim, two by Dubois-Sandoz and one without an author (listed under Switzerland). All were probably produced by the Journal Suisse d'Horlogerie.

R769 Dubois-Sandoz, U

La boîte de montre fabrication et décoration

Manuel de l'horloger praticien

Genève: Journal Suisse de l'Horlogerie, 1901, 8vo, 53 pp, 44 ill, 7 plates.

Watch making (French).

Manual of practical horology, watch case fabrication and decoration.

There are four booklets under the general title "Manuel de horloger praticien". One is by Ditisheim, two by Dubois-Sandoz and one without an author (listed under Switzerland). All were probably produced by the Journal Suisse d'Horlogerie.

R770 Dubois, E

Spiraux compensateurs a isochronisme ajustable

La Chaux-de-Fonds:, 1948, 40 pp, ill.

Repair (French).

Adjustable balance spring compensators for isochronism.

R771 Dubois, G

Cent ans de syndicalisme horloger

dans les Franches-Montagnes 1886-1986

1986, 80 pp.

History (French).

R772 Dubois, G

Un siècle d'horlogerie compliquée et d'indépendance au lieu

Switzerland: Dubois Depraz, 2001, 190 pp, ill.

History (French).

"A century of complicated horology" published on the 100th anniversary of the company Dubois Depraz which produces calibres of the highest quality for the most prestigious houses.

See also Golay & Dubois "90 années d'horlogerie compliquée".

R773 Dubois, P**Collection archéologique du Prince Pierre Soltykoff, horlogerie**

Paris: Librairie Archéologique de Victor Didron, 1858, 27.0 x 21.5 cm, 214 pp, 20 plates.

Bibliography, collection, history, illustration (French).

It is available as a Google Book PDF file (probably OK, but including some irrelevant material after page 79).

“Description et iconographie des instruments horaires du XVIIe siècle, précédée d’un abrégé historique de l’horlogerie au moyen age et pendant la renaissance. Suive de la bibliographie complète de l’art de mesurer le temps depuis l’antiquité jusqu’à nos jours”.

Descriptions of sixteenth and seventeenth century clocks and watches together with a short history of horology and an extensive bibliography.

Five chapters and an appendix. The first 4 chapters (76 pages) include a short history for the 16th century and descriptions of the Strasbourg and Lyon clocks. Chapter 5 (47 pages) has a brief introduction followed by descriptions of the pieces shown in the 20 plates and a listing of 13 unillustrated watches. The appendix (69 pages) discusses 17th and 18th century horology followed by notes on Gerbert, the Dijon clock, Huygens, Sully, Caron, Janvier and horologists of Louis XVI.

R774 Dubois, P**Histoire de l’horlogerie**

depuis son origine jusqu’à nos jours

Paris: Administration du Moyen Age et la Renaissance, nd (1849), 27.5 x 22.0 cm, 408 pp, 124 ill and 10 tables in text, 4 chromolithographs, 40 plates (13 fld), table of plates.

Biography, history, technical (French).

The illustrations are not numbered and various counts may be given. I have counted the separate illustrations rather than the figures they contain (about 154). Robertson “The evolution of clockwork” lists two editions, 1849 and 1850, both with the title “Histoire et traite de l’horlogerie ancienne et moderne”. This title is used on the plates and he is probably citing a separate atlas.

The 1849 edition is available as a Google Book PDF file (probably missing 2 plates and with 2 plates repeated).

“... précédée de reverches sur la mesure du temps dans l’antiquité et suivie de la biographie des horlogers les plus célèbres de l’Europe”.

History of horology from its origins to the present day with the research of time measurement and the biographies of celebrated European horologists.

In four parts:

Part 1 (98 pages) covers time, sundials, clepsydrae and the origin of clocks.

Part 2 (112 pages) is a history of 17th and 18th century horology.

Part 3 (135 pages) contains a technical study of clocks and watches including gearing, trains, friction and escapements.

Part 4 (61 pages) is of the nature of an appendix with additional information including a summary of French horological inventions, chronometers, escapements, a description of an early Philippe keyless watch and short biographies of famous makers.

[1st edition, very good] *Although the history is said to be inaccurate (by current standards) the extensive technical part is a very good and interesting survey; it has superb illustrations and includes extracts from Wagner on the cylinder and duplex escapements.*

The presentation of this book is wonderful. Not only are the illustrations and plates excellent, the text has many marginal decorations and delightful illuminated initial letters.

According to Chamberlain, much of the section on escapements has been plagiarised from Tavan “Description des échappements les plus usites en horlogerie”.

R775 Dubois, P**Histoire des fabriques d’horlogerie**

de la Suisse et de la France

Paris:, 1853, 12mo.

History (French).

History of horological manufacture in Switzerland and France.

Listed in Robertson. Probably same book as his “Lettres sur les fabriques d’horlogerie ...”.

R776 Dubois, P**La tribune chronométrique**

scientifique et biographique

Paris: A l’Administration, 1852 to 1853, 27.0 x 18.0 cm, 362 pp, 67 ill, 7 portraits, 4 plates (3 fld).

Biography, technical (French).

Originally a journal published monthly which only ran for a year, in 1851, and then reprinted as a volume in 1852.

Tardy suggests 5 plates, but he has probably included one of the portraits.

“A l’usage des membres de la corporation des horlogers”.

Letters, notes and articles on diverse topics. The main articles are on escapements, gears and reports on the 1849 French exhibition and the 1851 Crystal Palace exhibition. There are also several biographies and a bibliography. The main articles are reprints or extracts from earlier works. The book ends with “To the subscribers” explaining why publication ceased and referring subscribers to a new journal “Les

Annales du travail”, giving the subscription costs and noting that subscribers to the “Tribune” would receive the first issue gratis.

[1st edition, 1852, very good] A very interesting collection of articles. Included are chronometer balances (9 pages), descriptions of Tavan’s escapements (with excellent illustrations), a reprint of five parts of Wagner “Mémoire sur les échappements simples usités en horlogerie” (44 pages, 9 ill, 4 plates), an extract from Preud’homme “Considérations pratiques sur les engrenages de roues et pignons en horlogerie” (35 pages, 10, ill, 2 tables) and “Entretiens sur l’horlogerie” by Louis Berthoud (20 pages). Authors of other notes are Ferdinand Sere, H. Robert, A. Leon Noel, Garnier and Vulliamy. Many of the escapements were reprinted in Chamberlain “Its about time”.

R777 Dubois, P**Lettres sur les fabriques d’horlogerie**

de la suisse et de la France

Paris: Administration du Moyen Age, 1853, 8vo, xii, 144 pp, no ill.

History (French).

Letters written by “Patrie” on watchmaking in Switzerland and France.

R778 Dubois, Ph & fils**Dubois 1785**

aus der geschichte der ältesten schweizer uhrenfabrik
nd, 56 pp, ill.

History (German).

Company catalogue?

R779 Ducommun, P**La stabilisation des huiles d’horlogerie**

par la substance dite alpha-naphthylamine

Neuchatel: Laboratoire Suisse de Recherches Horlogeres, 1947, 39 pp.

Technical (French).

The stabilisation of horological oils by alpha-naphthylamine.

Listed in Pertuch.

R780 Dudley Watch Company**The Dudley watch**

USA: Dudley Watch Company, ca 1920, 8 x 5 inch, 14 pp, ill.

Advertising, description (English).

Advertising booklet with colour photographs of watches and an illustration of the factory.

R781 Dueber-Hampden Watch Co**The care of a watch**

USA: NAWCC Buckeye Chapter (USA: Dueber-Hampden Watch Co.), 1979 (nd), 18.0 x 13.5 cm, 26 pp, 25 ill.

Description (English).

“For the information of persons who value accuracy and punctuality”.

Foreword (7 pages) followed by a 16-page illustrated price list of watches and a registration form.

[reprint, fair] The foreword is simply advertising. The only care instructions are to get the watch serviced regularly, wind it regularly and clean the pocket in which it is carried regularly.

The price list is interesting, but of not much use as it is undated.

R782 Dumontier, N**L’art de travailler les pierres précieuses****Die kunst die edelstein für die zwecke der uhrmacherei zu bearbeiten**

a l’usage de l’horlogerie et de l’optique enseigne en 10 leçons

Weimar: Bernh. Fr. Voigt; Paris: Dentu, 1856 (1843), 8vo, 80 pp, 38 ill, 4 plates (66 pp) (54 pp, 1 fld plate).

Technical (French, German).

Tardy lists German editions by Dumontier and Jurgensen in 1845 and 1856 (80 pp, 38 ill, 4 plates) which are presumably revised translations of “L’art de travailler les pierres precieuses”.

Saunier “The watchmakers handbook” includes 9 pages on jewel working based on the 1843 printing of this book.

The art of making precious jewels for the use of horology and optics in ten lessons. The methods and tools for making jewels.

R783 Dupin**Discours prononce aux funérailles de M. Breguet**

Paris:, 1823, 4to, 7 pp.

Miscellany (French).

Listed in Tardy.

Discourse given at the funeral of Breguet.

R784 Duplat, EA**A short history of the various methods of measuring time**

London: Royal Aquarium & Summer & Winter Garden Society, 1895, 8vo, 142 pp, 18 ill.

Exhibition, history (English).

“Together with the guide and catalogue of the exhibition of old and modern clocks and watches 14th

May to 15th June.”

The exhibition was at the Royal Aquarium, Westminster.

R785 Duraffourd

Guide pour faire un cylindre sans maitre

suivi d'un essai sur les causes des arrêts et variations de cet échappement à l'usage des jeunes horlogers de province

Paris:, 1846 (nd), 32 pp.

Technical (French).

Guide for making a cylinder without a master, followed by the causes of stoppages and variations of the escapement for the use of young country horologists.

R786 Duro, CF

Los ojos en el cielo libro cuarto de las disquisiciones nauticas

Madrid: Ministerio de Dafensa, 1879, 8vo, 441 pp, no ill.

History (Spanish).

Volume IV of “Disquisiciones nauticas”

Gardner “Catalogue of the Torrens collection” says it includes navigational instruments, longitude, chronometers and a history of watchmaking in Spain.

R787 Durr, HR

Humoristische uhrenspruche und cartoons

aphorismen, zitate, weisheiten und sprichwörter uber die uhr und die zeitmessung

: Druck, 2001, 21 x 15 cm, 33 pp, ill.

Miscellany (German).

Two separate volumes.

Humorous anecdotes, sayings, quotations and cartoons about timepieces and time.

R788 Duvanel, L; Jeannot, M

Vulcain 150 years

a passion for fine craftsmanship

Sainte-Croix: Presses du Belvedere, 2010 (2008), 31 x 23.5 cm, 149 pp, ill (142 pp, ill).

History (English, French).

Two editions both with bilingual English/French text.

“In 1858, the Ditisheim brothers made a grand entrance onto the watchmaking scene: their manufacture was immediately noted for the quality of its products: complication watches, chronometers and chronographs. Located at the heart of the Neuchâtel mountains, the cradle of Swiss precision, it was to receive international acclaim at the Chicago and Paris World Fairs. Following the eminently successful career of the watchmakers, the work chronologically retraces the milestones in the history of the Vulcain brand, world-famous for having invented the Cricket watch, the first alarm watch. Each step is recounted in detail right through to the brand’s renewal in the 21st century, including with a presentation of new calibres.”

R789 Dye, O

The valve maintained tuning fork as a precision time standard

London:, 1923, 8vo, 21 pp, 15 ill.

Technical (English).

Listed in Tardy.

Although strictly irrelevant to this bibliography, this pamphlet may give some interesting background to the Accutron watch.

R790 Earnshaw, Thomas

Explanations of timekeepers

constructed by Mr Thomas Earnshaw

London: Nicholson (Nicholson’s Journal, vol XIII, pp 416-430), 1806, 8vo, 15 pp, 1 ill.

Description, technical (English).

Reprinted by the BHI in Harrison, Arnold and Earnshaw “Principles and explanations of timekeepers”, which see.

Earnshaw’s description of his detent escapement.

See also Arnold and Earnshaw “Explanations of timekeepers constructed by Mr Thomas Earnshaw and the late Mr John Arnold”.

R791 Earnshaw, Thomas

Longitude

an appeal to the public stating Mr Thomas Earnshaw’s claim to the original invention of improvements in his timekeepers

England: British Horological Institute (London: Thomas Earnshaw), 1986 (1808), 23.5 x 15.0 cm (8vo), (22) 280 (35) pp, frontis, 6 ill ((6) 280 (35) pp).

Biography, history (English).

The 1986 reprint is a limited edition of 350 copies with a preface by R. J. Griffiths.

Some parts are quoted in Chamberlain “Its about time”.

Although not divided into sections and describing events in chronological order, the book has a number of quite clear focal points. It begins with evidence that Earnshaw invented the spring detent escapement and the turned, fused compensation balance (1780 to 1789, pp 1-22). This is followed by a rebuttal of

Dalrymple's assertion that Maskelyne unfairly favoured him (1789 to 1791, pp 23-35), evidence that his watches were better than Arnold's (1791 to 1792, pp 36-49), the first applications for assistance, watch trials and the award of £500 (1792 to 1799, pp 49-99), attempts to win the full premium culminating in the award of £3,000 (1800 to 1803, pp 99-114), the Board's change of mind and award conditions, resulting in Arnold's award and the delay of payment until 1805 (1803 to 1805, pp 115-201), and finally Earnshaw's attempt to seek redress from parliament resulting in this book (1806 to 1807, pp 201-224). The book concludes with certificates of the going of watches (56 pages), accounts of the daily rates of the three trials at Greenwich, comparison with Mudge's green and blue chronometers and conclusion.

[1st edition reprint, excellent] *This is a fascinating and compelling account of Earnshaw's attempts to gain recognition for his claim of inventing the spring detent escapement. It is a well written, well organised presentation of evidence supporting his opinion that he had been cheated, primarily by Arnold, Banks and Dalrymple. Mercer ("John Arnold & Son") says "although interesting, it is most tedious at times", but I did not find it so. The comprehensive presentation of facts necessarily lacks the excitement of a good spy novel and Earnshaw's writing is no more tedious than Mercer's; both require the reader to work through much fine detail and both deserve to be read with care.*

[Remark] *It has been suggested that the dispute between Arnold and Earnshaw is of no historical importance and is merely an interesting squabble. But I feel this is to ignore the three genuine questions which deserve to be answered. Did Earnshaw invent the spring detent escapement first? If so, did Arnold in some sense copy it? And is the invention, whoever made it, significant?*

Unfortunately the historical events are clouded by emotions, especially those of writers responding to Earnshaw's personality and his "rantings". Indeed, it is not possible to examine the questions unless we can separate them from other aspects of the controversy. But this is actually quite easy to do.

First, Arnold did not patent a spring detent escapement in 1782 even though many writers say he did. Arnold did mention the use of a spring, but his patent in no way describes a spring detent escapement and cannot possibly be interpreted as anything more than a vague hint. It is simply impossible to say, as Mercer in "John Arnold & son" does, that "the spring detent, which he patented in 1872, was different and theoretically more correct ...". What Arnold designed after he had submitted the patent may have been so, but the patent is not. Landes in "Revolution in time" politely says "there is no evidence that Arnold had in fact perfected his own version of the spring detent at the time of his (patent) submission". Baillie in "Clocks and watches, an historical bibliography" says "I fail to understand the escapement", which is hardly surprising as no escapement is described. Griffiths in his introduction to the reprint of "Longitude, an appeal" is more blunt by suggesting "one is inclined to believe that Arnold had not the faintest idea of what he was trying to do". Betts in Andrewes "The quest for longitude" wrote "to me at least, it remains a mystery".

At least two books do recognise the facts of the patent. Both Atkins and Overall in "Some account of the Worshipful Company of Clockmakers" and Nelthropp in "A treatise on watch-work, past and present" correctly state that "in 1782 he patented epicycloid scape-wheel teeth", the only intelligible thing mentioned in the escapement part of the patent. (Mercer incorrectly says Arnold invented epicycloid teeth). And to this we may add that Arnold expressed the idea of using a spring, but without the slightest indication of how to do so.

Second, Arnold did use a spring detent escapement with epicycloidal scape-wheel teeth after he had submitted his patent. This escapement is significantly different from Earnshaw's and I don't doubt Arnold designed it himself. However, there is no evidence that he designed it or used it before the time of his patent application. Indeed, Betts "can find no evidence at all to show that at this stage (1779-80) Arnold was in any way unhappy with his (pivoted detent) escapement" and hence he would not have considered a spring detent without some external pressure to do so.

Third, there is no doubt that Earnshaw designed the escapement which Wright patented and this patent, unlike Arnold's, is explicit and complete. The statements by Earnshaw regarding his invention of the spring detent have never been disputed (except in some of the evidence that the Board of Longitude rejected). For nearly 25 years, from 1780 to 1805, Earnshaw repeatedly claimed the invention and repeatedly produced evidence and witnesses to support that claim. On every occasion that the claim was considered the Board of Longitude agreed with him. Most importantly, Arnold never disputed his claim. Gould in "The marine chronometer" put it most succinctly when he wrote "The book ('Longitude, an appeal'), as far as can be tested by outside evidence, is neither overdrawn nor distorted".

Put baldly like this, it is hard to understand how any dispute over priority could arise. The only sensible conclusion to be drawn from the evidence is that Earnshaw did invent the spring detent escapement first. Arnold independently designed a spring detent escapement, but he did this after learning of Earnshaw's creation and his escapement is both later and not as good.

I also posed the question: is the invention, whoever made it, significant? This question was prompted by Clutton and Daniels "Watches". In the first edition it is stated that "in about 1780 Arnold devised a new (spring detent) escapement". However, by the third edition this had been modified to "Arnold went on to arrive at an escapement which, subject to refinement, and when mounted on a spring instead of a pivot, has been used in all marine chronometers to the present day ... the change from pivot to spring mounting is not so much an invention as a modification", thus suggesting that Earnshaw's contribution is not particularly important. If we agree, then the first two questions and their answers become inconsequential. I have no doubt that some modifications represent mere adaptation and, even if useful, their creators do not deserve great acclaim. However, we must be careful not to throw the baby out with the bath water! Is

Breguet's change from a plain balance spring to an overcoil a minor modification (especially as it is a mere adaptation of Arnold's ideas)? Is Mudge's lever escapement just an inconsequential alteration? Should we trivialise the work of Roskopf and Buck that led to the dollar watch and egalitarian timekeeping? Are Harrison's clocks just the result of painstaking, experimentation without much understanding? An innovation can be measured in terms of its impact on humanity, its conceptual clarity, its originality, its artistry and from many other perspectives. What is important is that we risk presenting conclusions based on unsatisfactory assumptions unless we spell out the criteria used to reach those answers.

I think two red herrings have confused the issue. But before discussing them, let me give a succinct and stunning example of what I mean. Mercer in "John Arnold and son" deliberately suggests that the idea of the spring detent escapement "had been Wright's in the first place, and Earnshaw had been the one to put Wright's ideas into practice". This is a superb example of what Morpurgo hates! Mercer's hypothesis is patently nonsense and he immediately demeans it, by writing "it matters little, so let us give Earnshaw the benefit of the doubt", because he was aware that it is silly. However, he continued down the slippery slope he had constructed for himself by adding Wright was "a highly religious man taking out a patent for someone else's invention in his own name. It doesn't make sense". He has ignored all evidence and reasoning to assert that because Wright was religious he would not do something apparently unethical! The consequence of these few words is to cast doubt on Earnshaw's honesty by offering a ridiculous (but apparently plausible) alternative; a red herring. I am sorry, but I cannot forgive Mercer for this. Instead of altering my opinion of Earnshaw it leads me to doubt the integrity of the rest of Mercer's writing.

The first red herring is the presumption that great works require great thought and labour. For example, Clutton and Daniels say "it is not clear whether Arnold changed from pivoted to spring detents to reduce friction or on grounds of cheapness" and "Earnshaw's simple adaptation is perfectly satisfactory"; the implication being that Arnold changed for intellectual or business reasons whereas what Earnshaw did was rather trite. I have not seen any evidence to suggest Arnold changed on the grounds of cheapness, and his puffing advertisement for watches that don't need oil makes sensible reasoning look unlikely. I cannot help but feel that Clutton and Daniels have been forced into some recognition of Earnshaw and begrudge it. To support this view I can also quote the first edition: "While Earnshaw's contribution was very substantial, the authors feel that his importance has been over-rated at the expense of Arnold". Also, in their third edition: "(Earnshaw) was not able to go into production on his own account until about 1790, by when Arnold alone had borne twenty years of continuous development ..."; I find this strange because it implies Arnold was a martyr, when he was in fact a prosperous business man, and it ignores the fact that Earnshaw desperately wanted to share the burden with him from about 1780!

There is a tendency to hold in higher regard the creator of many things over the designer of one; the arduous innovation from a lifetime's work engenders more respect than a momentary stroke of genius. It certainly enables the writing of more books about the person. But it is a very dubious criterion, especially when we note Betts' remark that Arnold's early machines were virtually identical to H4 and his compensation balance and helical spring inspired by Harrison. Although politically incorrect, I tend to agree with Gros (quoted by Chamberlain) that "Harrison, for finding longitude by a mechanism which was abandoned almost immediately, received £20,000. (Pierre Le Roy) received a medal!" Perhaps more acceptable is to ask if Mudge would be remembered with such awe if he hadn't, as a rather brief aside, invented the lever escapement and all we had were his years of labour developing unsatisfactory marine chronometers? Clearly something other than sheer effort is needed.

The second red herring is the implication that someone who behaved as badly as Earnshaw could not be great. It is not uncommon for authors to engender a feeling of compassionate warmth in their readers. Many books give anecdotes showing the subject to be kind, and they infuse us with the belief that gentleness and greatness go hand in hand.

Before reading Earnshaw's appeal, other books had given me the impression that he had some sort of personality disorder, and this feeling was largely derived from quotes of his own "puffing". Chamberlain goes so far as to say he had a persecution complex and Landes says "Earnshaw's sneers rang rudely in a culture given to understatement". Most authors mention his spite, invective and vitriolic remarks.

But when I read the appeal I felt that his intemperate remarks were justified and, if anything, somewhat restrained! Put yourself in his position. It is 1780, you are 31 years old and have been working for about ten years. Six years ago, married with 3 young sons, you fled to Ireland to evade creditors, but voluntarily return and surrendered yourself to the Fleet Prison in order that your debts might be resolved (see Betts in Andrewes "The quest for longitude"; it is interesting that Baillie "Watchmakers and clockmakers of the world" mentions this, but for a 'separate' Thomas Earnshaw also born in Ashton-under-Lyne!). Since then you have sorted out your life and make a reasonable living working for others. You have a fantastic idea, which you can't help bragging about, but which will cost more than a year's income to patent, which you cannot afford. But, given time, it will give you the life you want for yourself, your wife and your children. Then, suddenly, a rich and well-connected business man patents your idea. For the next 20 years, without any financial help, you unsuccessfully fight for what you consider your rights, which appear to have been stolen from you. And finally, after awarding you £3,000 in 1803 the Board of Longitude deliberately obstructs and prevaricates for two years before you can get your money; perhaps you remember Harrison saying "I hope I am the first and, for my country's sake, shall be the last that suffers by pinning my faith on an English Act of Parliament".

Would you be calm and gently argue your case, or might you feel some anger and speak somewhat impetuously? How would you feel when Arnold never bothered to deny your story and to your criticisms

“returned a decorous silence; he could afford to ...” (Landes)? Would you be happy if the person who caused this was also given £3,000?

What we know of Earnshaw bears out Britten’s statement that he had “the reputation of being honest, rugged and straightforward”. More importantly, it goes a long way towards explaining his otherwise irrelevant outburst on page 20 of “Longitude, an appeal”. He says he lent Barraud two guineas and then “Barraud has received both honour and profit from the timekeepers I made for him ... he has learned more from me than from any other man ... I was the best friend he had in getting his affairs settled”. And yet Barraud “last paid me 8s 8d in the pound ... I asked him when there would be another dividend, at which he felt himself affronted”. The stark contrast between Earnshaw placing himself in prison at the mercy of his creditors (and presumably repaying them in the end) with Barraud’s less than honest borrowing when he faced bankruptcy should not be underestimated.

But at the same time as we are told of Earnshaw’s weaknesses, we are usually offered the carefully posed portrait of the Arnolds; the benevolent provider acknowledging his helpmate while his son lovingly looks on. Actually this genteel scene is at odds with what we know of Arnold’s personality. He was arrogant (Clutton and Daniels, first edition), self assured and persuasive (Chamberlain), his character was an odd mixture of pomposity and braggadocio more befitting a charlatan (Bruton) and his conversation was animated, blustering and much adorned with oaths (Betts). Further, Arnold was happy to have a workman thrown into prison under rather dubious circumstances, and we also know from his “puffing” advertisements that he was willing to publish fanciful nonsense to boost his reputation. I presume when Mercer says John Arnold was a “gentle man” that he actually meant he was a “gentleman”, and this is an error like Earnshaw’s spelling of Brookbank and Roper Arnold (probably a typesetter misreading his handwriting).

I believe a diversity of opinion about this controversy exists because there has been far too much focus on points such as those I have raised. Of all the things that make people stand out from their peers, good manners, wealth and personality rarely matter in the long term. Two attributes seem most important; the long-lasting consequences and the elegance of their discoveries. We remember Hooke for *ut tensio sic vis*, not his rantings and affairs. We should remember Mudge for the lever escapement rather than his futile work on marine chronometers. We should remember Harrison for showing it could be done (as Clutton and Daniels say “although Harrison’s work led to nothing, he at least showed that accurate marine timekeeping was a possibility”). We should remember Arnold for his pivotal role in converting Harrison’s ideas into a practical mechanism. But we must also remember Earnshaw for the escapement which, to quote Betts, “virtually at one final stroke, created the standard marine chronometer that was to serve the nations of the world so well for the following century and a half”.

Finally, perhaps the most interesting question is: why did Arnold register a meaningless patent? After all, without it there would have been no controversy at all. His patent of 1775 (a balance and helical spring) is quite precise, as is the other half of the 1782 patent (another balance). Comparing the quality of the drawings in the two, it is clear that the second patent was produced in a rush; the first is a careful piece of draughtsmanship, whereas the second is a crude sketch by hand and compass. It is difficult to avoid the conclusion that Earnshaw’s summary of events is correct. In the light of Arnold’s personality and status, it seems reasonable to argue that the haste was because he wanted to protect potential developments as opposed to actual work; Arnold, after hearing of Earnshaw’s invention, rushed home in a panic to patent something and only then designed a spring detent of his own. How sad.

As Chamberlain said “Earnshaw ... possessed to the greatest degree that indefinable something which materializes in instantaneous ideas and immediate results requiring little alteration ... to him more than any other one man is due the credit for the supremacy in its manufacture which England has enjoyed for a long time.”

[Remark] It is interesting to compare this book with Horrens “Memoirs of a trait in the character of George III of these united kingdoms”. Both writers mount sustained and justified attacks against people who they see as having deliberately prevented justice being done. And Horrens is probably even more vituperous than Earnshaw.

R792 Ebauches S.A.

Technical communications by the watchmakers of Switzerland

Technische anleitungen der sweitzer uhrenfabrikanten

for the repair of chronographs, self-winding watches, calendar watches

Switzerland: Ebauches S.A., 1971 (1953), 30.0 x 21.5 cm, at least 26 leaflets 2-16 pp each, ill.

Repair, tools (English, German).

The notes I have seen are numbered 1-15, 15a, 16, 16a, 17-24. Leaflets 1-11 were distributed in a folder.

Technical notes for servicing specific Ebauches SA automatic, chronograph, alarm and electro-mechanical movements. They describe 8 chronographs, 10 automatics, 2 alarms and 6 electro-mechanical ebauches and their variants.

[2nd and 3rd editions, very good] These contain a wealth of information with superb illustrations of specific calibres. As time passes they will become increasingly useful for the maintenance of timepieces which will soon be antiques.

- R793 Ebauches S.A.**
The main types of chronograph explained by their dials
Les principaux types de chronographes expliqués par leurs cadrans
Die hauptsächlichsten chronograph-arten nach ihren zifferblättern
 Bienne: Editions F.H.; Neuchatel: Ebauches S.A., 1958 (1951), 21.5 x 15.0 cm, 36 pp, 20 plates, spiral bound.
 Description (English, German).
 Separate language editions with several printings.
 Produced as a sales aid, the booklet begins with a brief comment on mechanisms and then shows different types of chronograph dial, each with a labelled, full page colour illustration.
[1st edition, fair] An interesting booklet, but not significant.
Originally distributed free to watchmakers, and the current second-hand prices seem rather inflated.
- R794 Ebauches S.A.**
The self-winding Swiss watch
 the timekeeper of the future
 Switzerland: Ebauches SA, 1954, 22.0 x 16.0 cm, 12 double-sided transparencies, 4 pp.
 Description (English, French, German, Italian, Spanish).
[1st edition?, very good] Presumably produced as a selling aid, this booklet has 11 double-sided, overlaid transparencies that show the construction of the automatic mechanism of a standard Swiss watch and the ebauche on which it is placed. Each plate can be viewed from either side to show the top or underneath view of the particular part and its relationship to the rest of the mechanism. The plates are labelled with the corresponding Swiss part numbers. A 12th single-sided transparency briefly explains the operation of the mechanism in five languages.
An excellent example of a multi-layered picture showing the construction of an object. Like the style of publication, this mechanism didn't have as much of a future as the title desired.
- R795 Ebauches SA**
Catalogue Ebauches SA
 Switzerland: Ebauches SA, 1976 (1965).
 Repair (English).
 Original volume and at least 7 supplements.
 Parts list for Ebauches SA watches (A.S., Fontainemelon, Valjoux, etc.) with movement diagrams.
- R796 Ebauches SA**
Dictionnaire horloger, terminologie numérotation
 Switzerland: Ebauches SA, 1976 (1948), 30 x 21 cm, 493 pp, ill.
 Dictionary (English, French, German, Italian, Japanese, Portuguese, Spanish, Russian).
 A later edition of "Nouveau dictionnaire technologique des parties de la montre". In a red vinyl cover.
 Eight language dictionary.
- R797 Ebauches SA**
New technological dictionary of watch parts
Nouveau dictionnaire technologique des parties de la montre
Neues technologisches wörterbuch der uhrenbestandteile
Dictionnaire technologique des parties de la montre
 Neuchatel: Ebauches S.A., 1953 (1948), 22.0 x 16.0 cm, 51 pp, ill, (168 pp, ill, 14 plates).
 Description, repair (English, French, German, Italian, Spanish).
 The second edition (1953) is titled "Dictionnaire technologique des parties de la montre".
 A brief introduction followed by illustrations of watch parts with their standard Ebauches SA numbers and names. Parts are listed in separate sections by function: general components, escapements, alarm watches and chronographs.
[1st edition 1948, good] This book is a list, in part number order, giving illustrations and names of watch parts. Its purpose is to define the names and numbers for identifying and purchasing parts. Text in English, French, German and Spanish with the introduction in two of them.
[1969 edition, fair] The 1969 edition "Dictionnaire technologique" (51 pp, ill) is in 5 languages. It omits all introductory material and many obsolete parts including calendar mechanisms, cylinder escapement, alarms and chronographs. Added are automatic winding and new calendar parts. The illustrations are poor compared with the 1948 edition.
- R798 Ebauches SA**
Welcome to Ebauches SA
 Neuchatel: Ebauches SA, 1968, 18.0 x 13.0 cm, 16 pp, ill.
 (English).
 A four page "visit" to Ebauches SA followed by instructions for replacing a balance staff.
[1st edition, mediocre] This is the first comic strip about watches that I have found. And it is strange. The first part appears to be addressed to the lay man, and the second part is clearly addressed to the watch repairer, although it is rather superficial. The style of the comic strip drawings suggest the booklet was produced specifically for Americans. But why? I can only presume Ebauches SA thought many American watch repairers were badly educated and of rather low intelligence, so that they could not grasp anything above the level of a comic. Why else have a superman-like hero (John the watchmaker) explaining what we should already know?

R799 Ebel Watch Co

R799 Ebel Watch Co

Watches, the architects of time

La Chaux-de-Fonds: Societe des Montres Ebel, 1992 (1984), 4to, 5 booklets in slip case. Advertising (English).

"The plan, the idea, origins, turnings points, integration, communication, the future".

High quality advertising.

R800 Eckhardt, GH

United States clock and watch patents 1790-1890

New York: GH Eckhardt, 1960, 8vo, 231 pp, a few ill.

Description, technical (English).

"The record of a century of American horology and enterprise."

R801 Eckl

Materialkunde für uhrmacherei und feinmechanik, technologie

Horn: Verlag Ferdinand Berger, 1952, 24 x 16 cm, 152 pp, 60 ill.

Repair, technical (German).

Properties of materials for horologists and fine mechanics.

R802 Ecole des mécaniciens de l'Armée de l'Air

Notions sur la théorie horlogerie et les montres d'aviation

Rochefort-sur-Mer: Ecole des mécaniciens de l'Armée de l'Air, 1953, 4to, 144 pp, ill.

Theory (French).

R803 Eder, N

Beobachtungsuhren, deck watches, chronometres de board

Munich: Callwey, 1987, 24 x 20 cm, 214 pp, 278 ill.

History (German, English?).

Historical study of observers' watches, deck watches and pocket chronometers.

The title suggests at least the captions are tri-lingual, if not the text.

R804 Edgcumbe, R

The art of the gold chaser in eighteenth century London

Oxford: Oxford University Press, 2000, 11 x 8.75 inch, xxv, 197 pp, 139 b/w ill, 24 col plates.

History, watch making, bibliography (English).

Another source gives the format as 458 pp, 210 ill, 24 plates.

A study of the chasers who decorated London gold boxes and watch cases in the eighteenth century, including a biographical dictionary of the chasers.

Part 1 discusses chasing techniques 1710-1770 and the training of chasers, with a separate chapter on watch cases. Part 2 is an alphabetical listing of about 50 chasers.

[Review by Ted Crom] This very informative book is divided into Part I and Part II, preceded by an extensive 3-1/4 page "Acknowledgements," a two-page list of color plates, an eight-page list of figures, and one page listing the five diagrams. Two pages entitled "Describing a Watch" are very helpful in understanding terminology in the following Parts I and II. A 1-1/4 page list of abbreviations is provided. At the end of the text, before the illustrations, is a 9-1/2 page bibliography, one page listing previous relevant exhibitions, 13 pages listing watches noted in the book or in the author's 1980 thesis, and a 21-page index. The acknowledgements include a treasure trove of the names of horological authorities, past and present, horological collections in museums, and other sources of information. It is quite apparent that the book represents many years of study, travel, and personal contact with the horological world and its artifacts.

Pages 1-3 provide the introduction. To quote the author, "Part I of the book offers a general survey of the world of the gold chaser. The first five chapters discuss chasing techniques 1710-1770, the origin of chasers, their training, their patrons, and their artistic standing. Chapter 6 provides an introduction to the embossed watchcase. Part II offers alphabetical entries for about fifty individuals known or putative gold or watch chasers with their apprentices or masters. To keep the book within bounds, individuals described within contemporary records as chasers, but not as yet known to have had a connection with gold or watchcase chasing, have not been included. The incompleteness of much of the information provided will be only too apparent."

Although Mr. Edgcumbe states incompleteness is apparent, he unnecessarily depreciates his work. The book far exceeds what little has been published in a single volume on the subject. The definitions, history, and technique of embossing and chasing are given and well described. Chapter 6 details symmetrical and asymmetrical cartouches and sets the late 1730s as the time of change in style from the former to the latter. During the same period Mr. Edgcumbe notes changes of chasing style in high rococo. This helps identify and date chased items of the eighteenth century that have not been hallmarked or signed.

The illustrations consist of numerous photographs of great clarity and detail, many with triple or greater enlargements of the actual item. A substantial quantity of gold boxes, cane heads, medals, designs, engravings, and particularly watchcases provide the reader with an in-depth appreciation of the broad field of chasing in the eighteenth century.

It seems the duty of every reviewer to find something to criticize, even for this most magnificent of books. Duty is duty. Finding one's way back and forth through the book seeking information about a particular item is difficult. The several different numbering systems and lack of page numbers was confusing. It takes a while to learn the system.

There are advantages to having the illustrations and related text contiguous or intermingled. It makes for easy uninterrupted assimilation of the information. The principle disadvantage is that it adds to the cost of the book. A slight advantage to having all the pictures grouped in a single place is that the reader can quickly review them.

Mr. Richard Edgcumbe is congratulated on his contribution to the arts with this book. Anyone interested in gold work of any century will find "The Art of the Gold Chaser in Eighteenth-Century London" quite satisfying and informative. For those deeply involved with eighteenth century gold chasing, or having more than one chased item, the book would benefit their library.

Every major public reference library should have a copy for their readers.

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[Remark] *The number of pages in a book is hard to determine unless I have actually held a copy. Some people believe the total number should be given, including the preparatory pages and the oft met cluster of advertisements at the end. But this can be very misleading (see Kemlo) and some apparently long books turn out to be short pamphlets!*

For example, having not seen Edgcumbe I don't know if the wildly differing paginations indicate someone has made a mistake. But as $179+210+24 = 413$, which is getting close to 458 pages, perhaps there are 210 b/w plates and 179 pages of text. Unfortunately I am inconsistent like everyone else.

R805 Edidin, M

English watches for the american market

USA: National Association of Watch and Clock Collectors, 1992, 27.5 x 21.5 cm, 65 pp, 56 ill.

History (English).

Offprint from NAWCC Bulletin, Oct 1992, 515-544 and Dec 1992, 659-693

A history of the Tobias families and the import/export trade with America.

[1st edition, very good] *Part 1 gives the history and English operation of Morris Tobias and M.I. Tobias. Part 2 examines the M.I. Tobias exports to America and forgeries of Tobias watches, both in England and Switzerland. The articles also provide an interesting general history of the period (1800 to 1850).*

A very useful, well written "book" that should be easier to get and read, rather than being a hard-to-find offprint.

R806 Edwards, BJ

Clock and watch advertising

a grading guide

Chicago: Review Advertising, 1976, 8.7 x 5.7 inch, 86 pp, ill.

History (English).

Limited edition of 1000 copies.

American ephemera and advertising with about 180 items illustrated, including watch factory postcards.

[1st edition, review by Henry B. Fried] *All big clocks are advertising media. The big clock in the Houses of Parliament often referred to as "Big Ben" (that's the hour bell) advertises itself as the London landmark. The automata clock in St. Mark's square is as much a trademark of Venice as the canals, and who isn't familiar with the automata bears in Berne's thoroughfare? Bernard J. Edwards, an advertising man, turned his horological hobby toward the horological media and the novel uses to which these were put.*

Advertising clocks have become the focus for some clock collectors. Dr. Leonard and Joseph Schiff's recent book on Edward P. Baird tries to focus on Baird's inventions in locks, clocks and telephone coin devices, but despite this inventiveness, Baird is best remembered for his advertising clocks and devices.

This book is more than a catalog-history of advertising timepieces or horological advertising media. Realizing that to fall into the soon-out-of-date format of a pricing guide, Mr. Edwards instead has placed a coding with each item which grades it by comparative importance in its own category. Thus items are code-graded as unique or museum quality, rare, scarce, uncommon and common. When the item is titled "Pristine", it denotes, "Found new in original container" with diminishing successive descriptions, "Mint", "Fine", "Very Good", and "Good".

Many advertising clocks shown, aside from telling time, also mechanically rotated advertising discs or drums, revealing new subject matter at chronological intervals. Inanimate advertising clocks are also shown as are the various period painting of clock shops, watch signs, street clocks, plaques, posters and photos of model-T Ford trucks used by watch companies containing advertising panels.

Post cards of watch and clock factories are pictured here as are clocks with variant advertising motifs for medicines, razor blades, baking powders and tobacco together with numerous other subjects.

Novelty clocks of all forms to gather attention for a product are included. Among these are the G. E. refrigerator, bicycles, cattle, railroads and other form clocks.

While this 84-page book is small without too much text, any book hoping to become a reference should contain a detailed index. Incidentally, the subject of watch papers (an early form of horological advertising) is without inclusion here, possibly deserving a volume in itself. However, Mr. Edwards has produced a useful reference which adds to the growing number of informational sources available to the future researcher and hobbyist.

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R807 *Edwards, Frank*R807 **Edwards, Frank****Wrist watches, a connoisseur's guide**

London: Quintet Books, 1997, 4to, 160 pp, ill.

History, illustration (English).

A 26 page general history and description followed by short histories of makers in alphabetical order, with pictures of the cases and dials of expensive watches.

[1st edition, mediocre] Compared with Kahlert et al "Wristwatches: history of a century's development" and Balfour "The classic watch" I found this book superficial. But perhaps it would be of some interest to the novice.R808 **Edwards, J****Complete checklist of american clock and watch makers**

1640 - 1950

USA: New England Publishing Co, 1977, 23.5 x 15.0 cm, 52 pp, no ill.

Makers (English).

A listing of 4000 makers with dates and places they worked.

[1st edition, fair] A simple list with a one-line entry for each maker giving name, city and one date.R809 **Efimova, EM; Torneus, MI****Zapadnoevropeiskie chazy XVI-XIX vekov iz sobraniia Ermitazha****Antique timepieces 16th to 19th century in the Hermitage Museum**

Leningrad:, 1971, 8.5 x 6 inch, 104 pp, 174 ill.

Description (Russian, English?).

Descriptions and illustrations of 174 clocks and watches in the Hermitage Museum.

R810 **Eglin, EW****Clock and watch repairing for amateurs**

London: W. Foulsham, ca 1940, 16.5 x 10.5 cm, 64 pp, 19 ill, 4 plates.

Repair (English).

No. 10 in the Foulsham's "Do it yourself" series. Printed in England and undated. The author has been incorrectly given as EW Elgin.

Benton "Clock and watch repairing for amateurs" (which see) is a different, I assume first, edition of the same book.

"The amateur's guide to professional workmanship".

Thirteen chapters: Preliminary remarks, How a clock works, How the hands move, The pendulum and its swing, The escapement, When there is neither pendulum nor weight, The striking mechanism, When a clock refuses to go, Setting a pendulum clock in beat, Alarm clocks, Electric clocks, Repairing and cleaning a watch, and The repairer's kit.

[2nd edition, poor] This is a bad, bad book.*The preliminary remarks contain sound advice on how the novice should approach learning about clocks and watches.**The first half of the book (31 pages) describes how clocks work in general terms. However, this contains a few incorrect statements and an incomprehensible explanation of the pin lever escapement. There are 2 repairs mentioned, reshaping the pallets of anchor escapements and replacing gut a gut line for a fusee. The first, of course, cannot be done without much more understanding of faults and their correction, and the second requires detailed experience of disassembly which the reader does not have.**This is followed by some very simplistic remarks on basic clock repair which are completely inadequate. The additional chapters on alarm and electric clocks include a suggestion for adjusting a balance-spring, which is out of place and silly.**There are 11 pages on watches. These begin with an explanation of three types of keyless mechanisms; the first is right, the drawing for the second is wrong and the third is utter nonsense. This is followed by instructions on adjusting a watch, by altering the length of the balance spring by repinning it, and replacing a mainspring. Both are beyond the ability of the reader, thank God! Then there are instructions for cleaning and replacing crystals. Finally, we are told the hour hand (!) fits on a "rotating barrel" (canon pinion!) which might be too free and which can be tightened by inserting a hair.**There are other places where the text is wrong. So, except for the first couple of pages the book is hopelessly inadequate and full of errors. To say on the dust jacket "the amateur's guide to professional workmanship" is ludicrous.*R811 **Eguchi, S****Japanese made pocket watches**

history between 1890-1947, Meiji, taisho, showa era

Tokyo: Kaisei Shuppan, 1981, 112 pp, ill.

History, makers (Japanese, English?, English).

[Review by Donald Hoke] Professor Eguchi's book is an illustrated chronology of Japanese pocket watches from 1890 to 1947. It begins with the Osaka Watch Company and ends with the post war products of Siekoshu. Almost all the watches are illustrated photographically, usually showing both a dial view (in the case) and a movement view (also in the case). In several instances, there are movement illustrations from trade catalogs and other similar published sources. Several of the watches are not illustrated and their lack of detailed descriptions suggests that they are difficult to find.*Each watch is described in a "Feature Table" below its illustrations. Here, ten aspects of each watch are*

listed; "Maker," "Launching Year of Production," "Diameter of Pillar Plate," "Number of Jewels," "Material of Case," "Case Type," "Escapement," "Balance Wheel," "Hairspring," and "Dial." There is an 11th section for additional data. The inclusion of some additional data on each watch would have made the book even more descriptive and useful. For example, the movement material (gilt, nickel, nickel plated), the winding and setting mechanism, the length of time particular models remained in production, and the full inscriptions on the movement and case.

The descriptive data in the "Feature Table" is written in both Japanese and English, however virtually all of the remaining text is in Japanese and members who have not yet had the opportunity to master this language must necessarily find a translator. After a short time examining the book, some Japanese characters for often repeated words do become familiar, such as "jewel," but one should not expect to learn Japanese by such a method. The book is quite useful, however, since the most important data concerning each watch is available in English and accompanies the illustration. Thus, in using the book as an identification tool, the reader need not know Japanese to identify a particular watch as being of Japanese manufacture or of a particular date.

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R812 Ehlers, R; Wiegmann, V

Vintage Panerai, watches with history

Germany: Druckhaus Becker, 2007, 228 pp, ill.

Illustration (English, German, Italian).

Parallel English, German and Italian text.

Described as "a high quality publication packed with colour illustrations providing an overview of a selection of historical Panerai watches such as the California Dial, Radiomir and Luminor, their use of the Rolex Crown and available historical information including diatoms of their use by combat swimmers."

See also Zei "The Panerai in Florence".

R813 Ehrhardt, R

American pocket watch encyclopedia & price guide

volume 1

USA: Heart of America Press, nd (1982), 4to, 216 pp, 998 ill.

Price guide (English).

Black and white photocopier pages.

[Review by Henry B. Fried] This first volume of a planned four-volume encyclopedic enterprise concentrates on an exhaustive study and exposition of the Boston, Nashua, Aurora, Hampden, New York, Columbus, South Bend, Seth Thomas, and the American Waltham watch companies. The latter (Waltham companies) understandably takes up a major portion of this book. One may also remark that the Boston and Nashua products were closely tied to the later American Waltham enterprises.

Roy is one of the first to studiously compile such information and publish it, together with current price guides, for the collector. He has assembled and collected a vast representative collection of watches, movements, and early catalogs. Along the way, over 300 acknowledged individuals who have done specialized research have volunteered their findings so that through him, these may benefit the collector of American pocket watches.

This is a fine effort, reflecting much dedication and intense effort. The hundreds of photographs and line cuts, as well as engravings, make this the most definitive and comprehensive publication to date on the products of the companies mentioned earlier.

Opening pages instruct the reader on how to use the book and its many faceted descriptive details such as adjustments, jewel settings, regulator types, movement finishes, dial descriptions, years produced, jewel counts, styles, such as hunting, open faced, convertible, and movement finish. Factory model numbers, type of hand-setting mechanisms, the numbers produced, factory grade or number, where each is illustrated in this book, and the retail value range of each is likewise listed.

The introductory pages cover: how values are determined, how to obtain top value for a watch, the best way to buy a watch, and private label or (jewelers') contract watches. Further, rare or low production grades, railroad associated names, watch companies and mail order, town or historically named watches and models, as well as how to judge values of each type, make for useful and interesting reading. Other instructional pages list methods of determining sizes with watch size conversion tables.

Two full pages contain the famous line drawings of W. A. Gabriel of an 18 size, 23-jewel Veritas 3/4-plate Elgin movement which this reviewer regards as the best drawing ever of any horological mechanism. The drawings of the bridge side unfortunately has not been reproduced as well as it could have been.

Included are a few mini-treatises by major contributors on "Jeweling," "What Makes an American Pocket Watch Collectible or Valuable," "Waltham Productional Figures," and the Aurora watch.

The 998 illustrations and 2200 listings indeed earn the term encyclopedia of the watches mentioned earlier. It would be almost impossible to list each company's one-of-a-kind product knowing the nature of such factories' whims and operations. Yet many rare watches are found here, not previously published.

Reading this volume, one is justifiably impressed with the comprehensiveness of the subject matter. The pictures of the models of these various watch companies, many never before seen, together with the histories and divisions of watches and the ephemeral set of dollar values, make this the most important publication on American pocket watches. If this publication is the true prototype of the other three

volumes to come it should highly please enthusiasts of these watches.

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[Remark] The difference of opinion between my reviews and those by Fried, Marsh and Treiman should be noted. With two exceptions, the reviews date from 1974 to 1986 and so pre-date the publication of Ehrhardt and Meggers "American watches beginning to end" in 1987. This is important because, at that time, there were few good books on American watches. And so, despite their flaws, Ehrhardt's books would have been a major contribution of great value. However, now in 2011 there are many later publications of much better quality, so a current comparison necessarily results in a re-assessment of Ehrhardt's work. What was once essential is now of peripheral value.

R814 Ehrhardt, R

American pocket watch identification & price guide

book 2

USA: Heart of America Press, 1980 (1974), 28.5 x 22.0 cm, 192 pp, ill.

Identification, price guide (English).

Photocopier pages.

This book consists of extracts of sale catalogues from Hampden, A.C. Becken (1896, 1930), Oskamp-Nolting (1917, 1924, 1930), Hamilton (Red Book 1919 and 1958), Brodnax (1924), Gordon & Morrison (1909), Aurora (1891), Illinois (1879, 1980), R & T (1911), Elgin (1888, 1904, 1912), United States of Marion (1873), United States of Waltham (1894, 1898), S.F. Myers (1898), Columbus (1889, 1895), Seth Thomas, Waterbury, South Bend (1911), Rockford (1908), Gardner (1870), C & E Marshall and some others. The material is organised by watch manufacturer.

Appended is a "master" index for 13 of Ehrhardt's pre 1980 books.

[reprint, mediocre] The catalogues reproduced are interesting in parts and many of the watch movement cuts are excellent. It is a pity that a better reproduction method wasn't used.

As an identification tool the book might have some use but it is not coherent. The main value lies in the examples of catalogue style rather than the information about watches which can be better located in other books.

It is primarily a collectors' shelf-filling book and price guide.

[Remark] There are many books which are price guides or include price information, but after a few years values change and these prices cease to have much use. Consequently, we must ask to what extent such a book retains some usefulness or if it has ceased to have any purpose.

For example, Shugart "Complete price guide to watches" is published each year with new prices and fundamentally the same introductory material. If the book is bought for the information it contains, then probably any reasonably recent edition will do. If it is bought for the prices, then a new edition should be purchased every year.

However, the books by Cumhaill, Ehrhardt and others are not revised frequently, if at all, and their price data is out-of-date. In this case, is it possible to ignore the prices and buy these books just for the information they contain? Or do these old prices retain some value?

Out-of-date prices do have a little value. As I have noted elsewhere, collecting for profit requires an understanding of the effects of inflation as well as the costs of storage, insurance and maintenance. For example, a watch movement that cost \$25 when it was made (about 4 weeks wages in the 1800s) would be worth about \$2000 today if we relate its value to wages. Similarly, with a bit of work we could relate Cumhaill's prices adjusted for inflation to current values of similar pieces. But such comparisons are difficult and probably of not much interest to most people.

It is more likely that we have to view old price guides in terms of the usefulness of the information they contain, ignoring the prices. At one extreme is Ehrhardt and Meggers "American watches beginning to end"; I had forgotten that this is a price guide because I have never looked at the prices, and if all the prices were deleted it would remain one of the best and most important guides to American watches ever printed. Similarly Cumhaill's book contains some interesting and useful information making it possible to ignore the prices and learn something from the rest. But it is a borderline case. In contrast, it is much more difficult to justify buying the book I am reviewing. If the prices are ignored we are left with a somewhat disorganised collection of catalogue pages and advertisements which (despite a table of contents) cannot be easily used as an identification tool and it has little value as a guide to advertising because the reproduction is mediocre. Indeed I have only opened it twice, once when I first got it and now to write these remarks.

There are two points that need to be made about catalogues. First, they are wonderful when they are well reproduced, as, for example, Wyke "A catalogue of tools for watch and clock makers" or the books by Crom (although some are unfortunately reduced in size); then the often superb illustrations are a delight. But inadequate photocopying destroys their pictorial value. Second, catalogues are aids for selling; their organisation is strictly governed by the need to appeal to potential customers. Consequently they are simply not concerned with questions of classification and identification and so are poor tools for those tasks; their organisation is inappropriate for those purposes. Which is why I find Ehrhardt's use of them fails badly, and it is why his books are often disorganised, unhelpful collections of illustrations which fail to provide the necessary guidance to his readers.

- R815 Ehrhardt, R**
American Watch Company serial numbers
 1,001 to 1,500,000 1857 to 1882
 USA: Heart of America Press, 1995, 11 x 8.5 inch, 150 pp, ill.
 Identification (English).
 Spiral bound b/w photocopier pages.
 Copy of the hand written factory catalogue of the first 1,500,000 serial numbers with descriptions, and a copy of the Waltham 1885 parts catalogue.
The catalogue of serial numbers is presumably from the "Record". The Record is discussed in David "American and swiss watchmaking in 1876" and Watkins "Watchmaking and the American System of Manufacture".
- R816 Ehrhardt, R**
Bradley character watches
 identification and price guide
 USA: Heart of America Press, 1995, 28 x 21 cm, 146 pp, ill.
 Identification (English).
 Spiral bound black and white photocopier pages.
 Copies of original sales catalogue pages.
- R817 Ehrhardt, R**
Elgin Watch Company
 identification and price guide
 USA: Heart of America Press, nd (1976), 11 x 9 inch, 120 pp, ill (65 pp, ill).
 Dating, identification, price guide (English).
 This appears to have been originally published with the title "Elgin Watch Company - grade and serial numbers".
 Serial numbers, grades and styles: "All named and numbered grades with classification and description as originally made. Also shown for each grade is the total production, the first and last serial number, and the value. In addition, the first and last serial number for all runs for all grades with production of less than 10,000. The complete Elgin serial number list of 50 million is also included; line drawings of the Elgin models; ..."
[1st edition, review by Hugh Marsh] This is an extremely useful reference book for anyone doing research or interested in the collection of Elgin watches. Information is included to determine the grade for all watches made between 1864 and 1953. Charts are also included which provide a substantial amount of detail regarding production runs and descriptions. A number of line drawings are also included on various models of movement with complete specifications and cut-away detail on sizes 16 and 18. Included in the production run information is a column for current value. However, reference is also made to the authors book, "American Pocket-Watch identification Price Guide Book 2". For anyone seriously interested in Elgin watches, this should make an excellent reference book and will have lasting value, except for the price information which can be used at least for a few years to recognize the relative value and scarcity of the different models.
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[Remark] Superseded by Ehrhardt & Meggers "American pocket watches - serial number grade book".
- R818 Ehrhardt, R**
European pocket watches book 2
 USA: Heart of America Press, 1993, 4to, 164 pp, ill.
 Price guide (English).
- R819 Ehrhardt, R**
European pocket watches book 3
 USA: Heart of America Press, 1994, 4to, 196 pp, ill.
 Price guide (English, German).
 "All the watches shown were auctioned during the past 5 years at Henry's Auction in Germany. Represented in this book are many types of following: alarm, automaton, blindman, Breguet, coach calendar, comic character, coin, compass, calendar, cast, captains, continental center seconds, Chinese market, chronographs, clock watch, coach watch, cylinder, ..." (and many more).
I presume the book consists of unedited facsimiles of auction catalogue pages, which is why the book is in German!
- R820 Ehrhardt, R**
Foreign & american pocket watch
 identification & price guide book 3
 USA: Heart of America Press, nd (1976), 28.0 x 21.5 cm, 174 pp, ill.
 Price guide (English).
 Spiral bound photocopier pages.
 This book consists of sale catalogues from Jos. Brown & Co., Illinois (1904, 1907), E.V. Roddin, Illinois (1893), C.A. Kiger (1929), the Jewelers' Circular & Horological Review (1877, 1884), and others. Modern price estimates have been superimposed on the illustrations.

Appended are a contemporary list of W.L. Scolnik (1976) and listings of watch names (American, imported and fake railroad).

[2nd printing 1981, mediocre] The catalogue pages are interesting, especially for the examples of case styles and the original prices. However, the reproduction of them is variable and often only just adequate. The lists of watch signatures are probably the most useful parts, but other books are more convenient. Overall, as an identification tool the book has little value and it is primarily a (now out-of-date) price guide.

R821 Ehrhardt, R**Gruen master book and price guide**

USA: Heart of America Press, 1993, 262 pp, ill.

Dating, identification, price guide (English).

Spiral bound black and white photocopier pages.

Reprint of the Gruen product record book 1910-1959, giving serial numbers and dates of Gruen pocket and wrist watches.

“The wrist and pocket watch sections (containing 272 pocket, 1,856 mens wrist and 2,520 ladies watches) have been completely reproduced, along with many of the handwritten notes.”

R822 Ehrhardt, R**Hamilton pocket watch identification and price guide**

production figures with grade and serial numbers

USA: Heart of America Press, 1994 (1976), 11.25 x 9 inch, 64 pp, ill, (53 pp, ill).

Dating, identification, price guide (English).

Revised in 1981 and 1994. Spiral bound black and white photocopier pages.

A complete Hamilton serial number list.

[1st edition, review by Hugh Marsh] Similar to author Ehrhardt's volumes on watch prices, this book, as the title implies, is specially dedicated to the Hamilton Watch Company. It includes descriptive information on the models produced by Hamilton and sold both under the Hamilton name and under the various names from Webb C. Ball of Cleveland. It will provide an excellent reference for anyone seriously interested in the study or collection of Hamilton watches. Included are a substantial number of line drawings, descriptive information on Hamilton movements, and explosion drawings of disassembled movements. Most of the line drawings have been copied from Hamilton advertising and catalogs. Current prices have been added, models and pictures include both early production data and photocopies from various Hamilton factory catalogs. With the exception of the price information, this should continue to have substantial value for research purposes and the prices may serve as a guide to relative value at least for a few years.

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R823 Ehrhardt, R**Libertine love**

ca 1993, 11 x 8.5 inch, 149 pp, ill.

Price guide (English).

Limited edition. Black and white spiral bound copier pages.

Price guide to erotic art with hints about buying and selling. It includes automations, enamels, repeaters, bird boxes, seals, musical seals, monstrance table clocks, snuff boxes, modern wristwatches, music boxes, cigarette cases.

Presumably an earlier edition of Ehrhardt and DeMesy "Enamels, libertines, automatons, repeaters".

R824 Ehrhardt, R**Patek Philippe parts and materials catalogue**

book 2

USA: Heart of America Press, 1997, 11 x 8.5 inch, 114 pp, ill.

(English).

Spiral bound photocopier pages.

R825 Ehrhardt, R**Pocket watch price guide book 1**

USA: Heart of America Press, nd (1972), 11 x 8.75 inch, 128 pp, ill.

Identification, price guide (English).

Black and white photocopier pages.

Supposed to have been reprinted.

[Review by Henry B. Fried, mediocre] At the present rate of appreciation, inflation, competitive bidding or whatever you may wish to call it, any book which purports to indicate price values runs the risk of outdating itself. Serious examples of the recent past such as P. W. Cumhail's "Investing in Clocks and Watches" and DeCarle's "Clocks and Their Values", published just a few short years ago, are no longer quoted.

Roy Ehrhardt, in loose-leaf binding his efforts, hints that this listing can be contemporized with fresh inserts or additions. This book lists more than 2,600 pocket watches and their prices which the author claims were compiled from lists of watches offered for sale.

There are suggestions as to how to grade a watch in one's collection and how to find its near equivalent in this reference. There is an alphabetical list of about fifty names and categories which comprises a table

of contents and index to items listed. Available also in this reference are tables of watch sizes and charts showing the differences between the Lancashire, Dennison and Swiss sizing systems.

There are English, French, Swiss of varied makes and miscellaneous pocket watches and separate sections for watch cases. There are also various lists of American watch company production tables by year and serial number. Also included are some pages of explanation of different types of cases, price trends and a reproduction of a four-page Parke-Bernet catalogue which is included to indicate the trends in these prices. A number of pages show catalogue reproductions of some American watch movements and cases and complete watches with (original) prices.

Future editions might be improved by better alphabetical listings of company models shown or listed, greater variety of more high-priced items and inclusions of page numbers of most of the pages, at least.

While many of the prices listed have left us forever, perhaps, this reference does serve as a useful guide for those who wish to obtain a relative idea of what value their items have and a general idea of what desired or available watches might bring. This might be done roughly by adding the yearly compound percent of appreciation. While so many enquiries profess only an academic interest in their watches, invariably they include a question as to their current value; this part is seldom, if ever, answered. Such a book should satisfy those who are intently curious as to values.

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[Remark] Described on Ehrhardt's internet site as: "The one that started it all! The first pocket watch price guide ever written! A fine book for beginners. Great for dealers to use as a reference book. Investors use it to see what watches have shown the most improvement in value. Over 2,600 watches priced with values from \$5 to \$16,000, with 95% being common everyday watches you need to know the value of. Lists of all major American and foreign watches showing descriptions and retail prices. Charts of production dates, grading movements and cases, how to determine size, and other useful information. Not much use to you now if you have our other books, but it will make your library complete!"

The last sentence says it all.

R826 Ehrhardt, R

Pocket watch price indicator

USA: Heart of America Press, 1976 to 1980, 11.25 x 9 inch.

Advertising, price guide (English).

Four price indicators were produced:

1976, 64 pp, ill; 1977, 96 pp, ill; 1978, 110 pp, ill; and 1980, 110 pp, ill.

[1976, review by Hugh Marsh] "This issue ... contains 40 additional pages of pictures, advertisements and new material not shown in Book 2. A 1875 Illinois brochure showing all keywinds with descriptions - four pages of Illinois - Ben Franklin, including 23J - 1887 watch cases - 1877 Howard - 1864 Waltham factory price list with descriptions - all Webb C. Ball serial numbers, production figures & dates - 25J Columbus - more Hampdens, Walthams, 14J Seth Thomas, etc. - Elgin, New York Standard, Trenton, Elinvar Hamilton, etc. - cases (13 pages)."

As the title implies, this publication does not purport to be a list of prices paid but merely an indicator of price trends. This is particularly true since most of the data was collected during the year 1975. This edition, like others of Mr. Ehrhardt's publications, uses a substantial number of photocopied pages from watch catalogs which are excellently copied and provide substantial amounts of detail regarding watches and watch movements. This edition also includes comparative prices between 1974 and 1975 directly keyed to author Ehrhardt's "Pocket Watch Price Guide Book #2".

Mr. Ehrhardt has included a number of new pages which essentially represent additions to this previous price guide of information which was not available for the previous print. This specific edition primarily represents an addition to price guides previously published. However, sufficient new information is included, that it may be of interest to many who have not purchased previous editions.

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[1977] "Additional material on Hampden - The Ball Watch Company - Ben Franklin 1910 catalog - United States Watch Company - Special railroad watches - Burlington Watch Company - Sears Roebuck watches - Montgomery Ward watches - Columbus Watch Co - E. Howard Watch Co - Waltham - Santa Fe Special - Washington Watch Co - with material on 145 antique watch keys, chronometers, up-down indicators, and a complete price guide to all American companies and individuals who made watches (282 listings)."

[1978] "46 additional pages of new reprints, never before seen, including pages on Mermod Jaccard - Freeport - Waltham indicator parts - mainsprings - E. Howard cases - Non-magnetic - Rockford - Interstate chronometer - Waterbury - Standard American - Monarch - and Webb C. Ball, 42 pages of unusual, scarce & rare American watches never shown in print before. The last section contains photographs of unusual watches."

[1980] "Some of the important sections are Swiss fakes - English contract - interesting and rare Hamiltons, Illinois, Cornell, Newark, Albert Potter, Waltham, New York Watch Co, Hampden and Seth Thomas - rare and scarce movements."

R827 Ehrhardt, R**Rockford grade and serial numbers**

with production figures

USA: Heart of America Press, 1994 (1976), 4to, 68 pp, ill (44 pp, ill).

Identification, price guide (English).

Black and white photocopier pages.

Reproduction of the 1907 Rockford serial number list and parts catalogue, with serial numbers up to 824,000.

R828 Ehrhardt, R**Rolex and Tudor parts book**

USA: Heart of America Press, 1993, 4to, 250 pp, ill.

Identification, repair (English).

Including "movements diagrams, parts and illustrations, disassembly and re-assembly, crown and tube charts, case part number index, tool information".

R829 Ehrhardt, R**Trade marks**

watch cases, pocket watches, precious stones, diamonds

USA: Heart of America Press, nd (1976), 28.0 x 21.5 cm, 128 pp, ill.

Identification, makers (English).

Spiral bound photocopy pages.

Two thirds of the book contains illustrations of trade marks on watches imported into America, American watches and American watch cases. Included in these sections are a short index cross referencing watch names to distributors and a list of Swiss "fake" railroad watches. The last third reprints two articles on silver marks and a glossary of jewelry information. Despite the title a section on clocks is included.

[reprint, mediocre] Most of the book is a cut and paste from other sources and the variation in type and style together with the mediocre reproduction make it hard to use.

Most importantly, there is no way to find trade mark information except by a laborious search. There are extensive lists of watch signatures (imported and American) with the retailer's name and watch case trade marks by company, but no sensible way of searching them.

The two articles and glossary are interesting, if largely irrelevant. The associated notes by Ehrhardt suggest they have been included to help people make heaps of money buying scrap gold and diamonds.

A far better book on American trademarks is Jewelers' Circular "Trade marks of the jewelry and kindred trades".

R830 Ehrhardt, R**Waltham pocket watch identification and price guide**

serial numbers with descriptions

USA: Heart of America Press, nd (1976), 11.25 x 9 inch, 172 pp, ill.

Dating, identification, price guide (English).

Colour or black and white photocopier pages.

Apparently reprinted.

This includes a copy of Waltham "Serial Numbers with Description of Waltham Watch Movements", selections from the 1890 Waltham Products Catalog (watches and cases), 1874 Waltham Illustrated Price list, extracts from the 1901 Waltham Mainspring Catalogue, 1948 Waltham Clock & Watch Material Catalog, and the 1952 Swigart manual of movements (see Swigart "Illustrated Manual of American Watch Movements").

[Review by Hugh Marsh] Mr. Ehrhardt has again accumulated a substantial amount of reference material on a single company - the American Waltham Watch Company of Waltham, Massachusetts. Illustrations include line drawings of many Waltham movements, with details- regarding production runs, serial number sequences, and a current retail value has been identified with each watch movement, illustration or description. Model names, sizes, grades are included, plus information on various items produced by Waltham, other than standard watches.

In addition to the current value information, many of the pages are full copies from original catalogs indicating the original selling price. With the exception of some price information, this is an outstanding reference volume and should retain its value over the coming years for anyone doing research or collecting items produced by the American Waltham Watch Company.

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R831 Ehrhardt, R; Demesy, J**Cartier wrist and pocket watches and clocks and miscellany**

identification and price guide

USA: Heart of America Press, 1992, 4to, 100 pp, ill, plates.

Identification, price guide (English).

Spiral bound colour or black & white photocopier pages.

R832 Ehrhardt, R; Demesy, J**Enamels, libertines, automatons, repeaters**

USA: Heart of America Press, ca 1999, 11 x 8.5 inch, 97 pp, ill.

Illustration, price guide (English).

Spiral bound.

Price guide with colour photographs of cases and dials, including erotic scenes.

See also Ehrhardt "Libertine love".

R833 Ehrhardt, R; Demesy, J

European repeaters and clock watches book 1

USA: Heart of America Press, 1993, 11 x 8.5 inch, 166 pp, ill.

Price guide (English).

Colour or black and white photocopier pages.

Identification and price guide. "Contains a representative selection from all companies of such complications as carillon, grand complications, 2-train, minute repeating moonphase perpetuals, split and simple chronographs, digital, split registers, split seconds, clock watches, as well as minute, quarter, half-quarter and 5 minute repeaters. All case metals are illustrated and priced ... From the earliest of verge repeaters to the highest-grade precision watches of the 20th century!"

[Review by Henry B. Fried] *This is the first guide devoted to European watches that ring the time on command or automatically, as a clock would, (unless by optional control). These include carillon, musical, grande complications, 2-train, perpetual calendar watches, chronographs of various types and their appraised values.*

Among the many watches shown are those with verge escapements of the eighteenth century, mingling with some nineteenth century and twentieth century products. Such diverse collections would, of course, bear many prestigious names, some dating back to the late eighteenth century.

The illustrations are black and white and include many watches with automatons (none erotic). There are watches by Breguet, Patek Philippe, Audemars, and Piguet. The prices in this book have been achieved at auction sales or by expert appraisers.

Among the watches are those from Fleurier, known for their duplex escapement watches made expressly for the oriental market. These are separated from others with quarter repeating and with lever escapements. Others like these are highly ornamented with independent center seconds, double trains, are enameled, and key-wound and set.

There is a good index by name and by type of all the items shown.

In all, this is an interesting and informative catalog showing a vast array of ringing pocket watches with values by acknowledged appraisers.

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R834 Ehrhardt, R; Demesy, J

Modern wrist watch price guide Book 1 (1970-1991)

retail prices

USA: Heart of America Press, 1992, 4to, 116 pp, ill.

Identification, price guide (English).

"Do you trade in modern wrist watches? If so, you need this book containing 12 high-line companies (Audemars Piguet, Blancpain, Breitling, Cartier, Chopard, Gerald Genta, International-Schaffhausen, Patek Philippe, Piaget, Rolex & Vacheron Constantin). From these twelve companies we have chosen the most popular modern watches and included retail prices and company reference numbers. It is easy to identify your modern wrist watch using this most valuable tool!"

Includes production data and an index to "Vintage American & European wrist watch price guide" vols 1 to 5.

R835 Ehrhardt, R; Demesy, J

Patek Philippe identification and price guide

USA: Heart of America Press, 1991, 9 x 6 inch, 448 pp, 2219 ill.

Identification, price guide (English).

Also given as 1993.

Covers 1,685 wrist watches 689 pocket watches and 33 clocks. Includes an index to Patek Philippe reference numbers.

[Review by Henry B. Fried] *The format of this book is of the usual high calibre maintained by the Ehrhardts. Two pages are devoted to methods of ascertaining values. This is followed by an excellent glossary of general terms used in collecting, repairing, technical areas and defining antique watch terms used in the trade to describe antique watches. One page contains a table of watch sizes and measurements. The famed Calibre 89 is featured since it is the Patek Philippe watch that brought the record price at auction. But the range of Patek Philippe watches is quite large, including world time watches with tourbillon. There are tourbillons in pocket chronometers, carillon clock watches, others with grande complications, split second chronographs, and some with moon phase indicators. Diamond pavé watches with complications, two-train minute repeaters, and others with "montre a tact" (time telling by touch) are also included. Many others are shown, some with simple 46m/m and smaller in size, still others are "giant" watches. Half quarter and five minute repeaters are included. Watches with offset dials, "astronomical" dials, time zone dials. 24-hour dials (chronometro Gondolfo), and watches with spring detent chronometer escapements are pictured.*

The watches with complications require 114 pages of this book. Other sections are devoted to regular and older watches from this 150-year-old prestigious company. There are square, elliptical, offset dial, platinum, and skeletonized watches with repousse cases, enamel watches and convertible types.

A section on ladies pendants, form watches, and coins with ultra-thin movements enclosed are shown in a 30-page section. Also featured are enamel and highly decorated watches, some with portraits. One modern twentieth century watch described as a gold-painted enamel open-face with horseman, appears to be a very close copy of a David painting of Count Potocki, an early nineteenth century nobleman and military hero. Other watches contain enamel portraits of other famous people.

Clocks are not omitted. There are 30 highly decorated clocks featured. Bird boxes with watches are found here, too. One hundred and ninety-six pages of wristwatches contain a great variety of these vintage and modern timepieces, Other pages contain tables which determine the age of a watch by its serialized production number.

There are 33 movements pictured among the final pages, and six pages of reprints from catalogues of Shreve and Company (San Francisco) and Brock (Hollywood). There are four pages of a good index and eight pages of advertisements. Except for the covers, all photos are in black and white; most are of good quality, a few are dull. However, this book of 689 pocket watches, 1685 wristwatches, 812 ladies wristwatches, and 33 clocks has been compiled from the contributions of 64 collectors, dealers and auction galleries. Thus, it must be expected that a few would vary in clarity. Despite these minor observations, this book provides a very acceptable reference of watches and current estimates from the shops of a world renowned watchmaker.

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R836 Ehrhardt, R; Demesy, J

Rolex identification and price guide

USA: Heart of America Press, 1993, 28 x 21 cm, 108 pp, ill.

Identification, price guide (English).

Colour or black and white photocopier pages.

Includes a detailed Oyster case part number listing.

R837 Ehrhardt, R; Demesy, J

Rolex wrist watch price guide

USA: Heart of America Press, 1993, 48 pp, ill.

Identification, price guide (English).

A pocket sized guide mainly for Oysters.

R838 Ehrhardt, R; Demesy, J

Vintage American pocket watches, dials and cases

USA: Heart of America Press, nd, 11 x 8.5 inch, 90 pp, b/w ill.

Price guide (English).

Spiral bound

"Rare collectible American pocket watch movements, cases & dials. Includes many rare factory decorated dials."

R839 Ehrhardt, R; Hanson; Meggers, WF; Rabeneck

Marion watches

American pocket watch encyclopedia & price guide volume 3

USA: Heart of America Press, 1993, 4to, 130 pp, ill.

Dating, identification, price guide (English).

"From over 2,000 watches we have created a first ever reconstructed serialized production list. With this list, and the EA diagrams, one can quickly, accurately and reliably identify Marion watches, determine their scarcity, and establish their value! We have included information on every known private label on a Marion product (including Railroad - Newspaper - Royal Gold) and Marion's successor watch companies (Independent and Freedonia); many previously unpublished photographs of rare and important Marion watches; and much more other information and articles."

Assuming this is like other Ehrhardt books, Muir & Kraus "Marion - a history of the United States Watch Company" will be much better value. But because Meggers is one of the authors, this book may be good.

R840 Ehrhardt, R; Meggers, WF

American pocket watches

serial number grade book

USA: Heart of America Press, 1993, 28.0 x 21.5 cm, 324 pp, ill.

Dating, identification, makers, price guide (English).

There is a "small" edition as well.

Listings of plate signatures and movement diagrams for American watch company products. Additionally, serial number/model lists are provided for Ball, Elgin, Hamilton, Illinois and Rockford. The book ends with concise serial number/date of production tables which also include IWC, Longines, Omega, Patek Philippe, Rolex Oyster and Vacheron & Constantin.

[1st edition, very good] A useful reference for American watch collectors, although largely superseded by the authors' "American watches - beginning to end, ID & price guide". It is one of the useful price guides, if you ignore the prices, because of the detailed serial number and grade information.

R841 Ehrhardt, R; Meggers, WF

American watches beginning to end

identification & price guide

USA: Heart of America Press, 1998 (1987), 11 x 8.5 inch (21.5 x 16.0 cm), 464 pp, ill (480 pp, ill).

Identification, makers, dating, price guide, collecting (English).

The 1998 edition is a reprint on spiral bound photocopier pages which may contain some changes.

The bulk of the book consists of two parts:

A 156 page alphabetical listing by manufacturer giving brief production information, serial numbers with dates and illustrations of the top plates of virtually all calibres. The illustrations are "EA" diagrams numbered from EA1 to EA922.

A 232 page alphabetical listing of the inscriptions on watch plates and dials, cross-referenced to the first part.

These parts are prefaced by a number of short sections:

How to use this book (3 pages); How values are determined; How can I obtain top value for my watch?; Suggested methods for selling a watch; What is the best way to buy a watch?; What makes an American-made watch collectable or valuable? (7 pages); How to determine the size of a watch (2 pages); Movement part names; Jewelling of American watch movements (6 pages); Private label - Illinois watches (7 pages); Retail values for mint condition pocket watch cases; Dial foot positions and movement weight (5 pages); and Dealing through the mail.

[1st edition, 1987, excellent] *This is an essential book for American watches. It is undoubtedly the most useful general reference for American watch collectors, particularly because of the listing of plate signatures which encompasses most American and some imported watches. By means of that list and the excellent drawings, watches can be quickly and efficiently identified. The price estimates should, of course, be ignored because they are out-of-date and add nothing to the value and importance of the book. In addition, the introductory sections provide very useful additional data and remarks.*

[Later printings] *I have not seen the 1998 printing, but I discuss this in my review of Ehrhardt and Meggers "Vintage American pocket watches dials and cases identification and price guide".*

R842 Ehrhardt, R; Meggers, WF

Illinois Watch Co

American pocket watch encyclopedia & price guide volume 2

USA: Heart of America Press, 1985 (1976), 11 x 8.5 inch, 432 pp, ill.

Dating, identification, price guide (English).

[Review by Laurence Treiman] *The Illinois Watch Co., Springfield, Illinois, turned out such a seemingly endless variety of watch movements that research-oriented collectors attempting to catalog them have faced a formidable challenge. That challenge has been met with outstanding success in this new book (hereinafter called "Vol. 2") from Heart of America Press.*

The result of years of research by NAWCC Fellows Bill Meggers and Roy Ehrhardt, with additional data contributed by hundreds of collectors, this book is an exhaustive reference work on Illinois watches as well as a price guide. It is the second volume in a planned series on American watches but, unlike the first volume, covers only one maker. The depth and thoroughness of this volume overshadow that of the first, and set a standard that future efforts will be hard-pressed to meet.

An impressive array of Illinois watch models, grades and variants have been cataloged in detail, including scarce and perhaps one-of-a-kind items. For the popular "Bunn" and "Bunn Special" grades alone, over 100 variants are listed.

Illinois also produced what, according to the authors, was a greater variety of private label watches than any other American manufacturer. Anyone who has perused the private label section of Vol. 2 is unlikely to dispute the claim. Illinois' private label customers ranged from mail-order and retail giants such as Sears Roebuck; Montgomery Ward; R. H. Macy; and Marshall Field; to lesser-knowns such as John Spencer & Daughter of Edgerton, Wis. Illinois also supplied private label watches to specialty mail-order firms such as the Burlington Watch Co. and the Sante Fe Watch Co., as well as to wholesale jobbers.

The authors have compiled a list of all private label Illinois watches that they have been able to record over a period of eight years. The resulting list has over 700 major entries and many sub-entries, with descriptions and values.

The illustrations in Vol. 2 include outline drawings showing plate and bridge configurations of known standard and custom designs of Illinois movements. Listings are keyed to their appropriate drawings. Also, many listings are keyed to further illustrations in the form of watch photos and/or catalog and advertisement reproductions.

The reproductions of selected catalog pages and advertisements are fascinating, but caution must be exercised when using them for research. An examination of the reproductions, particularly those from c.1925 and later, shows that the factory often altered and even used incorrect illustrations. Examples range from changing jewel markings and adding "SIXTY HOUR" markings, to completely turning around the movement markings so they would read right-side-up when the movement was shown pendant-up, and even using cuts of 16-size movements to illustrate 12-size grades.

To go into all the details presented in the individual grade listings would be beyond the scope of this review. Besides such items as details of construction, finish and markings, first and last serial numbers (and dates) and estimated or actual production figures are shown. The many abbreviations used in the listing should be familiar to those who have used Vol. 1; otherwise they might take some getting accustomed to. Instructions are provided to assist the reader in using the book.

The Illinois factory serial number and grade list, which fills over 90 pages of Vol. 2, previously was published in another Heart of America book. At that time many entries were incomplete because of information missing in the original records. Through their research the authors have since been able

to fill in missing items, as well as correct errors that occurred either in the original records or during transcription. The resulting list is a much better one, though the process of filling in the blanks and correcting the errors in the list will be an ongoing one. As with any such work, discrepancies between the serial number list, the listings in the book, and actual watches are bound to turn up.

The book presents an interesting chapter on the history of the Illinois Watch Co. From the history, collectors will be able to learn and appreciate the significance of some of the names that appeared on Illinois movements, such as Bunn, Stuart, Hoyt, and others.

Many other subjects of interest to students and collectors of Illinois watches are discussed in the book. Among them are significant watches, factory casing, identifying high quality watches, jewelry, and others.

After using this book for several weeks this reviewer is thoroughly impressed with the amount of useful information it contains. The impression is that the authors have presented in it virtually every bit of information that they could find on Illinois watches, or at least whatever would fit within the physical constraints, thus offering a great potential resource to students of American watches. Therefore, it is especially regrettable that the book does not have an index. The so-called "Indexed Table of Contents" on page 2 is peculiarly done and is a very poor substitute for a comprehensive index. The omission is particularly surprising in view of the fact that Vol. 1 was provided with an index.

Once the reader becomes accustomed to the arrangement of the book, the lack of an index will probably not be an impediment to looking up and valuing watches. However, this reviewer has spent considerable time going through Vol. 2 page-by-page, searching for bits of information that might have been found quickly and easily with the aid of a good index.

This soft-cover book is "perfect-bound," an apparent improvement over the plastic, multi-ring binding of Vol. 1 and other Heart of America Press books. However, some examples of perfect binding fail to live up to the name, particularly when subjected to hard use, and allow leaves to come unglued. Only time will tell if this book will stand up to the considerable use that it is bound to get. One might well wish for a more durable form of binding in a \$50 reference book.

The wealth of information and illustrative material in Vol.2 far overshadows the few faults such as the lack of an index, the binding, and perhaps to some, the \$50 price.

The research-oriented hobbyist stands to gain much from the book, though perhaps in a less tangible way. The watch values are ephemeral, but they are just one aspect of the book. Much of the information in Vol. 2 represents a significant contribution to American watch research and will be valued for many years to come.

Although the considerable research that goes into a book such as this is done as a labor of love, it is undoubtedly costly to produce such a large volume. Thus it is hoped that this volume proves sufficiently rewarding to its publisher to encourage future efforts (albeit with indexes) on behalf of other American watch companies.

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R843 Ehrhardt, R; Meggers, WF

Railroad watches

identification and price guide

USA: Heart of America Press, 1995 (1993), 28.0 x 22.5 cm, 192 pp, ill, ads.

Dating, identification, price guide (English).

The reprint is spiral bound photocopier paper.

The book begins with a brief introduction, including notes on private labels, tables of dial feet locations and production dates. The body consists of two listings. Firstly, movement diagrams and production information for companies and secondly an alphabetical listing of plate signatures cross-referenced to the former. Finally there is a section illustrating dials and some movements.

[reprint, very good] Following the style of Ehrhardt and Meggers "American watches beginning to end" makes this a valuable and useful book. It provides a simple, coherent means of identifying watches from plate signatures and movement diagrams.

R844 Ehrhardt, R; Meggers, WF

Vintage American pocket watches dials and cases

identification and price guide (beginning to end 1830-2009)

USA: W. Selovar, 2009, 11 x 8.5 inch, 463 pp, ill, 6 pp religious ads.

Identification, makers (English).

See Ehrhardt & Meggers "American watches beginning to end, identification & price guide" for the first edition.

As with the first edition, the bulk of the book consists of two parts:

A 84 page alphabetical listing by manufacturer giving brief production information, serial numbers with dates and illustrations of the top plates of virtually all calibres. The illustrations are "EA" diagrams numbered from EA1 to EA922.

A 205 page alphabetical listing of the inscriptions on watch plates and dials, cross-referenced to the first part.

In addition there are 3 other main parts:

A 90 page section "American watch models (featured)" of colour photographs of American watches sold at auctions between 1996 and 2004 with prices.

A 16 page section of black & white photographs of railroad dials and movements with EA numbers (reproduced from Ehrhardt & Meggers "Railroad watches, identification and price guide").

A 35 page section giving serial numbers, grades and production dates for Ball, Hamilton and Rockford, followed by short lists for American and Swiss companies (reproduced from another Ehrhardt book).

These parts are prefaced by a number of short sections:

How to use this book (2 pages); How values are determined; Getting top value for your watch; Suggested method for selling a watch; What is the best way to buy a watch?; What makes an American-made watch collectable or valuable? (3 pages); Technical research and production counting; How to determine the size of a watch (2 pages); Movement part names; Jewelling (3 pages); Private label - Illinois watches (3 pages); Pocket watch case values; Dial foot positions and movement weight (4 pages), and What is a railroad watch.

[History of the book] According to Selovar: "This book was first released in 1987 and updated in 1994 and 1998 and 1999 and released in small editions and again updated in 2000 by Roy Ehrhardt and Bill Meggers, Put into full 8 1/2 x 11 format for study use, and revised and corrected until 2002 when Bill Meggers passed away, Larry Ehrhardt updated the prices and Roy finished the proof copy corrections in 2003 and due to health and 2 hurricanes passing directly through Umatilla, Florida and seriously damaging the building this book was never released and printed. Roy died in 2004. I have combined this book with 2 others making a Memorial Edition. The most Complete Book of the most Important Information on American Pocket Watches Available."

[Memorial edition 2009 review, very good] As with the first edition, this is an essential book for American watches. It is undoubtedly the most useful general reference for American watch collectors, particularly because of the listing of plate signatures which encompasses most American and some imported watches. By means of that list and the excellent drawings, watches can be quickly and efficiently identified. However, the reproduction of the EA movement drawings and photographs are smaller and often of only fair quality, and the caption text is too small. This is because the originals have been reduced and rearranged to fit quarto pages.

As a result this book is an adequate substitute for the first edition (which was professionally printed and bound) but definitely not as good. So, although the book is "excellent" I feel obliged to downgrade it to "very good".

"American watch models (featured)" are described as "remarkable watches with more remarkable prices realized". The auction date from 1988 to 2004, but the vast majority are from one auction held in 2002. So the prices are out-of-date. The photographs are generally only fair with some being poor. Each illustration has an RE number, but these are useless because they are not unique, the numbers starting at 1 for each maker's name. Other than being a pretty display of atypical, selected cases and movements, I don't see any value in this section.

The railroad dials and movements section, in which the photographs are in random order, adds very little to the book because the photographs are uniformly mediocre.

Finally, the section giving serial numbers, grades and production dates is strange because it only covers 3 companies in detail, whereas I would have thought the listings should encompass all makers.

These three additional sections seem to be fillers, included to increase the size of the book. They add very little that is useful and should have been omitted; a straight reprint of the first edition would have been much more sensible and better.

(I must add that I am reviewing the pdf file version of the book. However, I expect the printed and bound version is a hard copy of the pdf file and the quality of reproduction is the same.)

The 2 major sections are interesting.

The first part, listing EA diagrams, is identical to the first edition other than some minor changes. All prices have been deleted. Two diagrams have been left out (EA6 and 123) and one duplicated, presumably errors when the original was cut and pasted into the new layout. A few entries without diagrams now have them. These are all cases, like EA 61 and 62, where the text is "Same as ... except the winding wheels are reversed". Ehrhardt has solved the problem by including a mirror image of the other illustration complete with backwards writing! And also, the overall layout is now less "user friendly".

The second part, the alphabetical listing of inscriptions, is different from the first edition. A new feature is that each entry has an EM index number. This number starts at 10,001 and goes to 24,609. Other than suggesting there are 14,609 entries it is not of much use, but more sensible than the RE numbers. (The first edition had "11000" entries, so it may be that some 3,500 entries have been added. Of course, if the index were to be revised these EM numbers, being assigned alphabetically, would change and so be useless unless everyone used the same edition.) However, I have not hand checked the index line-by-line and cannot quantify the changes. Certainly parts of it have been reorganised and there are a number of new entries and explanations; in particular, I do not know if the new entries are significant or are unimportant "odd-ball" examples. An old feature that has been retained is that each entry has a price estimate range. However, many of these are the same as in the first edition (now 23 years old) and although others have changed I suspect they relate to the 1994 and 1998 revisions and so are also badly out-of-date. Indeed, to call this book a price guide is ridiculous.

Finally, the introductory sections are largely word-for-word copies of the corresponding parts of the first edition; for example, the case values are unchanged from the 1987 edition. The few changes update them a bit but are of little consequence.

So which is better, the first or the 2009 edition? From the point of view of print quality and so usability,

the first edition is much better; and if you can get a copy do so and cherish it. However, the changes to the alphabetical listing of inscriptions may justify getting the new edition. If so I think getting the pdf file version is preferable. \$35 for it is reasonable, but I think \$110 for a printed copy is excessive. Anyway, you only need 289 of the 469 pages (and less if you have the first edition), so you will be saving a few trees.

R845 Ehrhardt, S**Vintage american & european wrist watch price guide**

USA: Heart of America Press, 1984 to 1996, 23.0 x 15.0 cm, seven volumes, ill.

Dating, identification, illustration, price guide (English).

The seven volumes are:

Ehrhardt, S and Planes, P: "Vintage American & European wrist watch price guide", 1984, 336 pp, ill.

A 1987 update for book 1 was produced (80 pp, ill) showing additional watches.

Ehrhardt, S, Ehrhardt, R and Demesy, J: "Vintage American & European wrist watch price guide Book 2", 1988, 448 pp, ill.

Mycko, D, Ehrhardt, S and Ehrhardt, R: "Vintage American & European character wrist watch price guide Book 3", 1989, 224 pp, ill. Mickey Mouse and others.

Ehrhardt, S, Ehrhardt, R and Demesy, J: "Vintage American & European wrist watch price guide Book 4", 1989, 624 pp, ill.

Ehrhardt, S, Ehrhardt, R and Demesy, J: "Vintage American & European wrist watch price guide Book 5", 1990, 656 pp, ill.

Ehrhardt, S, Ehrhardt, R and Demesy, J: "Vintage American & European wrist watch price guide Book 6", 1993, 672 pp, ill. Includes special edition watches.

Ehrhardt and Demesy, J: "Vintage American & European wrist watch price guide Book 7", 1996, 672 pp, ill.

Thousands and thousands of pictures of wrist watch cases and dials with some company information.

[vols 1, 2, 4 and 5, fair] I find pictures get boring after a while (especially when there isn't one of my watch), but this is partly because I am not particularly interested in price guides. I am always hoping to find some real information and I am usually disappointed.

There are some dates, a few tables of company production information, and general trends in style can be weeded out by slowly comparing photographs. But there is no information on or photographs of movements. On the whole I find the books uninformative and of almost no use.

There is a little information, including some on Longines (Books 1 and 5), Gruen and military watches (book 4) and a fairly extensive section on Rolex Oyster (Book 2). but other books are better.

R846 Eiffe, JS; Airy, GB**Account of improvements in chronometers**

with an appendix containing Mr Robert Molyneux's specification of a patent for improvements in chronometers

Munich: Callwey (London: Palmer & Clayton), 1977 (1842), 27 x 21 cm, 26 pp, 5 plates.

Technical (English).

R847 Eigner, PW; Hillman, B**The balance staff and cylinder**

Chicago: Hazlitt & Walker (Chicago: Geo. Hazlitt & Co), 1903 (1894), 20.0 x 13.5 cm, 32 pp, 20 ill (23 pp, 15 ill).

Repair (English).

Tardy gives the first edition as Chicago 1842, which is impossible.

Three parts. The first two (23 pp, 15 ill) form a prize essay by Eigner on making a lever escapement balance staff and some remarks on the cylinder escapement staff. The third part by Hillmann (his name is spelt incorrectly) is an essay on "Correction of balance vibrations in cylinder watches".

[1903 printing, good] The first part gives general instructions on making a lever staff with some useful information on turning, grinding and polishing. The second outlines fitting a cylinder staff by turning the seats and pivots of a purchased rough staff. This includes rather vague instructions for making eccentric runners for a standard lathe. It is followed by some interesting remarks on truing balances.

The third part by Hillmann is a good description of faults in cylinder escape wheels with instructions for correcting them, including how to reshape the teeth.

Eigner's essay is only fair, glossing over the topics and omitting necessary detail. But good information on cylinder watches is scarce and this booklet is valuable for providing some ideas which the repairer may find useful, especially those of Hillmann.

R848 Elgin Watch Co**Elgin genuine material**

Illinois: Elgin National Watch Company, 1941 (1919), 29.5 x 23.0 cm (10 x 7 inch), 236 pp, ill.

Repair (English).

A serial number and grade list followed by detailed lists of Elgin part numbers for all grades. There are also a few sheets showing hands, dials and terminology.

It is produced in loose leaf format allowing updates to be added; the copy seen covers serial numbers 101 to X917000 (1941) and contains sheets dated 1927, 1935 and 1941.

[several editions, fair] There are no movement diagrams or other information about the different grades and no repair notes. So, other than for determining the grades of movements, the book is of little use unless genuine Elgin material is available.

R849 Elgin Watch Co**Elgin reminiscences**

making watches by machinery

USA: Ken Roberts Publishing, 1972 (1869), 21.5 x 14.0 cm, 32 pp, ill.

Miscellany, history (English).

Facsimile reprint of the article "Making watches by machinery" from Harpers Magazine (1869, 14 pp, 24 ill), followed by extracts from the Elgin 1873 Almanac (8 pp) and the "Watchmaker and Jeweler". There are also 2 illustrations from the Elgin 1871 almanac.

[1st edition, good] The Harpers article is a popular (and partly inaccurate) history followed by a jolly walk around the Elgin factory, describing the process of making a watch.

The Almanac extracts include remarks on female rates of pay, fallacies about watches and "The fourth and last purchase", a delightful advertisement pretending to be a story.

Well worth reading for the contemporary accounts written in masterful English.

R850 Elgin Watch Co**Illustrated almanac**

Illinois: B.J. Edwards (USA: Granada Hills) (Illinois: Elgin National Watch Company), 1977 (1871), 22.0 x 14.5 cm, 32 pp, ill.

Advertising, miscellany, history (English).

First published in 1871 and produced until 1876.

The 1871 almanac was reprinted in 1977 (Illinois: B.J. Edwards, 36 pp, ill with 8 pp of modern material additional inserted in the reprint).

The 1872 almanac was reprinted in 1972 (Granada Hills).

The 1873 almanac appears in "Elgin Reminiscences: Making Watches By Machinery" (which see).

Booklets containing advertising puff, short stories, sentimental etchings, poems and, almost incidentally it seems, the year's almanac.

[1871, good] The almanac has notes on the founding of the town of Elgin, a description of the factory, care of the watch, a Mark Twain story "My watch", which is a delightful watch owner's nightmare, and a story by Thomas Beecher "The people in my watch".

[1872] This is a wonderful example of advertising, containing brief descriptions of the factory and watch manufacture, a short and inaccurate history of timekeepers, and a short story, "Praestare fidem morti", that would equal any by Mills and Boon!

[1873] This includes "The Watchmaker's Love Story" by Edward Eggleston and another story "The fourth and last purchase".

[1875] There is an adulatory note on Elgin watches followed by suggestions on the care of a watch, a story "My rococo watch" by Louise M Alcott, curious facts, riddles and cuts of movements.

R851 Elgin Watch Co**Making watches by machinery**

USA: Horological Association of California, 1975, 8vo, 13 pp, ill.

History (English).

Facsimile reprint of an article from Harpers Magazine (1869).

[Remark] This has also been reprinted in Elgin "Elgin reminiscences, making watches by machinery" (which see).

R852 Elgin Watch Co**What is a watch?**

Illinois: Elgin National Watch Company, 1950, 6.25 x 9.25 inch, 16 pp, ill.

Description (English).

Advertising display book.

R853 Elgin Watchmakers College**Questions and answers on watch and clock making**

Illinois: Elgin Watchmakers College, 1954, 28.0 x 21.5 cm, 40 pp, no ill.

Description, repair (English).

Questions immediately followed by answers on clockmaking (18 pages, 142 questions), watchmaking (10 pages, 64 questions), advanced watchmaking (8 pages, 50 questions) and watch train calculations (4 pages, 25 questions).

[1st edition, mediocre] Similar to the AWI "Questions and answers of and for the watchmaking profession" this is a set of 281 sample examination questions and answers. There are no references to appropriate texts.

The emphasis is on the regurgitation of rote learned facts, although a few questions require the student to think. The answers are often too brief and provide inadequate explanations.

My opinion can be summed up by one of the "advanced" questions: "Explain how a quarter hour repeater watch operates? A quarter hour repeater watch strikes each quarter hour on two bells and the full hour on the heavy bell. The controls are by means of a button." As an advanced answer this leaves quite a lot to be desired!

R854 Elliott, DJ

Shropshire clock and watchmakers

London: Phillimore & Co., 1979, 8vo, 172 pp, ill, 19 plates.

Makers (English).

A listing of about 550 makers from the 1500's to the 1800's.

"Old clocks and watches have a great interest for most people, especially those made in their own localities. This book supplies information about some 550 craftsmen, born or working within the county of Shropshire, from the early 16th century to the late 19th, together with much background material on the development of the trade in the county and fuller accounts of the exceptional firms, such as the Joyce family of Whitchurch. Just over one quarter of the craftsmen who made clocks and watches in Shropshire did so in Shrewsbury, with the rest divided between Bridgnorth, Ellesmere, Ludlow, Newport, Oswestry, Shifnal, Wellington and Whitchurch."

R855 Elliott, Henry

The clockmaker's assistant

or a treatise concerning the calculation of all manners of numbers belonging to all sorts of clocks

London: Henry Elliott, 1726, 15.0 x 9.0 cm, 107 pp, 1 ill.

Clock making (English).

Instructions for calculating the size and proportions of gears, springs and pendulums, and chimes.

Irrelevant. It is included here because it does not appear in any of the other bibliographies I have examined, including Baillie, Leroy, Pertuch, Robertson and Tardy.

R856 Elzas, M

Het horloge in den loop der eeuwen

Amsterdam: Zutphen, ca 1975 (1935), 24 x 17 cm, 245 pp, 41 ill, 47 b/w plates.

Technical (Dutch).

R857 Emmet, B; Jeuck, JE

Catalogues and counters

a history of Sears Roebuck and company

Chicago: University of Chicago Press, 1965 (1950), 788 pp, a few ill, map.

History, miscellany (English).

R858 Encyclopedia Britannica

Clock and watch work

from the eighth edition of the Encyclopedia Britannica

Edinburgh: Adam & Charles Black, 1855, 17.5 x 11.5 cm, 144 pp, 37 ill.

Description, history (English).

A separate publication containing the articles "Clock and watch work" and "Dipleidoscope" from the 8th edition of the Encyclopedia Britannica.

Beckett states the "articles on Clocks and Watches ... in the eighth and ninth editions of the Encyclopedia Britannica were abridgments of this book" ("A rudimentary treatise on clocks and watches and bells"), so his authorship is not in doubt.

The book was printed twice by Adam & Charles Black, one with the title "Clock and watch work from the eighth edition of the Encyclopedia Britannica" giving no author and the other titled "Treatise on clock and watch work with an appendix on the dipleidoscope" giving the author as Frederick Dent (who presumably wrote the appendix on the dipleidoscope).

The edition which does not mention the authors contains 3 errata and it may be the second printing.

One source gives 152 pp for the "Dent" edition and this may just be including the 8 preliminary pages or a publisher's book list.

The book is available as a Google Book PDF file.

Although not clearly divided, there are four sections: clocks (97 pages), watches (31 pages), gearing (9 pages) and the dipleidoscope (an appendix of 5 pages).

[1st edition, mediocre] The section on watches is best described as inconsistent and strange. Simplistic description is coupled with sophisticated mathematical formulation and both are interlaced with anecdotes (supportive of Dent, Earnshaw and Beckett, and derogatory of Arnold and Frodsham). The barely disguised advertising for Beckett and Dent gives it a bias which, with the occasional startling error, makes the reader seriously doubt the veracity of it. It is bare-faced self-aggrandisement masquerading as a serious treatise.

The section on watches begins by ascribing ut tensio sic vis to Huygens, indirectly credits E.J. Dent with going barrels and then says Mudge introduced the reversed fusee! Throughout, the text implies Beckett and Dent were responsible for every important development in the 19th century.

The editors of the Encyclopedia Britannica made a very bad choice of author.

[Remark] It is interesting to compare this book with later editions of "A rudimentary treatise on clocks and watches and bells". By 1883 it appears that Beckett has condescended to learn a little about horology and history (correcting obvious errors and mentioning Hooke), but he has watered down the interesting bits. For example, in 1855 he wrote about 2 pages extolling "Earnshaw's genius" and attacking Arnold (pages 107 and 122). But in 1883 he wrote "This plan ... was introduced by Earnshaw" and "I cannot help thinking that Earnshaw's personal skill had a good deal to do with the superiority ..."; the word "genius" is nowhere to be found.

R859 Enders**Der preisführer der taschenuhren**

Munich: Callwey, 1995, 25 x 20 cm, 224 pp, 546 ill, 10 diagrams.

Price guide (German).

Pocket watch price guide.

R860 Engel, T**A.L. Breguet watchmaker to kings**

thoughts on time

Switzerland: Sticher Konzepte, 1995 (1994), 28 x 22 cm, 221 pp, 56 ill, 45 plates.

Description, history, illustration (English, German).

Separate English and German limited editions bound in red leather.

Biography on the life and works of Abraham Louis Breguet, with an introduction by Lord Yehudi Menuhin.

Documenting part of Engel's collection. Includes plates showing extracts from Breguet's notebooks.

R861 Engel, T**Thomas Engel**

a modern Thomas Edison, an autobiography

Germany: Costa Maritim, 2003, 300 pp, 1 portrait.

Biography (English, German).

[1st edition, review by Fortunat Mueller-Maerki] Like most students of horology I first came across Thomas Engel as the author of the 1993 book "A.-L. Breguet, Watchmaker to Kings, Thoughts on Time", one of the most lavishly produced horological volumes in the last decade. More recently he was in the news when the depth of his collection of superb Breguet pocket watches (and others of similar importance) became apparent when Antiquorum in Geneva held a superbly documented, single-owner auction of about 150 world-class watches in 2001. In the auction catalogue one could learn that this collector was a self-taught, self-made inventor who had also taught himself watchmaking up to the level of making his own tourbillon watch. When I heard about an autobiography I decided that I wanted to learn more about the motivations of a fellow timekeeping nut, although this watch collector obviously had at his disposal more means, energy and skills than I ever will.

Engel, born 1927 in Germany, never finished school due to wartime interruptions, and never had any formal professional or business training, but got a head start as a "kitchen helper" for the US Army (and black-market goods trader) in the chaotic aftermath of WW2. A love of reading and self-study, coupled with street-smarts, untamed curiosity, ambition and energy, soon made him start a one-man business in the then new area of plastics processing. Disregarding conventional chemistry and physics wisdom he invented several new processes and plastic materials. A tinkerer, truth seeker and inventor at heart he decided early on to make his living selling licenses and collecting royalties, rather than becoming a manufacturer.

Engel's introduction to horology came in the early 1950's, when his UK licensee turned out to be a serious collector of Breguet timepieces, who gave him a copy of Sir David Salomon's Breguet book as a gift. Engel caught the watch collector's bug, just as he came into his first chunk of disposable income. In his single-minded - if not to say obsessive - manner that characterized all his endeavors he started to study Breguet and collect his masterpieces. Engel taught himself watchmaking, taking a special interest in the techniques used to produce fine rose-engine cut dials in the style of Breguet. With his inherent mechanical aptitude he became a good dial and casemaker, but employed formally trained craftsman to make unique movements for the watches that bore his name on the dial.

The charm - and weakness - of autobiographies of this kind is that they clearly are not "literature", but "stream-of-consciousness" narrative, probably told to a tape-recorder and then transcribed, and only lightly edited. This process also unavoidably leads to numerous small factual errors. This is not primarily a horological book. Engel's family, his inventions and his career get first billing, but there are significant horological tidbits (well known watchmakers like Alfred Hellwig and Richard Danners make their appearance, meetings with prominent dealers like Edgar Mannheimer, Tina Millar and Richard Faulkinert are described, as are once important collectors like Cyril Rosedale and Seth Atwood) to fascinate a horologist.

If you don't like this style of self-serving autobiography don't bother to buy this book, but if you enjoy anyway the somewhat voyeuristic pleasure of an unvarnished self-description of a successful self-made-man the many horological threads that wind through the narrative will be appealing to horological collectors, who may well see sides of themselves in the sometimes obsessive ways Tom Engel pursued his vocational and avocational interests.

[Remark] I haven't read this book and should not comment, but I believe fame and importance come from the opinion of others, not from self-promotion.

R862 Engelmann, M**Leben und wirken**

des Württembergischen pfarrers und feintechnikers Philipp Matthaus Hahn

Berlin: Richard Carl Schmidt & Co., 1923, 23 x 15 cm, 273 pp, 70 ill.

Biography, history (German).

The life and work of the Wurttemberg clergyman and instrument maker Philipp Matthaus Hahn.

R863 [England]**Francis Lever, the young mechanic**

being incidents and lectures explanatory of the first principles of mechanics, with some account of the most celebrated engines ancient and modern

London: John Harris, 1835, 14.0 x 11.5 cm, 252 pp, 28 plates, 5 unnumbered lithograph plates.

Description, miscellany (English).

The title has been given as "The young mechanic, being incidents and lectures ..." with the author Francis Lever (pseudonym). However it is clear that the name is part of the title and the book is anonymous.

Said to have been written by John Harris.

Eight chapters: Incidents and observations; Raising the house and catastrophe; Education and Dr Knowles; Operations of the ancients (buildings, aqueducts and engines); Perpetual motion; Holidays (domestic lectures and lectures on matter); Lecture on mechanical powers; and Lectures on machines (mills, clocks, watches and steam engines). Chapter 8 has 34 pages and 5 plates on horology, including watches and their construction.

[1st edition, excellent] I read this book immediately after Watkins "Affectionate advice to apprentices" and part of my joy is the result of the stark contrast between the two. The aim of Watkins is to persuade apprentices to submit, willingly or otherwise, to their lot in life, using God as a fearful motivator. In contrast, the author of this book takes a thoughtful, not very happy boy and awakens in him and the reader a love and desire for things mechanical. Where one beats into submission the other arouses passionate involvement, and I know which I prefer.

We meet Frank Lever as a rather lost, aimless child with somewhat worried and concerned parents. Then his father, with the help of the teacher Dr Knowles, brings out and develops a latent interest in mechanics. Beginning with experiences on a sea-saw, the concept of the lever is developed and illustrated, with wedges and gears explained as more complex lever systems. By the end we have a conceptual understanding of mechanical powers of far more long term value to us than any amount of dogmatic, rote learning. And this has been achieved with pleasure!

The section on clocks and watches is a little out of context, considering that the whole concept of mechanical powers has to be turned on its head and the "gearing" reversed. And it is probably the least convincing section of the book (especially as plate 24 shows the striking part of De Vick's clock as an explanation of a going train with a fan escapement). But it is interesting as it reaffirms that Britten "borrowed" extensively for his books, two of his figures being obviously derived from the same source as used by the author of this book (Rees or perhaps someone before him).

R864 [England]**Master catalogue of balance staffs, winding stems, ...**

London:, 1953, 60 pp.

Repair (English).

The only reference to this gives the author as "Horophile".

Clerkenwell parts catalogue.

R865 [England]**Observations on the art and trade of clock and watchmaking**

London: J. Richardson, 1812, 8vo, 23 pp.

History (English).

"The causes and consequences of the numerous frauds and innovations resulting from the defect of the laws now being for its better government; and shewing the necessity ... for further regulations to protect and relieve from their present state of extreme distress the persons lawfully engaged in the said art."

R866 [England]**The cabinet of useful arts and manufactures**

designed for the perusal of young persons

Dublin: W. Folds and Son, 1831 (1821), 5.75 x 3.5 inch, 180 pp, frontis, 9 plates.

Description (English).

Printed in 1821 (180 pp), 1825 (180 pp), 1826 (96 pp?), 1827 (143 pp) and 1831 (190 pp)

This book for young people includes brewing beer, watch making, baking, copper plate engraving, leather making and making books. The plates depict a woman spinning, a weaver, a rope maker, a calico printer, a beaver, a currier, a seal, a paper maker, a letterpress printer and workers in a salt mine.

R867 [England]**The Goldsmiths, jewellers, silversmiths, watchmakers, opticians, and cutlers directory**

for London, Birmingham, Liverpool, Manchester, and Sheffield, the watch trade of Coventry, the movement manufacturers, file makers and tool makers of Prescott

London: W. Hogg, 1867 (1863), 18 x 12 cm, 188 pp (188 pp, ill).

Makers (English).

The 1863 edition is available as a Google Book PDF file.

Table of contents and list of advertisers followed by directories of makers and advertisements. The directories, which provide names and addresses, are divided into:

London: Part 1, wholesale, manufacturing and retail directory (19 pages); Part 2, workers and tool makers directory (12 pages); Part 3, opticians, barometer, etc directory (4 pages); Part 4, watch and clock makers (22 pages); Part 5, cutlers and hardware (11 pages).

Birmingham (12 pages).
 Coventry watch trade (3 pages).
 Liverpool (4 pages).
 Manchester watch and instrument trades (2 pages).
 Prescott watch trade (4 pages).
 Sheffield: Part 1, manufacturing and wholesale (9 pages); Part 2, edge tools (6 pages); Part 3, Britannia metal, opticians, watchmakers, etc. (6 pages).
 There are 63 pages of advertisements.

[1867, good] A useful listing of contemporary makers with many interesting examples of advertising.

R868 [England]

The London directory

wholesale, manufacturing, and retail goldsmiths, silversmiths, jewellers, watch makers, opticians, and cutlers

Cambridge: J. Wadsworth (London: Collison & Co.), 1996 (1861), 21x15 cm (21x15 cm), 173 pp directory and 147 pp of contemporary advertisements.

Makers (English).

The 1966 facsimile reprint of the 1861 directory is a limited edition of 500 copies.

“... containing also a comprehensive and carefully classified directory of the wholesale houses, (agents, factors, manufacturers, merchants and importers) at Birmingham, Liverpool, and Manchester; the toolmakers of Prescott; the watch trade of Coventry; the cutlers and silversmith of Sheffield; and the jet manufacturers of Scarborough and Whitby”.

The directory entries are arranged geographically for the cities mentioned in the title. For London there is additionally a street directory. Within each city there the entries are grouped by trades. Advertisements for groups of trades are provided with an alphabetical index.

[Review by Jerzy Ganczarczyk] Basically the entries for a specific trade (or group of trades) give only name and address. However, in some cases additional information is provided as a reference to more than one trade, and/or sub-specialty. This is done by use of selected symbols.

There is interesting information about trades in mid-nineteenth century England, showing the geographical distribution of workers and firms. I have used it with some success to identify ebauche (rough movement) makers by monograms found on the pillar plates of some watches.

The advertisements differ in size and content. Some are only information about who produces what at a given address, but some provide more details and also some drawings.

[Review by Tom Spittler] As the very long title suggests, this is a reprint of a British trade directory of 1861. Most directories are city directories and therefore they provide useful information for that city. This trade directory provides a snapshot of the jewelry and related trades throughout England in 1861. Clockmaking and watchmaking are well covered. The book contains 145 pages of advertisements in addition to the directory listings.

As an example of what is contained in the directory, I have extracted the headings associated with watchmaking in Prescott. The number that follows the heading is the number of listings under that heading. Those headings are:

Watch balance manufacturers (17); Watch barrel manufacturers (12); Watch bolt, case spring, and frame manufacturer (1); Watch clock manufacturers (3); Watch ditton manufacturers (4); Watch finisher (1); Watch frame manufacturers (7); Watch fuzee manufacturers (10); Watch fuzee bottom manufacturers (3); Watch fuzee top manufacturers (2); Watch hand manufacturers (12, of which 4 made seconds hands); Watch index and stud manufacturer (1); Watch lever manufacturer (1); Watch manufacturers (3); Watch movement manufacturers (38); Watch pillar manufacturer (1); Watch pinion manufacturers (24); Watch roller and lever manufacturers (3); Watch spring manufacturers (2); Watch and clock tool manufacturers (27); Watch verge manufacturers (3); Watch vice manufacturers (2); Watch wheel cutters and manufacturers (17).

This is only one town's listings and only for watches. I found it interesting to see the large number of skills necessary to make the parts for a British watch movement in 1861. The whole reprint makes interesting reading. In the advertisement section I discovered an ad by John Greenwood and Sons of 6 St. Johns Sq., Clerkenwell, London, listed as the “sole importers of Welch's and Seth Thomas' celebrated clocks.”

While interesting, this reprint is probably only worthwhile for serious horologists to add to their libraries. (Reprinted by permission. Bulletin No. 319 ©1999 by the National Association of Watch and Clock Collectors, Inc.)

R869 [England]

The technical educator

The new technical educator

an encyclopaedia of technical education

London: Cassell & Co, ca 1900 (ca 1885), 26.0 x 19.5 cm, 4 vols (4 vols of 410 pp, ill, frontis; 412 pp, ill, frontis; 412 pp, ill, frontis; and 428 pp, ill, frontis).

Description (English).

The “Technical educator” was produced in at least 2 editions with the same title, but different contents. The only distinguishing feature is that the internal page headings are either “The Technical Educator” or “The New Technical Educator”. Both editions are undated but given as 1885 or 1900.

My copy of “The Technical Educator” (which is “specially prepared for subscription only”) mentions

the date 1887 in an article.

Cassell also published "The popular educator".

The "Technical Educator" has only a small amount on clocks and watches.

Volume 1 has 3 articles, the second (and all?) by John Timbs, on the origins of clocks and watches.

Volume 4 has 4 articles on horology: Watches, the arrangement of their component parts (2 pages, 7 ill by a London watchmaker); Watches, their principle of construction (2 pages, 1 plate by I. Herrmann); The lever and chronometer escapements (4 pages 2 ill, by I. Herrmann); and The duplex and horizontal escapements (2 pages, 3 ill I. Herrmann).

In addition, there are some related articles on lathes and technical drawing.

The "New Technical Educator" includes a series of articles titled "Watch and clock making" by Glasgow. *[The technical educator, mediocre]* The articles on the origins of clocks and watches in volume 1 are primarily about clocks. They are mediocre and not worth reading.

"Watches, the arrangement of their component parts" is a brief description of an English watch with most of the text on the fusee. It is good, but uninspiring.

"Watches, their principle of construction" is a more technical description, explaining the role of the balance and balance spring, basic train calculations, the purpose and form of teeth, epicycloid generating circles and depthing. This is OK, but too obscure for the general reader. The plate has drawings of watches and escapements (which are not explained in the article) and a drawing of a watch with a pendulum hanging out of it!

The four escapements have rather obscure, very detailed descriptions which are presented out of context. The drawing of the lever escapement is incorrect.

[The new technical educator] See Glasgow "Watch and clock making" for my review of his articles.

R870 [England; Weld, CR]

Reports on the Paris universal exhibition, 1867

1868, 8vo, 6 volumes.

Exhibition (English).

Available as a Google Book PDF file.

Volume 2 (620 pp, ill) contains the article "Horological instruments" by C.R. Weld (19 pages, 2 ill).

[1st edition, mediocre] Weld begins by discussing the need for temperature compensation, compensation balances and mentions the problem of acceleration. Most of the first 13 pages deals with clocks. Weld lists the names of noteworthy exhibitors without providing much detail on their work. What information he does provide relates in particular to pendulums and an escapement by Frodsham.

Weld then discusses watchmaking, again mainly listing exhibitors, but also providing some statistics about production at Besancon and Cluses. He concludes with some remarks on tools.

R871 [English Ladies]

1927, 1942 catalogue, wrist, pocket watches, variety

USA: The English Ladies, 2005, 110 pp, ill.

Catalogue (English).

Reproductions of parts of catalogues published in 1927 and 1942. It includes pocket and wrist watches by Ball, Ingersoll, Dueber-Hampden, Hamilton, Waltham, Elgin, Illinois, Howard, and watch cases.

R872 English Ladies

The English Ladies 1927 catalogs

Waltham and Hamilton watches

1927, 4to, 28 pp, ill.

Catalogue (English).

Compiled from Norris-Alister Ball Co. Blue Book.

R873 Eppner

Entstehung der taschenuhren

fabrikation zu lahn in Schlesien

1854, 8vo.

History (German).

The origin of pocket watch manufacture in Silesia.

R874 Epstein, SR (ed); Prak, Maarten (ed)

Guilds, innovation and the european economy

1400-1800

England: Cambridge University Press, 2010, 9 x 6 inch, 360 pp.

History (English).

Print on demand.

Introduction: guilds, innovation, and the European economy, 1400 - 1800 (S. R. Epstein and Maarten Prak); 1. Craft guilds, the theory of the firm, and early modern proto-industry (Ulrich Pfister); 2. Craft guilds, apprenticeship and technological change in pre-industrial Europe (S. R. Epstein); 3. Subcontracting in guild-based export trades, thirteenth - eighteenth centuries (Catharina Lis and Hugo Soly); 4. Circulation of skilled labour in late medieval and early modern Central Europe (Reinhold Reith); 5. Painters, guilds and the art market during the Dutch Golden Age (Maarten Prak); 6. Craft guilds and technological change: the engine loom in the European silk ribbon industry in the seventeenth and eighteenth centuries (Ulrich Pfister); 7. Guilds, technology and economic change in early modern Venice (Francesca Trivellato); 8. Inventing in a world of guilds: silk fabrics in eighteenth-century (Lyon Liliane

Perez); 9. 'Not to hurt of trade': guilds and innovation in horology and precision instrument making (Anthony Turner); 10. Reaching beyond the city wall: London guilds and national regulation, 1500 - 1700 (Ian Anders Gadd and Patrick Wallis); 11. Guilds in decline? London livery companies and the rise of a liberal economy, 1600 - 1800 (Michael Berlin); Index.

[1st edition] *"A re-examination of the role of guilds in the early modern European economy. Leading economic historians argue that industry before the Industrial Revolution was much more innovative than previous studies have allowed for and explore the different products and production techniques that were launched and developed in this period. Much of this innovation was fostered by the craft guilds that formed the backbone of industrial production before the rise of the steam engine. The book traces the manifold ways in which guilds in a variety of industries in Italy, Austria, Germany, Switzerland, France, Belgium, the Netherlands, and Britain helped to create an institutional environment conducive to technological and marketing innovations."*

The book includes "Not to hurt of trade, guilds and innovation in horology and precision instrument making" by Anthony Turner.

R875 Ernouf, Baron

Histoire de trois ouvriers français

Richard Lenoir, Abraham Louis Breguet, Michel Brezin

Paris: Hachette et Cie, 1867, 12mo, 263 pp.

History (French).

Biographies of Lenoir, Breguet and Brezin.

R876 Esembl-o-graf; Smith, WO Snr; Smith, WO Jnr

Esembl-o-graf

the world's first fully illustrated text book on chronograph repairing and adjusting
Pittsburgh: Western Pennsylvania Horological Institute, USA: Esembl-o-graf Research Laboratories, 1949 to 1955, 10 x 7 inch, CD ROM (1985 pp, ill in 28 volumes, slip case).
Repair (English).

Parts 1-23 were published in 1949 and part 24 in 1951.

Part 25, "The chronograph watch calibre guide and mainspring guide appears to have been produced separately in 2 soft-cover sub-parts.

Parts 1-24 were distributed in a slip case in a numbered edition.

The complete set of 28 volumes has been reproduced on CD ROM.

Detailed instructions for the servicing and repair of specific wristwatch chronograph models available in America at the time:

Vol 1 (48 pages): Landeron calibre 51

Vol 2 (58 pages): Venus, calibre 170

Vol 3 (48 pages): Landeron calibres 48 & 54 with minute register

Vol 4 (56 pages): Valjoux calibre 23

Vol 5 (56 pages): Valjoux calibre 69

Vol 6 (32 pages): Fountainmelon, calibre 205 Datograph (this is a simple calendar, not a chronograph).

Vol 7 56 pages): Valjoux calibre 23 (Old Model)

Vol 8 (54 pages): Unicompax Minute Register (calibres 285, 287, 292, 385, 386, 387)

Vol 9 (66 pages): Venus calibre 150

Vol 10 (70 pages): Valjoux calibre 84

Vol 11 (64 pages): Lemania calibre 15

Vol 12 (58 pages): Mido Multicenter Chronograph calibre 1300

Vol 13 (90 pages): Valjoux calibre 71

Vol 14 (86 pages): Lemania calibre CH 27

Vol 15 (56 pages): Pierce calibre 134

Vol 16 ((36 pages): Movado calibre 475 Calendograph (this is a simple calendar, not a chronograph).

Vol 17 (90 pages): Movado calibres 90M and 95M

Vol 18 (78 pages): Universal Compax Minute and Hour Register (smaller sizes)

Vol 19 (48 pages): Rolex Oyster Perpetual Chronometer (this is an automatic mechanism, not a chronograph).

Vol 20 (90 pages): Universal Dato-Compax (larger sizes)

Vol 21 (120 pages): Valjoux calibre 72-C

Vol 22 (80 pages): Longines 13L Center Minute Register Chronograph

Vol 23 (114 pages): Venus calibre 179/185

Vol 24 (133 pages): Functional adjustments of the chronograph mechanism (Black Book of Chronograph Repair).

Vol 25 (86 pages): Chronograph identification and Mainspring replacement

Vol 26 (96 pages): Angelus Chronodata calibre 217

Vol 27 (64 pages): Valjoux calibre 77

Vol 28 (52 pages): Venus calibre 188

Some volumes have addendums published by the Western Pennsylvania Horological Institute.

[1st edition, excellent] *Volumes 1 - 23 and 26 - 28 each describe a particular chronograph. They all have the same format:*

First, there is an identification page which shows the top-plate and under dial views of the watch. As

Swiss watches are identified by the keyless setting levers, these are shown separately at the bottom of the page.

Second, 2 pages of instructions for use of the book; these are the same in each volume.

Third, one or more pages with drawings of the parts of the chronograph and their names.

Fourth, 2 pages on adjusting eccentric studs with appropriate warnings.

Fifth, for each of the parts there are 2 pages explaining the disassembly and assembly of that part. They are given in the order in which the parts are removed during disassembly. One page provides a drawing of the part and any screws, oiling instructions, and a photograph of the movement at this stage of disassembly. The other page has instructions for and hazards in disassembly of the part, instructions for and hazards in assembly, the functions of the part and remarks.

Sixth, instructions for testing the chronograph after assembly and methods of correcting simple faults.

Seventh, directions for reading the dial and setting the hands correctly.

These volumes are excellent in that they achieve their purpose very well. A novice, with patience and care, could quite easily strip, clean, assemble and perform minor adjustments on chronographs with confidence.

The obvious fault with this structure is that there is no overall description of how the chronographs work. Although the function of each part is explained, this is done in order of disassembly and not in the order necessary to understand its behaviour and interaction in the context operating the chronograph. And so the user of these books should read Lecoultré "A guide to complicated watches", Humbert "The chronograph, its mechanism and repair" and other books first, to get an overall understanding of chronograph mechanisms.

Also, because each chronograph is discussed in isolation, there is no easy way to compare chronographs and recognise similarities and differences. We are given very precise, cookery-book instructions for each watch and by following them word-by-word we can strip and assemble that type of watch. But we may never develop an adequate understanding of chronograph mechanisms. Humbert covers much more in far fewer pages. He achieves this by explaining principles and noting that most chronographs are minor variations on a few different designs.

*Which approach is better? *Esembl-o-graf* enables us to fairly mindlessly, but successfully work on chronographs whereas Humbert requires us to understand them. So the main problem with *Esembl-o-graf* is: what happens when we are given a chronograph that is not described in the 28 published volumes? In fact, after working on a few chronographs we will probably find we no longer need to refer to these volumes, except on rare occasions when we want to check something.*

Volumes 24, Functional adjustments of the chronograph mechanism, is completely different. It gives very clear descriptions of the design and action of different parts of the chronograph mechanism, explains how and why faults occur and gives detailed repair instructions. Covered are the return to zero mechanism (in particular the flyback lever), the minute register mechanism, magnetism, and springs and studs, amongst other topics. This volume is also excellent. However it does not cover everything and Humbert's book should also be studied.

The separation of repair from basic cleaning and adjusting is a very good idea. Repairers should be warned not to alter parts until they are absolutely certain of the cause of the fault and how to remedy it. Indeed, most chronographs do not need much repair, other than as a result of wear, unless they have been previously damaged by poor work. And readers of these volumes should remember to tread very carefully before undertaking any of the tasks described here.

Volume 25 is in two parts. The first part (38 pages) explains how to identify a chronograph and then reproduces the identification pages from the individual watch volumes. The second part (34 pages) explains how to replace a mainspring and then gives specific information for each chronograph. This consists of a photograph of the watch, a list of the parts that have to be removed in order to get at the barrel, and the mainspring dimensions (width, strength and length). The writers note that all information was obtained from actual watches; they found that watch companies sometimes specified different mainsprings from those actually used.

Overall, this collection provides a wealth of very valuable information presented clearly and precisely. Despite the lack of an overview of chronograph mechanisms and limitations of the repair volume, it should be compulsory reading for anyone who intends to do more than just look at these watches.

R877 *Esembl-o-graf*; Smith, WO Snr; Smith, WO Jnr

The chronograph watch calibre guide

identification of all chronograph movements currently sold in the United States of America
USA: *Esembl-o-graf* Research Laboratories, 1950, 9.5 x 7 inch, 35 pp, ill.

Identification, repair (English).

This, together with "The chronograph watch mainspring guide", forms part 25 of "*Esembl-o-graf*, the world's first fully illustrated text book on chronograph repairing and adjusting" (which see), but it is often sold separately.

R878 *Espinos*

Dialogo de la relojeria

Valencia., 1802, 112 pp.

(Spanish).

Listed in Tardy.

R879 ETA SA**125 Jahre ETA SA**

Switzerland: ETA SA, 1981, 27 x 21 cm, 36 pp, ill.
History (German).

R880 Etchells, CT**Repairing repeating watches**

USA: Adams Brown Co (Chicago: Hazlitt & Walker), nd (1917), 19.5 x 13.5 cm, 26 pp, 11 ill.
Repair (English).

This book was first published in parts in the *Horological Journal* from February to September 1892.

There may be a modern reprint.

A description of some features of repeaters with remarks on the problems of repairing them and a few specific repair instructions. Written a guide for country jobbers.

[1st edition, fair] A strange booklet. Much is a tirade against customers, botchers and the harm they do, cheap watches, and thin repeaters being bad. Most of the rest is descriptive, giving information about some of the features of different types of repeater. There are general comments about being very careful not to damage parts, not to alter parts and likely problems to be encountered. But the only specific repair tips concern loose hand-setting taper pins, repairing racks and bushing holes. The few illustrations are poor. Although this booklet is uninspiring, what it says is satisfactory and it is better than nothing. Also, the abuse of jobbers is enjoyable and instructive!

R881 Etienne, JP**Petit manuel, notions sur l'horlogerie**

pour les personnes qui font usage des montres

France:, 1810, 33 pp, 1 plate.

(French).

Small manual, ideas of horology for people who make use of watches.

R882 Evans, G**Time, time and time again**

England: Quinto Press, 2008, 24 x 16 cm, 227 pp, 20 b/w ill, 18 plates.

Biography, history (English).

[1st edition, review by Fortunat Mueller-Maerki] Some horological books deeply impact me by blasting open entirely new areas of knowledge and insight; others I enjoy because they are amusing, entertaining or well crafted. Some books are extremely useful to me as information sources to be consulted again and again because they provide well organized facts on an important subject. And then there are books that I am glad they exist, because they provide the only permanent record on a relatively obscure corner of horological history. The book under review falls in the latter category.

The book consists of the autobiographical reminiscences of Geoffrey Evans, who was well positioned to observe British horology in the second half of the 20th century. The author, after coming of age during World War II, began his professional career as a Design Engineer in a watch factory in Wales UK, rising to Chief Engineer of the Anglo-Celtic wrist watch factory in Ystradgynlais, Wales, putting him in a position to document more than three decades in a virtually unrecorded chapter in British horological history: The valiant, but eventually unsuccessful efforts to extend Britain's period of horological glory into the age of mass production, are described in the first 100 pages of the book under review (and in a 30 page technical appendix).

By the early 1980's Evans had become the National Secretary of the British Horological Institute, putting him at a central point of the efforts to maintain professional standards in the British horological trades at a time when formal horological education was collapsing. This soon also led to his involvement with the British Watch and Clock Manufacturers Association as their Secretary General. The BWCMA merged with the Watch and Clock Importers Association to form the British Horological Federation. After serving this trade group in parallel to his duties at BHI, Evans continued part time as Secretary General of BHF after his retirement from BHI in 1995 until 2005. Some 80 pages of the book recount episodes and encounters of the author while serving these professional and trade bodies. This again is a poorly documented sector of British horological history. While part of this section makes for somewhat tedious reading, this reader is glad that these facts are preserved in this book for future generations of horological historians.

R883 Evans, J**Thomas Tompion at the dial and three crowns**

England: Antiquarian Horological Society, 2006, 30.0 x 24.0 cm, 128 pp, 110 ill, ads.

Biography, dating (English).

"With a concise check list of the clocks, watches and instruments from his Workshops".

A biography of Tompion (51 pages) followed by checklists of his clocks, watches and instruments (64 pages) and an index.

[1st edition, very good] The first part of this book is a biography of Tompion, including some information on his relationships with Robert Hooke (including interesting remarks about the origins of wheel-cutting engines), Edward Banger and George Graham. Although this updates the biography given by Symonds in "Thomas Tompion, his life and work", Tompion's life (especially his early years and where he trained) remains a mystery. Other than a few interesting conjectures, what we know has to be based on the clocks and watches that still exist. But even these are difficult to interpret because some do not have serial

numbers, some may have been in stock for a long time before they were sold, and just when the numbered clocks were produced is not known.

The lack of documents and other evidence creates problems with the check lists of clocks and watches. These are prefaced by a long and detailed explanation of sources and how dates, especially for the clocks, were estimated.

The book is non-technical and there is no information on the designs of Tompion's clocks and watches. A few features, such as escapements are mentioned, but they are not explained and so they are not useful.

Although the biography is very good and worth reading, the book will mainly be of interest to those who collect Tompion timepieces. Unfortunately his watches are only mentioned in passing, with only a couple of interesting illustrations, and so the watch enthusiast might hesitate before reading this book.

[Review by Fortunat Mueller-Maerki] Thomas Tompion (1639 - 1713) undoubtedly is the best known British clockmaker from the "classic period" of English horology in the late 17th century. While most horological enthusiasts have heard of him, many know very few details about his life and work. There are two reasons for this: Although Tompion was prolific, his clocks and watches have been sought after for so long that few appear in the marketplace, and at prices that are out of reach for most collectors. And no new book dedicated to Tompion has been published since 1951. "Thomas Tompion - his Life and Work" by Robert Symonds is a 300 plus page, well illustrated monograph, but has been out of print for decades, and can cost up to \$200 if you can find a used copy at all. Much additional information (including many newly discovered timekeepers) has come to light in the last half century.

Jeremy Evans, for many years Curator at the horological department of the British Museum until his recent retirement, has been a lifelong scholar of Tompion's life and his output. Evans is generally considered the leading global authority on the subject. It is well known that for decades he has been amassing facts and details with the eventual goal of creating the definitive text on Tompion. The book under review is not this long awaited opus magnum, but a "teaser" that will only whet the appetite of Tompion aficionados around the world.

In 2003, on occasion of the 300th anniversary of Tompion becoming the Master of "The Worshipful Company of Clockmakers of the City of London", Evans was invited to give the prestigious Dingwall-Beloe Lecture at the British Museum. The lecture was subsequently printed in "Proceedings of the AHS" (September and December issues 2004). Now this text - slightly enlarged - has been combined with Evans's hereto unpublished "Concise Checklist..." into this book, the first new book on Tompion after more than fifty years.

The lecture, taking up about 50 pages, focuses on Tompion's life in a building at the corner of Fleet Street and Water Street, a house known as the "Dial and Three Crowns". This corresponds to the time from 1676 till around 1705, and offers only a cursory coverage of his youth and formative period, and of the final stage of his life with the transfer of the business into other hands. This is a biographical overview, covering mainly his personal and professional life, rather than providing an in depth assessment of his inventions, or a technical description of his work. This reviewer found the account entertaining, interesting and easy to read. The fact that this text was originally an illustrated lecture is still quite evident: nearly every other paragraph specifically refers to one of the 110 illustrations. Both text and images are witness to the incredible depth of Evans's scholarship; he must have spent decades searching through old manuscripts, maps and records to find the many interesting tidbits of Tompiana he presents. These informational nuggets make this reviewer anticipate with great eagerness the forthcoming comprehensive Tompion book by Evans, which presumably will also cover the rest of his life and his work with the same amount of highly illuminating detail.

The second half of the book is dedicated to what is labeled "A Concise Checklist of the Clocks, Watches and Instruments from the Workshops of Thomas Tompion". The "concise" list covers some 58 pages! Evans describes it as a "simple checklist of all surviving Tompion items which have been recorded thus far, ... includes numbered items that have been identified in manuscript and printed sources". The list leaves out much of the data gathered by Evans over the years on such aspects as dimensions, descriptions, signatures, other marks, etc. The list is organized into sections:

Section 1: Clocks (about 200 unnumbered clocks in 15 categories, and nearly 500 numbered clocks of a possible range of about 800 numbered clocks).

Section 2: Watches (about a dozen unnumbered watches, about 800 numbered watches from the first series, a small number of alarm watches and clock watches, 300 watches from the repeating series).

Section 3: Instruments and Tools (Sundials, barometers, tools).

Section 4: Works by Apprentices and Associates (Clocks, Watches)

True to the "concise" nature of the list, information provided on each item is limited to the essentials on one line: Signature, type, duration, a few words on case and dial, a few words of Notes, and - most helpful - where appropriate, bibliographic references to other publications. General dating guidelines are also provided. Obviously, the list is a perpetual work in progress, if for no other reason that every year a handful of Tompion clocks and watches resurface.

This publication is neither an introductory overview text on Tompion's role in horological history, nor is it the - still outstanding - definitive volume on Tompion. But it is a welcome advance-view of what presumably will, in due course, be only two elements of the comprehensive book.

Given the enormous volume of information on Tompion already collected by Evans it may well be a while before we see the "big book"; but given the richness of what is in the current publication I have no doubt that it will have been worth the wait. Any horologist seriously interested in classic British clocks, or in

Tompion specifically will consider the current book a "must have" title. The AHS deserves praise for taking the initiative for making this horological scholarship available now, and for giving us all so much more to look forward to.

[Remark] If a "big book" appears I suspect it would have to complement rather than expand this book. Evans indicates that we are not likely to learn much more about Tompion's life and I suspect the check lists will not expand all that much in the future. However, what Evans could do is to fill in the technical gaps by producing a book that goes into the details of Tompion's clock and watch designs, including escapements, repeater mechanisms and other features. I for one would like to learn more about them.

R884 Evard, M**Cernier, chronique d'un village chef-lieu**

2010, 163 pp, 200 ill.

History (French).

Village de naissance de Roskopf, chef-lieu des usines de Fontainemelon, les Maillardets et Chézard St-Martin.

R885 Evard, M**Fontainemelon, chronique d'un village industriel**

Switzerland: Editions de la Chatiere, 1999, 119 pp, ill.

History (French).

Une grande partie de cet ouvrage traite de l'industrie horlogère, richesse tant historique que humaine de ce village.

R886 Excelsior**A practical treatise on the balance spring**

New York: D.H. Hopkinson Jewelers Circular, 1876, 20.5 x 14.0 cm, 144 pp, 12 ill.

Repair (English, French, German).

See Fritts "The watch adjuster's manual" for the revised editions.

First published as a series of articles in the Jewelers Circular under the title "Practical hints on watch repairing" and then revised for this book. Fritts noted in his later book that "A practical treatise on the balance spring" "... has been translated into German and French and reprinted abroad - without my consent"; but I don't know which titles these are.

"including making, fitting, adjusting to isochronism and positions and rating, also the adjustment for heat and cold".

A 6 page introduction followed by six parts: Making (11 pages), Fitting (23 pages), Adjustment to positions (4 pages), Adjustment to isochronism (42 pages), Regulating (23 pages) and Adjustment for temperature (23 pages). The book concludes with an appendix with additional notes.

[1st edition, partial review, very good] Adjusting is not my strong point; which words you may treat as a gross understatement if you wish! So I feel diffident about commenting on this book.

The book is written in a delightful, convincing style. It is based on rational argument rather than mystical manipulation, making it credible; whereas some other accounts often seem to me vague and based on haphazard fiddling.

The first three sections (balance spring making and fitting, and positional adjustment) are very good. In particular, the making of spiral and helical balance springs is, I think, the best I have read.

But I have some concerns about fourth next section on isochronism. I found the discussion of pinning points inadequate. More importantly, Fritts rejects Phillips terminal curves and proposes his own, based on a much simpler method. In justifying this, he suggests that the center of gravity of the spring is not all that important and he writes "I shall not weary the reader with a mathematical analysis ..." Usually such statements hide inability and I doubt if he could prove his ideas even if he wanted to; I have a very strong impression that Fritts, although excellent at the practice of watchmaking, is weak when it comes to theory. Although this is only one point, and much of the rest of the section is very good, it reinforces my feeling that adjusting for isochronism is an art based on experience and there are no hard and fast rules for success.

The remainder of the book provides excellent information on making compensation balances and temperature adjustment.

R887 Exposition Internationale**Catalogue officiel illustre et explicatif**

exposition internationale de machines et d'outils employées dans l'horlogerie, la bijouterie, la fabrication des boites a musique et les branches qui se rattachent a ces industries a Genève

Genève: E Privat, 1880, 8vo, 156 pp.

Tools (French).

Official illustrated and descriptive catalogue of the international exhibition of machines and tools employed in horology, jewellery, the manufacture of music boxes and the branches which are linked to these industries in Geneva.

Catalogue of an exhibition of machines and tools held in May-July 1880.

R888 Eyermann, E**Chemisch-technisches rezeptbuch fur uhrmacher**

Germany: W. Knapp, 1923 (1912), 120 pp (113 pp).

Repair (German).

Volume 3 in the series "Fachbibliothek fur Uhrmacher".

Chemical-technical receipt book for horologists.

R889 Eyermann, E; Reutebuch, R

Rezept und nachschlagebuch

chemisch-technisch für uhrmacher, optiker, feinwerkgestalter
Berlin: Historische Uhrenbücher, 2005 (1952), 292 pp, ill.
Repair (German).

The 2005 printing is a facsimile of 1952 edition.

Chemical recipes useful to the practicing horologist.

R890 Faber, E; Unger, S

American wristwatches

Amerikanische armbanduhren

five decades of style and design

50 jahre style und design

USA: Schiffer, Munich: Callway, 1997 (1988), 28 x 25 cm, 272 pp, 698 ills, price guide (248 pp, 565 ill).

Description, history, price guide (English, German).

Separate English and German editions.

"Introduced into a sceptical American marketplace early in the twentieth century, the wristwatch soon caught the consumer's imagination. It was not long before American watch manufacturers adopted the form and brought their ingenuity and creativity to bear on the style and design of the wristwatch. Fifty years of innovation and beauty follow, and this beautiful book brings you the story in word and picture. Illustrated with over 600 full color pictures, the authors have traced the history of the American wristwatch. Their original research brings life to some of the persons who influenced its development. Design periods are defined and the watches they engendered are amply illustrated giving the reader knowledge that is valuable, both for the appreciation and the collecting of these wristwatches."

[1st edition, review by Roland Murphy] Chapter by chapter, this book goes through the history and development of the wristwatch in America, along with a brief history of the major American watch companies, and their more important contributions to the development of the wristwatch, for example, the Hamilton Electrics and the Bulova Accutron.

The first chapter deals with the transition from pocket watch to wristwatch, explaining how the first World War helped make the wristwatch acceptable. It goes on to explain that the soldiers' exposure to the wristwatch during the war translated into a new demand which prompted companies like Waltham and Elgin to capitalize on the new market.

It also shows how influences from pocket watches were evident in most early wristwatches, for example, the winding crown at 12 o'clock, and the fact that some wristwatches were just small pocket watches with fixed lugs.

It does a very good job at depicting the changes in style and design of the wristwatch since the first World War.

It's easy to see that the writers have made numerous interviews in compiling information for this book.

This is most evident in the sections on Hamilton, Bulova, and Gruen.

Watch company histories, production dates, and a glossary are also included in this book and can be found in the back.

Apart from a few errors in the descriptions of some of the watches and somewhat sketchy historical descriptions of most of the watch companies, this book is very worthwhile reading. One minor error, for example, is the statement that the case for the Hamilton Spur was manufactured by Wadsworth, when, in fact, Schwab & Wuischpard made the case.

Most impressive were the hundreds of beautiful full color photographs of vintage American watches. This is truly a pictorial history and a "must" for anyone interested in American wristwatches.

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R891 Faessler, F

Histoire de la ville du Locle

des origines a la fin du XIX siècle

Le Locle: Editions Baconniere, 1960, 8vo, 166 pp, frontis, ill.

History (French).

History of Le Locle from its origins to the end of the 19th century.

R892 Faessler, F; Guye, S; Droz, E

Pierre Jaquet-Droz et son temps

La Chaux-de-Fonds: Musée d'Horlogerie, 1971, 8vo, 171 pp, 48 plates.

Exhibition (French).

Pierre Jaquet-Droz and his time. Produced for the 250th anniversary of his birth.

Exhibition of works from the museum and private collections.

R893 Failey, D; Hefner, R; Klaffky, S

Long Island is my nation

the decorative arts and craftsmen 1640-1830

New York: Society for the Preservation of Long Island Antiquities, 1976, 28 x 22 cm, 304 pp.

History (English).

Includes Long Island silversmiths, clockmakers and watchmakers.

- R894 Falck, P; Holmquist, K; Nodermann, M**
Tidsfodral, svenska urfodral fran fyra sekler
 Stockholm: Nordiska Museet , 1997, 4to, 214 pp, ill.
 History (Swedish).
 On Swedish clock and watch cases.
With a short summary in English.
- R895 Fallet Scheurer, M**
Geschichte der uhrmacherkunst in Basel 1370-1874
 Berne:, 1917, 9.5 x 6.5 inch, 284 pp, no ill.
 History (German).
 History of horology in Basel.
- R896 Fallet Scheurer, M**
La montre de poche est-elle d'invention allemande?
 ca 1920, 11 pp.
 History (French).
 Listed in Tardy. May be a journal article.
 The pocket watch, is it a German invention?
- R897 Fallet Scheurer, M**
La régénération horlogère
 ou la crise horlogère contemporaine étudiée dans ses causes ses effets et ses remédies
 Neuchâtel: Journal Suisse d'Horlogerie, 1927, 8vo, 183 pp, 48 pp ads.
 History (French).
 The regeneration of horology or the contemporary crisis in horology, study of the causes, effects and remedies.
- R898 Fallet Scheurer, M**
Le travail a domicile
 dans l'horlogerie suisse et ses industries annexes
 Berne: Imprimerie de l'Union, 1912, 544 pp, 20 ill.
 History (French).
 The cottage industry in Swiss horology and its associated industries.
Final report published under the auspices of the Comite d'organisation des expositions de Zurich et de Bale de l'industrie a domicile (the organising committee for the Zurich and Basle exhibitions for domestic industries).
- R899 Fallet Scheurer, M**
Les crises de l'industrie horlogère
 dans le canton de Neuchâtel
 Neuveville: Beerstcher, 1914, 24 x 16 cm, 194 pp.
 History (French).
 The crises of the horological industry in the canton of Neuchatel.
Thesis.
- R900 Fallet, Estelle**
L'atelier d'horlogerie de l'Hospice du Locle
 1827-1879, l'éducation par le travail
 1999, 175 pp, ill.
 History (French).
- R901 Fallet, Estelle**
La mesure du temps en mer
 et les horlogers suisses
 La Chaux-de-Fonds: Institut l'Homme et le Temps, 1995, 28.5 x 19 cm, 520 pp, ill.
 History (French).
 Reference book on Swiss chronometry. Bulletins de marche of the Neuchâtel Observatory from 1860 to 1885.
"A comprehensive study of Swiss marine chronometer makers and their work; some makers such as Nardin and Ditisheim are well known, but this book also includes a lot of less well known makers. The book includes a chapter on the Neuchâtel and Geneva Observatories where chronometers were tested and a list of all the chronometers (with their serial numbers) on trial at Neuchâtel between 1860 and 1984."
- R902 Fallet, Estelle**
Tissot, 150 years of history 1853 - 2003
Tissot, 150 ans d'histoire 1853 - 2003
Tissot, 150 anni di storia
Tissot: 150 Jahre geschichte - 1853-2003
 Le Locle: Tissot S.A., 2003, 30.5 x 25.0 cm, 351 pp, colour ill.
 History (English, French, German, Spanish).
 Separate language editions.
 Six sections: Le Locle (31 pages), Technology and the product (87 pages), From small factory to industrial group (75 pages), Commerce (45 pages), Communication (43 pages), and The future of Tissot (2 pages).

Followed by annexes (39 pages including bibliography, list of calibres and serial number/date table). There is a table of contents but no index.

[1st edition, mediocre] I am confused! When I read "Tissot, the story of a watch company" (the review of which you should read first) I decided that Estelle Fallet is a competent journalist who knows nothing about horology. But I find that she has a degree in history, French literature and history of art from the University of Neuchâtel, has been in charge of research at the Musée International d'Horlogerie in La Chaux-de-Fonds, and has been the curator of the Musée de l'Horlogerie et de l'Émaillerie in Geneva. In addition she has written several books and articles on horology. So it seems I was right when I suggested she must have a Dr Jeckle/Mr Hyde split personality! But perhaps not. This book is undoubtedly better than "Tissot, the story of a watch company"; it is, after all, a major work on a watch company. But it is only a little better.

However, it would be grossly unfair to condemn Fallet with a few brief comments. And so I need to carefully explain why I think she has largely failed to produce something worth while.

The preamble to this book begins in the 1940's with a picture of harmony, workers singing at the bench overseen by the mother-figure of Marie Tissot while children play happily outside; a scene interrupted by the "tall and emaciated silhouette of Edouard-Louis Tissot". This may be pretty, but it is not realistic and is devoid of historical importance. Written in the royal "we", the preamble wanders around explaining the basis for the book in the archives, established by Marie Tissot, and oral sources. Interleaved between the text are quotations which are quite often out of context; such as a 1928 remark on overdrafts in the midst of a 2001 description of the attitudes of Thiebaud, the chairman of Tissot. The reader is left with a warm, fuzzy feeling, but wondering what on earth is going on.

The first chapter, "Le Locle", covers the history of the town and the Tissot factory buildings. The history is far too vague. We are told there was a crisis between 1857 and 1861 but not what the crisis was or how it affected watchmaking. And apparently Neuchâtel became a part of Switzerland in 1848, but there is no explanation of the status of the region before then and no mention of how and why it joined Switzerland; maybe this would be common knowledge to a citizen of Neuchâtel, but I doubt if many other readers know anything about it. Instead we are treated to comments like: "Perhaps (she) took away with her a fine chatelaine watch enamelled and ornamented with fine pearls, dazzling with the sparkle of diamond roses". And we are told that the streets of Le Locle were renamed and houses renumbered. Comments that are sometimes fatuous and frequently unnecessary. Intertwined with these snippets of information, presented almost randomly and without regard for chronological order, are some strange statements. For example "In daily life, the protestant work ethic left its mark on people - such as an austere timer working with Ulysse Nardin ...". As the book is about Tissot, we don't know who the timer was, and we are not told what effect the protestant work ethic had, the sentence is stunningly irrelevant and meaningless! Similarly: "Community life in the Neuchâtel Mountains illustrates the combination of many different factors (climatic, religious, political, economic or intellectual), which were fostered by the social structures built on the family roots of the agricultural and industrial companies". I have no idea what Fallet is trying to say, if anything; maybe it is, as I suspect, a meaningless generalisation.

This style continues in the second part of the chapter, which describes the buildings occupied by Tissot. We are provided with lots of small bits of information which are not very interesting. Most importantly these are presented as facts without any attempt to make them intelligible, let alone to explain their significance. For example, there is a brief, written description of the "Shooting Range Plateau" area in Le Locle, including street names. But there is no map of the town and simply no way the reader can convert these words into a useful picture. Certainly some snippets of information are relevant and interesting, but there is no coherent history. Indeed, this chapter is gossip, not history. By that I mean it is like a dinner conversation between friends; free-flowing chatter composed of remarks, anecdotes and personal observations, generally related, but sometimes branching out in unexpected directions, and containing little that is insightful. Enjoyable at the time, but quickly forgotten.

A lot of the time the reader probably doesn't want to know, as with fine detail relating to building codes. But some very important statements are treated with the same neglect. One of the most significant bits of "gossip" we are given is: "After impressive dismantling operations and after equipment, workpieces and tooling has been assigned to the Omega factory or buried in a trench dug within the perimeter of the Ranconniere factory ...". Without any comment, Fallet has managed to dismiss the quartz crisis in a single sentence! The fact that she does not bother to tell us what and where the Ranconniere factory is, together with all the other unexplained snippets in the chapter, pales into insignificance when compared with this utterly incomprehensible oversight. In her other book, "Tissot, the story of a watch company", she provides a fascinating photograph showing about 6.5 cubic metres (160 cubic feet) of watch movements "destined for the rubbish heap, circa 1978"; but there she provides a vague indication of the crisis, appropriate enough for such an unimportant book. But here, in an apparently major study, can such neglect be accepted? No. (In fact, the same photo appears much later in this book, but without comment.) It appears that Fallet believes historical research consists of collecting pieces of information and publishing them. If so, I can only assume she has had an incompetent education, because historical research involves far, far more. Most importantly, it is the job of the historian to interpret and understand the significance of the evidence, to convert a collection of facts into an explanation of how and why events took place. Fallet has taken the first step, both easy and tedious, of extracting and collating information from archives. Apparently she has then decided that no more is required and published a selection of these snippets. Sadly, the result is boring, serves no useful purpose and leaves the reader just as ignorant

as he was before he began reading.

The second chapter, "Technology and the Product", is no better. Near the beginning we are told: "But the quality of Neuchâtel watches suffered in the first instance from certain technical inadequacies, most of which were resolved after the mid-19th century. ... Creativity was encouraged by a 'crisis' effect which resulted from the commercial development of watchmaking and the general economic trend." Nowhere are the technical inadequacies explained and there is no explanation of what is meant by a 'crisis' effect. And this failing, of making statements without any attempt to explain them, continues throughout the book. The most startling example in the second chapter is where Fallet presents two tables of watch production. The first, headed "Tissot production" shows that from 1974 to 1984 Tissot manufactured 7,918,654 watches. The second, headed "Tissot sales by calibre" shows that in the same period the company sold 4,662,041 watches, a difference of 3,256,613 watches. But Fallet does not mention these tables and there is nothing in the text to explain this discrepancy. We might assume that these 3 million watches went to the rubbish heap, but some of the discrepancies occur much later; for example, 358,000 watches were manufactured in 1984 but only 14,140 were sold. There are other possibilities, for example Tissot manufactured movements for Omega, but failing to explain these figures is simply negligent.

But then, Fallet's failings seem to be matched by incompetent administration within Tissot: "I was recruited on 1 January 1991 as a technical assistant to the product managers of Tissot in Bienne. I very soon found that component standardisation was non-existent. ... The typical example is the Rock (watch), Baby, Unisex, Gent models: we have 140,000 glasses that are too thin and cannot be used to make water-resistant watches (price Fr. 854,000.-) ... Tissot crowns: we have cut the 400 types down to 50, and have 350 useless stocks. ... for the PR 100, we had eight suppliers and nothing was interchangeable because we were the victims of our suppliers who have no set standards and act as they think fit". And these comments date from 1993-94! It is astounding that the company survived; or, I should say, was allowed to survive.

In addition, as earlier, some sentences simply don't make sense: "By initiating this process of reflection, the Le Locle watchmakers corrected the juxtaposition, inadequately formulated up to then, of the technical and commercial domains of their company management. Hence, the application of theoretical principles, acquired in the course of personal exchanges and during travel, became part of the modern working methods of the factory." An economic historian would be proud to write such a paragraph!

Fortunately almost no technical information is provided, the chapter being purely descriptive. There are no useful photographs of movements and almost no information on different calibres; although there is a calibre list in the annexes to which Fallet never refers. But technical words are often misused or unintelligible. For example: "... the steel centring plate was finished ... This calibre is based on a Lecoultre 12/BE calibre for the centring, ...". Of course, the problem may be caused by the translator, the Swiss company Interserv SA. However, the translation is very good, with the exception of a strange penchant to use the word "factory" instead of "manufacture"; the most enjoyable example of this is: "The factory of large series of economical escapement calibres entrusted to Tissot by SSIH for the whole group proved a failure. Obligated to adapt its capacities to falling sales, the factory therefore announced on 1 December 1976, the abandon of the factory of its products ...". So perhaps the original French made sense, although I personally doubt it. However, the lack of technical information is not surprising. Tissot has always been a minor, quite small company producing ordinary, good quality watches, and so there is not much to comment on. The one exception to this is the Astrolon watch. Designed between 1964 and 1971, this was a nearly all plastic mechanical watch and definitely innovative. Unfortunately it was not popular and produced at the beginning of the quartz revolution which destroyed any hope of success; about 500,000 finished watches were incinerated because they could not be sold.

Not much needs to be said about chapter 3, "Small factory to Industrial Group". This provides quite a good history of the SSIH holding company and its eventual collapse. Again the chapter fails because it is restricted to considering Tissot and to using Tissot archives. So events are mentioned, such as the "Zenith bomb" without any explanation. And in consequence the reader gains little understanding events and their general impact, within which Tissot was only one of hundreds of players. But by reading between the lines a vague picture emerges. In addition, the confusing and meaningless continue to appear; such as the unintelligible statement: "the history of industrialisation reveals two sensitive dimensions of time: working hours and time devoted to work".

Chapter 4, "Commerce", covers sales methods, primarily in Russia and Switzerland. And chapter 5, "Communication", concerns advertising, including international exhibitions and sponsorships. Both exhibit the same style and problems described above, and neither contains anything of note.

Having reached the end of this book, I tried to recall what I had read. With the exception of a couple of points (the Astrolon watch and the history of SSIH) I have no clear idea of what the book contains and, more importantly, I have only a vague and fragmented idea of the history of Tissot. My overwhelming memory is of reading many, seemingly random snippets of information which are of little interest.

Perhaps this reaction is partly explained by Fallet herself. At the end of the book she writes: "Abundantly fed by the exhaustively preserved documents ... this story presents a wealth of information to such an extent that any attempt to reach conclusions on this subject would be a delicate, if not impossible, venture." To put this another way, the archival information simply does not provide a coherent, intelligible historical record. Instead it presents little, indeed microscopic, fragments of day-to-day events which fail to provide an overall picture. Fallet was buried under minutia! And the problem is exacerbated by two important failings. First, like nearly all (perhaps all?) books on individual companies, Tissot is viewed

in isolation without any attempt to put it into context. And second, the material is not presented strictly chronologically; instead, Fallet wanders backwards and forwards through time for no apparent reason. The result is that the reader is left with a vague feeling of having learnt something, but having no idea what.

R903 Fallet, Estelle

Tissot, the story of a watch company

Switzerland: Tissot S.A., 2002, 16.5 x 11.0 cm, 279 pp, b/w ill.

History (English, French, German, Italian, Spanish, Chinese, Russian).

Several million copies were printed for the 150th anniversary of Tissot and given away to watch buyers.

Diary of a trip to Switzerland and Tissot S.A.

[1st edition, poor] *I love reading very good books. It is a real pleasure to have things explained clearly and logically, and it is especially gratifying when the author goes beyond mere facts and analyses relationships and consequences. When the influences of social, economic and political conditions on the history of horology are carefully examined. When the designs of mechanisms are explained simply and, more importantly, when the reasons why particular features are necessary is illuminated. When I end up not just knowing more, but understanding more.*

I love reviewing bad books. Although often slow and difficult, it is a pleasure to work through superficial and unjustified statements, understand incoherent and often meaningless arguments and come to some understanding of the aim of such a book and how it fails. I loved reviewing this book.

At first I didn't understand the purpose of it because I was continually distracted by the search for something about the history of Tissot. After reading about half the book I realised that it was pointless to look for information and the writer's aims were becoming clear.

This book is the personal diary of Estelle Fallet covering a couple of weeks she spent in Switzerland. Throughout the book she is referred to as "sir", a rather strange and unnecessary artifice reinforced by the very strange postscript. It is simply an autobiography describing what she did and who she met. Although not stated, and indeed apparently contradicted, I presume she was there by the invitation of Tissot to gather material for another book she was asked by Tissot to write, "Tissot, 150 years of history 1853 - 2003". Fallet admits she knew nothing about horology and the diary appears to summarise what she learnt. Unfortunately, most of the historical information which she gives, gleaned from interviews and tourist brochures, is superficial, sometimes wrong, and quite uninteresting. At one point she writes "the Watchmaker's Metropolis is giving up its secrets" but she doesn't bother to share any of them with us. Presumably all that she learned and made notes on appears in the other book, but this book has almost nothing to do with Tissot and even less with horology in general, and Fallet appears to remain almost as ignorant at the end as when she started. Like Jaquet and Chapuis in "Technique and history of the swiss watch" the Jurassic watchmaker is presented as the perfect human, an industrious genius competing with Jesus for the right to sit beside God. This sort of self-congratulatory, meaningless generalisation has no place in a serious book, although later Fallet (probably accidentally) provides a more realistic quote: "... if you want to become something, be a watchmaker. ... Just look at all the idiots who manage to earn spadefuls of gold". Simplistic glorification, common in advertisements, permeates the book and we never see past it so that we can learn something vaguely useful.

We are actually forewarned that this is a strange book. In the preface written by Francois Thiebaud, President of Tissot, we learn that the book was deliberately published as a paperback and the intention was to produce an "historical novel". An historical novel! A fictional romance! Well fortunately it isn't, as a personal diary is much more appealing than rampant fantasy, although I must admit there is quite a bit of fantasy here. Thiebaud goes on to say "that is why ... I am proud to say that no other traditional watch company has ever produced anything like the book you presently hold in your hands". This is a great relief for me. If all watch companies produced such books we would be buried under a pile cheap books printed in China on poor paper and suffocated by the pointless verbiage they would contain. Thiebaud also says "Tissot is the leading industrial manufacturer of traditional Swiss watches". But what about Longines, Rolex, Patek Philippe, Omega and other leading manufacturers of traditional Swiss watches? More interesting is the question: why would a person buying a Tissot watch want to receive a copy of this book? Would someone in China or Australia be interested it? Indeed, why on earth did Tissot decide to print it in the first place? Fallet is a competent wordsmith (I suspect she is a journalist) and the translation into English is very good (it only took a few hours to read the book and it was quite enjoyable), but good writing is pointless if the author has nothing interesting or useful to say. Fallet tells us nothing interesting or useful about Tissot.

[Remark] *I have not read "Tissot, 150 years of history 1853 - 2003" and now I don't want to. Unless Fallet has a Dr Jeckle/Mr Hyde split personality I cannot see how she could write a good book about horology. But perhaps she is able to produce both competent but superficial journalism and thoughtful analysis.*

R904 Fallet, Estelle; Cortat, A

Apprendre l'horlogerie dans les montagnes neuchâtelaises

1740-1810

La Chaux-de-Fonds: Institut l'Homme et le Temps, 2001, 28 x 19 cm, 220 pp, 55 ill.

History (French).

Also described as 176 pp, ill.

“This study, funded by the FNRS and conducted by Estelle Fallet and Alain Cortat, covers the process of learning and transmission of watchmaking expertise in the Neuchâtel mountains over the period 1740 and 1810”.

The book is divided into five chapters: Watchmaking in the Neuchâtel Mountains; The apprenticeship agreement signed before a notary; The conditions of the apprentice watchmaker; Watch training in the eighteenth century; and Identities and networks of transmission.

R905 Fallet, Estelle; Simonin, A

Dix écoles d’horlogerie suisses

chefs d’oeuvre de savoir-faire

Switzerland: Editions Simonin, 2010, 30 x 24 cm, 568 pp, 1400 ill.

History, technical (French).

Ten Swiss schools of watchmaking and their masterpieces of horological knowledge.

Historical and technical work with contributions from several historians. Created in the middle of the 19th century, the the schools specialised vocational training aimed at producing complete watchmakers, ready to answer the needs of local companies.

The schools are those of Geneva, Porrentruy, Bienne, Soleure, Saint-Imier, Neuchâtel, Fleurier, La Chaux-de-Fonds, Locle and the Vallee de Joux. The evolution and work of the schools is covered, as well the adaptation of teaching to industrial requirements, technological inventions, and the evolution of work and trades.

There is a bibliography.

[1st edition, review by Fortunat Mueller-Maerki] The ten watchmaking schools of Switzerland have been pillars of the horological know-how and tradition of Switzerland from the time the first one (Geneva) was founded in 1824 to the present. Six of them are still operating today (Geneva, Le Locle, Bienne, Porrentruy, Solothurn/Grenchen, Le Sentier), while four (La Chaux-de-Fonds, St. Imier, Neuchâtel, Fleurier) have merged into larger regional schools. The history of these schools has been told once before: In 1929 the Association of Swiss Watch School principals published a 272 page volume (with over 130 additional pages with advertising) describing - in a somewhat self promoting format - the seven schools then operating. In spite of its limitations, that long out of print book (Linder, Editor: Les Ecoles Suisses d’Horlogerie – Die Schweizerischen Uhrmacherschulen, Zurich 1929) is much sought after by horological collectors, and if it can be found at all sells for over \$200 a copy.

The new book (originally planned to coincide with the special temporary exhibit on the same subject in Geneva in 2008) is dramatically different and much more informative. It deals not only with the schools as institutions, but devotes a substantial portion of its space to the surviving artifacts of the schools, specifically the unique ‘School Watches’ the graduates of all schools were required to design and build themselves (based on an ebauche) in order to gain their certification as watchmaker. The ten main chapters of the book deal with the ten schools in the order they were founded, and vary in length from 20 to 70 pages. Each of these chapters has two sections, a historic section describing the history of the school, written by local experts (Estelle Fallet, Claude-Alain Künzi, Pierre-Yves Donzé, Hélène Pasquier, Maurice Evard, Anne-Marie Cruchaud, and Vuk Djurinovi) and a ‘Catalog’ section describing selected surviving school watches. The catalog sections vary from 15 to 40 pages per school, with each page describing and illustrating one to three objects per page. The majority of these are highly customized and individualized pocket watches with unique movements, some with complications (and sometimes also unique cases), but the catalog also includes wristwatches, clocks and one of kind horological tools.

Most of these objects are currently in private collections and many have never been published before. A large number of them were exhibited in the 2008/2009 special exhibit at the Musée d’Art et d’Histoire in Geneva. The combined catalog sections amount to nearly 200 pages, and in the opinion of this reviewer are reason enough to purchase this weighty volume. Each artifact is shown with a superb illustration of the movement, often accompanied by additional pictures of dial, case or technical details.

The historical sections on the individual schools are also richly illustrated, with portraits of key people, reproductions of gorgeous vintage technical drawings, facsimiles of regulations and curricula, workshop images etc. In some cases the book includes short specialized essays by additional authors relating to a particular aspect of a school’s history. These ten schools, solidly rooted in the last decades of the 19th century, with their insistence of training ‘complete watchmakers’, people able to produce an entire watch from scratch, were a key element in forming the culture of the Swiss watchmaking industry. Understanding the history and values of these institutions will enhance the readers understanding of the Swiss watch industry as a whole. A short chapter on the future of horological professional education and several appendices (including a massive index and a substantial bibliography) conclude the book. The book – like all titles by Editions Simonin - is well made, strong paper, well bound, great photography (mostly by Bernard Muller), and printed in high resolution.

Does the book include references to all known Swiss school watches? Of course not. Weighing it at over four pounds it already is a massive volume. The selection of objects ultimately shown reflects the contacts and know-how of the publisher, who has collected Swiss school watches for decades, and is probably the foremost expert on Swiss school watches, one of the more intriguing and interesting sub-sectors of watch collecting. While most serious collectors of pocket watches will enjoy studying this book (even those whose knowledge of the French language is far from fluent), I consider it a ‘must buy’ for anybody with a particular interest in individually made and customized watches, and for horological scholars focusing on the role of horological education in horological history.

R906 Fanx**The little watchmaker**

Switzerland: Fanx, nd, child's toy and instructions.
Miscellany (English).

A small box containing instructions and pieces for a child to learn about watches.

R907 Farber, RH**Time to rewind**

a guide to collecting Disneyana Ingersoll wrist watches 1933-1939
USA: R. H. Farber, 2005, 97 pp, ill.

Collecting (English).

History of the collaboration between Disney and Ingersoll, information on dating and reproductions of advertisements.

R908 Farmer, JJ; Loseby, ET**An account of the improvements in chronometers, watches and clocks**

by ET Loseby (an eminent Horologist) with his efforts to obtain official recognition for the same
Coventry: Iliffe (London:), 1914 (1852), 12mo, 68 pp, 8 plates.

Description, history (English).

A compilation of letters and official documents including Loseby "Loseby's improvements in timekeepers".
See also Loseby "Loseby's improvements in timekeepers".

R909 Fasanella, EL; Watchdoc**Watchmaking lessons**

2005 to 2007, CD ROM.

Repair (English).

"Vintage mechanical watch repair". A set of nine lessons with supporting material:

Lesson 1 (83 pages): Tools and equipment; Watch company technical bulletins; Removing a watch from its case; Dial restoration and refinishing; Diagnosis of mechanical watch failures; The balance and timekeeping; Disassembly, inspection, and cleaning of a Elgin wrist watch movement.

There are two videos on how to remove a watch from its case and there are reproductions of a number of booklets and advertisements: Watch parts schematics (1 page); Use of L&R cleaning machine (1 page); Use of demagnetiser (1 page); Elgin information (74 pages, including information on balance staffs, replacing jewels and material for Elgin movements); Use of LG mainspring winder (1 page); Use of crystal removers/inserters (2 pages); Hamilton technical data sheets (regulating, 3 pages, friction jewels, 2 pages, temperature compensation, 2 pages, rust on hairsprings, 1 page, and watch sizes, 1 page); Use of the Watchmaster ultrasonic cleaner (12 pages); Staking set information (ad); Behr loupe (ad); Presto tools (ad); 6 size imitation watches (ad). Some reproductions are only fair.

Lesson 2: (44 pages): Disassembly, inspection, and cleaning of the 18 size (full-plate) American pocket watch. In addition there are reproductions of Rex roller remover instructions (1 page) and an advertisement for Marsh screw undercutters (1 page).

Lesson 3 (68 pages) Disassembly, inspection, and cleaning of the 16 size (3/4-plate) watch: The 7-jewel or low-jeweled movement - problems with wear; High grade Swiss watches - Patek Philippe; Elgin 16-size disassembly (8 pages reproduced from "Ordnance school text, ordnance timepieces OS 9-66"); Hairspring manipulation and troubleshooting (6 pages reproduced from "Ordnance maintenance wrist watches, pocket watches, stop watches, and clocks - technical manual TM 9-1575"); Typical 16 size high-grade movements; Hamilton repair manual for the 4992B and repair notes for the 992B (33 pages reproduced from "Operation, service and overhaul instructions for master navigation watch type AN5740"); Hamilton repair notes (2 pages reproduced from "Ordnance school text, ordnance timepieces OS 9-66" and 9 pages reproduced from Hamilton technical data sheets on Grade 992B, Removing and replacing the Hamilton floating stud, Temperature compensation, and Improved friction jewelring).

Lesson 4 "Timing and adjusting your lever escapement watch" (21 pages): The verge, cylinder and duplex escapements; Chronometer escapement; Adjusting the lever escapement.

Lesson 5 "Balance wheel staffing, repairs and restoration" (88 pages): Considerations before restaffing the vintage watch; Shock-resistant balance jewel settings; Riveted balance staffs and friction fit staffs; Replacing a riveted staff; Measuring and fitting a roller jewel; Repivoting a balance staff; Making a complete balance staff; Factory leaflets on staffs and balances (30 pages); American staff dimensions (10 pages).

In addition there are reproductions from a number of booklets: American balance staffs from Bestfit (1 page); Hampden balance staffs (1 page); Presto roller jewel setting tool (2 pages); Rockford balance staffs (1 page); South Bend balance staffs (1 page); and Waltham balance staffs (1 page). Only some of these give dimensions.

Lesson 7 "Care and use of the watchmakers lathe" (29 pages). There are two videos on drilling and stem repair, and reproductions from a number of booklets: Collet dimension chart (1 page); Swartchild catalogue (2 pages) and Waller grave instructions (1 page).

Lesson 8 "Wrist and pocket watch case restoration tips for the hobbyist and beginning professional" (25 pages): Tools and material needed; Crystal replacement and/or restoration; Scratch removal; Dent removal; Dial restoration and refinishing.

Lesson 9 "The watchmaker's staking set (16 pages): History of the staking tool; reproduction of the catalogue "K&D staking tools and how to use them" (23 pages). There are three videos on The

K&D staking set, Hand fitting, and Jeweling. In addition there are reproductions from a number of booklets: K&D stumps and punches (2 pages); K&D stumps, punches and other accessories (8 pages); K&D balance staff remover (1 page); Instructions for friction jeweling (2 pages); Moseley staking tool catalogue (5 pages).

Lesson 10 "Waltham aircraft clock repair information" (10 pages). There are reproductions from a number of booklets: Technical manual aircraft clock type A-13A (10 pages); Instructions for Waltham aircraft clock (5 pages); Parts lists for aircraft clocks (23, 4 and 4 pages; and Catalogues of Waltham clocks (22 pages).

[1st edition, fair] *The most difficult task for both the writer and the reviewer is to think like the intended audience.*

Most writers have some purpose in mind and this defines the type of reader. Repair books show this very clearly, being directed towards the beginner or to the experienced watch repairer. And the content and style must necessarily change to suit. In one case, simple tasks, like how to use a screwdriver, need to be explained; whereas in the other the writer can assume a reasonable level of knowledge and competency.

Reviewers must appreciate this difference. It is easy, when one has repaired a lot of watches, to understand what the author is writing, but can the intended audience understand it?

Which brings us to the fine art of transference. The only way it is possible to write a good beginners' book is to think like a beginner. Try to put oneself in the position of a person who has never opened a watch case and ask: what does he need to know? Or, remember back to the time when you knew nothing and recall how you learned; what was good and what was simply confusing or unintelligible; what blunders you made. If we do not do this, then we will assume that what is easy for us experienced repairers must be easy for others, and we will try to explain and demonstrate things that our poor students cannot comprehend simply because they do not yet have the essential background knowledge and skills.

The same is true for the reviewer. I can skim over a beginners' repair book pretty quickly and understand it. But that does not mean it is a good book for beginners. So when I review a book I have to put myself in the place of the intended audience. I have to pretend a suitable level of knowledge and experience and then see if the book makes sense to me. This is not easy to do! It is necessary to strike the right balance, and assuming too little is as bad as too much. Whether you call it visualisation, day-dreaming or fantasising, it is an essential skill that needs to be fostered and developed by every teacher and writer. One consequence is that such awareness enables us to avoid embarrassing blunders, for we become much more aware of our own limitations. So I know that there are topics I should not write about and books I should not review, because I do not have the necessary expertise. But I do know enough to assess books for novices.

Lesson 1 begins by describing basic tools, providing a few suggestions for reading (primarily technical bulletins and parts lists for specific watches) and explaining how to identify the maker of a movement. It is clear that Fasanella is writing for the novice who knows nothing about watch repair, and this is reinforced by the next section which shows how to remove a pocket watch or wrist watch movement from its case, and then remove the hands and dial.

The core of the first three lessons is the disassembly, cleaning and assembly of a watch; first a wrist watch, then a full-plate watch and finally a 3/4-plate movement. This approach is appropriate for a beginner, but in the reverse order. Developing basic skills should move from the easiest to the more difficult. So the writer should start with a simple, working movement (with no faults to distract the learner) which is easy to disassemble, and almost any seven-jewel 3/4-plate movement will do. Only after gaining confidence by successfully handling such a watch should the beginner tackle harder problems. Wrist watches are small and need greater dexterity. And the full-plate watch is tricky, especially because of the potence supporting the bottom balance-staff pivot (Fasanella does not even mention the potence and his instructions are far too vague in this regard). It is only after such experience that the student can be expected to understand how to detect faults, let alone fix them.

But in lesson 1 Fasanella briefly explains dial repair and then spends 30 pages describing possible faults in a watch, beginning with the escapement. However, the reader does not have the necessary skills and experience for these topics to be of any use and for him to understand them. For example, the description of balance staff faults is OK, but the reader has no way of examining a staff because he cannot, as yet, disassemble a movement. And in both Lessons 1 and 2 adjusting the weight of a balance, by adding timing washers or reducing screws, is considered when the learner cannot even do simple tasks. Most important is that the reader is not able to distinguish bad from good and will probably accept the odd ridiculous suggestion, such as the hole in a jewel can be enlarged simply from the pressure of a balance pivot when a watch is dropped. (Another example is in Lesson 2, where two-part epoxy glue is recommended to attach the roller jewel to the roller; this is simply wrong.) Really, the first 3 lessons need to be read in reverse order!

Lesson 3 is better than the previous two because most of it consists of extracts from professional publications; these instructions are precise and reliable. But three aspects are unsatisfactory. First, Fasanella begins by explaining how to bush worn holes in a 7-jewel movement, a task that cannot be attempted at this stage. Second, he briefly describes cleaning a Patek Philippe watch (which he thinks is the only fine Swiss watch), a task best left until more experience has been gained. And third, he launches the student into the Hamilton sweep-seconds 4992B, a watch that requires considerable skill and understanding to handle. Lesson 4 is crass. The description of escapements is superficial and there is not one diagram. Adjusting the lever escapement is based on fiddling with the banking pins (but there is no distinction between slide

and lock) and overbanking, which is superficially mentioned in every lesson. The only other suggestion is to see if the canon pinion is loose. Adjusting the weight of the balance appears yet again, even though the need to do this indicates a catastrophic problem beyond the capabilities of the student. It is not clear what this lesson is about and the reader certainly has little chance of making sense of it.

Lesson 5 provides a quite good explanation of how to replace a balance staff, backed up by some useful professional leaflets on balance truing and poisoning. However, other topics (repivoting and making a new staff) are glossed over, and if a replacement staff can be purchased there are no instructions on how to adjust it to suit the watch. Also, Fasanella points out that the balance jewels will often be broken, but he provides no information on how to replace them. Thus only part of the task is described.

Lesson 7 provides a superficial description of the watchmaker's lathe with some equally superficial notes on how to use it. The video on drilling discusses why you should use tungsten-carbide drills and the video on stem repair shows Fasanella drilling a hole.

Lesson 8 covers case repair, mainly scratch, dent and inscription removal. It is a general description of procedures.

Lesson 9 provides a history of the staking set and some suggestions for buying and taking care of it.

In reality, this course only examines two tasks, cleaning and balance staff replacement. The rest is too descriptive and much is covered superficially. But there does seem to be an underlying thread. The frequent references to adjusting the balance weight, the emphasis on removing scratches and dents from the case (at the risk of thinning it too much), and the superficial and inaccurate explanation of bringing a watch to time, suggest that Fasanella is not teaching the student how to repair watches, but how to make a watch good enough to sell. This, to my mind, is the only explanation for some of the lessons, in particular balance adjusting; if the watch doesn't keep time, force it to.

It is clear to me that someone using this course would need to buy and read some books. Fasanella recommends Fried, but books on lathe work, staking tools, and general repair would also be necessary. In which case, there is no need to buy this course; everything in it is covered much better in a small number of books which would not cost the beginner much more.

[Remark] In addition to these 9 lessons there is Lesson 6 "Repairing US military watches WWI through Vietnam" which is sold separately. "This lesson of 438 pages contains detailed instructions on repairing US military watches. It covers the 16 size AN5740 Master Navigation watch (complete repair manual), the Hamilton model 22 Chronometer Watch (complete repair manual), the Hamilton/Elgin multi-dial aircraft clock, Seth Thomas Navy clocks parts catalogs, and timers. In addition, military specifications for various watches are included as well as specifications of parts for the various military watches with part numbers."

R910 Faure, F

L'art d'ajuster solidement

et de rendre surs les effets des montres simples et a répétition

Pontarlier: L'Impr. Faivre, 1805, 46 pp.

(French).

Listed in Tardy.

R911 Faure, P

Outils et fournitures pour horlogers, bijoutiers, mécaniciens

1893.

Tools (French).

Listed in Tardy.

Tools and requisites for horologists, jewellers and mechanics.

R912 Favorite

Precision lathe

Switzerland: Golay-Buchel & Co., 2001 (nd), 4 pp, ill.

Catalogue, tools (English).

The 2001 reprint may be of a different booklet.

Catalogue of lathes.

R913 Favre-Bulle, W

Le calibre de montre

Bienne: Bibliotheque Horlogerie, Magron (Geneve:), 1924 (1902), 20 x 14 cm, 3 volumes of 112 pp, 23 ill, 7 plates; xxxvi, 56 pp, 1 ill, 8 plates, loose errata page; and 207 pp, 235 ill (1 volume of 63 pp, 23 ill, 3 plates).

Technical, theory, watch making (French).

The second edition consists of 3 volumes. Volume 1 has two printings in 1915 and 1916. The 1915 edition has 7 plates numbered 1-4 and 6-8, and an erratum sheet noting that there is no plate 5. It is usually said to have 8 or 9 plates. Volume 2 was published in 1920 and volume 3 in 1924.

The first edition of 1902 was of the first volume only (63 pp, 23 ill, 3 plates).

The mechanical fabrication of watches.

The second edition consists of:

Volume 1: "Le calibre de montre, sa création théorique et graphique", the calibre, its theoretical and graphical design. Six chapters and 4 plates on choice of calibre (4 pages), height (6 pages), plan of the movement (26 pages), wheel centres (7 pages), gears (20 pages), sectional views (32 pages).

These are followed by two short notes by GA Berner on aesthetics of movements and GF Berner on very

small calibres; plates 6-8 illustrate these notes.

Volume 2: "Division et organisation de la mise en travail des calibres" (34 pages, 1 ill, 8 plates) followed by Introduction to the 3rd part (56 pages).

Volume 3: "Fabrication mécanique de la montre, l'ébauche", mechanical manufacture, the ebauche.

[2nd edition] Volume 1 is a purely practical description of the process of calibre design and drawing, showing how to create the detailed specifications for a 23.6 mm lever escapement movement from the particular example outlined in the first chapter.

Volume 2, Part 2 discusses how to convert the designs in Part 1 into the dimensions specified, which Favre-Bulle terms *poinage* (pointing). It includes the design of a vernier pointing tool (a very accurate depthing tool), gear cutter design for wheels and the escape wheel, and the design of a balance-spring terminal curve.

Rather strangely, Favre-Bulle also includes 2 plates and information on the detent escapement and a repeater quarter-rack.

Volume 2, Introduction to Part 3, consists entirely of tables for the dimensions of the watch to be manufactured, and planning the operations needed in manufacture. Except for a few entries, the tables are blank, presumably to be filled in by the student.

Volume 3 begins with a section of machine tool maker advertisements. It then examines measuring tools and cutter and die making. The main section describes the machines needed to perform the operations specified in Volume 2, illustrating many machines.

[Remark] The second edition is described in Cutmore "Watches 1850-1980" (pages 200-201).

R914 Favre-Perret, E

Philadelphia Exhibition 1876

Rapport présenté au haut conseil fédéral sur l'industrie de l'horlogerie, Exposition de Philadelphie 1876

report presented to the Federal High Council on the horology industry

Australia: Richard Watkins (Winterthour: J. Westfehling), 2004 (1877), 4to (13 x 21 cm), 12 pp, no ill (29 pp, no ill).

History (French, English).

The 2004 English translation by Richard Watkins is distributed as a PDF computer file.

Report presented to the federal high council on the horological industry, the Philadelphia Exhibition 1876. A summary of the exhibits of the United States, Switzerland, France, Germany and England, followed by some general remarks on American competition and manufacturing by machinery.

[1st edition translation, good] I have seen the opinion that this is widely regarded as one of the most significant reports in horological history. It isn't. Favre-Perret does make some very interesting comments, and recommends mechanisation in order to cope with the threat from American makers, but much of the report is a rather superficial summery of what was on display. Jacques David "Rapport a la Societe Intercantonale des Industries du Jura sur Fabrication de L'Horlogerie aux Etats-Unis" is infinitely more important.

I suspect the opinion I cited may be confusing this report with Favre-Perret's speech and the frequently quoted extract from it. The two do take the same approach, but in the report Favre-Perret "shoots himself in the foot" by praising Swiss progress and seemingly contradicting his recommendations.

[The speech] Moore "Timing a century" states that it was published in *La Nationale Suisse, Chaux-de-Fonds, November 17, 1876*, and Landes also quotes this source. The complete speech translated into English is reprinted in the *NAWCC Bulletin*, Vol 46, No 349, 2004, pages 171-174 and extracts appear in Watson "American watches, an extract from the report on horology at the international exhibition at Philadelphia, 1876".

This is more interesting than the report and definitely worth reading, but still minor compared to Jacques David's reports. Favre-Perret's aim is to awaken the Swiss to the danger of American manufacture. In addition to the famous quote, he says "had the Philadelphia Exhibition taken place five years later, we should have been totally annihilated without knowing whence or how we received the terrible blow". Possibly true, but he offers no ideas of how to overcome the threat, other than suggesting the need for horological schools. I think the problem is that, unlike David, Favre-Perret fails to recognise let alone comment on the qualitative difference between American and Swiss use of machinery; it is not whether machines are used, but how they are used that is the significant difference.

R915 Favre, A

Exposition nationale suisse a Zurich 1883

rapport sur le groupe 13 horlogerie

Zurich: Orell Fussli, 1884, 23.5 x 16.0 cm, 70 pp.

Exhibition (French).

R916 Favre, A

Rapport sur le horlogerie a l'exposition de Paris 1878

Geneva: Pfeffer, 1879, 22.5 x 15.5 cm, 85 pp.

Exhibition (French).

R917 Favre, M

Daniel JeanRichard (1665-1741)

promoteur de l'industrie horlogerie en terre neuchâteloise

Le Locle: Editions du Château des Monts, 1991, 8vo, 88 pp, ill.

R918 Favre, M

History (French).
Limited edition of 500 copies. Reprint date?

R918 Favre, M**Echappements fixes, carrousels et tourbillons**

Genève: Administration du Journal Suisse d'Horlogerie, 1908 (1905), 15 pp, no ill.
Technical (French).

Fixed escapements, carousels and tourbillons.

R919 [Fédération Horlogère]**Die uhrenindustrie von morgen**

prospektionsstudie über die schweizerische uhrenindustrie
Biel: Fédération de l'Industrie Horlogère Suisse, 1967, 92 pp.
History (German).

R920 [Fédération Horlogère]**L'horlogerie demain**

étude prospective de l'industrie horlogère suisse
Bienne: Fédération de l'Industrie Horlogère Suisse, 1967, 8vo, 91 pp.
Industry (French).

Horology tomorrow, study of the future of the Swiss industry.

R921 Fédération Horlogère**Lexikon der uhrenindustrie**

Switzerland: Fédération de l'Industrie Horlogère Suisse, 1978, 21 x 15 cm, 59 pp, 2 ill.
Dictionary (German).

Produced by the Swiss watchmaking organisation Fédération de l'Industrie Horlogère Suisse (FH).

R922 Feill, Antoine; Huseler, K**Katalog der uhrensammlung Dr Antoine Feill****Uhrensammlung Dr Antoine Feill**

Köln: (Hamburg:), 1955 (1929), 24 x 16 cm, 58 pp, 32 plates (54 pp, 32 plates with 109 ill).
Collection, catalogue (German).

I have not seen this work but it is probable that there are two independent publications rather than one and its reprint (the sources are ambiguous).

The 1929 catalogue is given as a "description of the collection of 471 pieces" with Huseler as the author. The 1955 version is given as an "auction catalogue of 322 lots for the sale of the collection of watches and clocks".

R923 Feldman, G**Watch lubricants**

exposing their secrets, explaining their use
USA: Fulcrum Oil Co., ca 1910, 12 pp.
Repair (English).

R924 Fell, RA**Some notes on the balance and spring**

London:, ca 1946, 4to, 22 pp, ill.
Technical (English).

R925 Felz, R**Nebenfächer des uhrmachers**

einführung in das optische fach, anleitung zur reparatur von schmucksachen und taschenuhrgehäusen
nd (1909), 138 pp, 23 ill.
Repair (German).

Modern reprint.

Repair of jewellery cases and pocket watch cases.

R926 Fennell, G**A list of Irish watch and clockmakers**

Dublin: Stationery Office, nd (1963), 8vo, 42 pp, no ill.
Makers (English).

It has been reprinted.

A simple list of makers.

R927 Ferrand, JP**L'art du feu, ou de peindre en email**

Geneva: Minkoff (Paris: J Collombat), 1973 (1721), 8to (6 x 4 inch), 236 pp.
Case making (French).

"Dans lequel on découvre les plus beaux secrets de cette science, avec des instructions pour peindre, apprêter les couleurs de miniature dans leur perfection".

The art of fire, or of painting in enamel. The techniques and secrets of painting in enamel and miniature; Methods of pigment making and ways to achieve various visual effects.

Ferrand studied under Mignard and Samuel Bernard.

- R928 Ferret, E**
Les Breguet
 Abram-Louis, Antoine, Louis-François, Antoine
 Paris:, ca 1882 (nd), 8vo, 131 pp, 5 ill (95 pp).
 Biography (French).
 The second edition is undated. It is available as a pdf file.
 The second edition has 7 sections: Maison Breguet (4 pages); Abraham Breguet (12 pages); Louis-Antoine Breguet (9 pages); Louis Breguet (48 pages); Institut de France, meeting 29 October 1883 (13 pages); Antoine Breguet (7 pages); L'énergie électrique par Antoine Breguet, Conférence sur les applications de l'électricité, 1878 (24 pages).
- R929 Fetil, Pierre**
Art de mesurer le temps avec précision
 ou la théorie de l'horlogerie réduite en tableaux
 Paris: Pierre Fetil, 1802, 8vo and folio, 2 volumes of 309 pp, tables and 12 tables.
 Technical (French).
 The art of measuring time with precision, or the theory of horology reduced to tables. Two separate volumes:
 Volume 1 is subtitled "contenant la méthode de calculer les différentes sortes de rouages, et des tables de calculs faits" (concerning the method of calculating different sorts of trains and of the tables of calculations made).
 Volume 2 is subtitled "ou réunion générale de principes recueillies pour en faciliter la propagation".
- R930 Feuchte**
Fachwortbuch für die schmuckwaren und uhrenindustrie
 deutsch, englisch, französisch, spanisch, italienisch
 Pforzheim:, 1932, 22 x 15 cm, 166 pp.
 Dictionary (English, French, German, Italian, Spanish).
 Multilingual dictionary for the jewellery and horology industries.
- R931 Figuiet, L**
Les grandes inventions anciennes et modernes
 dans les sciences, l'industrie et les arts, ouvrage illustré, à l'usage de la jeunesse
 Paris, Librairie de L. Hachette, 1870 (1867), 8vo, 454 pp, 238 ill.
 History, children (Dutch).
 Fifth edition in 1870.
 The 1870 edition is available as a Google Book PDF file.
 Great inventions: printing, engraving, lithography, gun powder, the compass, paper, clocks and watches, porcelain and pottery.
 Pages 87-102 and 12 illustrations on horology include clepsydra, sand glasses, sun dials, the discovery of weight clocks, the discovery of watches, descriptions of clocks and watches, the fusee and the barrel.
I have not read it, but it appears to be superficial, uninteresting and probably inaccurate.
- R932 Filtenborg, JC**
JC Filtenborg aktieselskab 1855 3 juli 1955
 udsendt i anledning af 100 ars jubilaet
 1955, 29.5 x 23.0 cm, 59 pp, ill.
 History (Swedish).
 History of the company with illustration of clocks and wrist watches.
- R933 Finn, JL**
Poising the balance
 Chicago: Geo. Hazlitt & Co., 1897 (ca 1889), 14.5 x 10.0 cm, 27 pp, 1 ill.
 Repair (English).
 The early date (1889) is uncertain and may refer to a printing in a journal.
 Posing balances and timing in positions.
[1st edition?, good] Finn begins by explaining how to roughly poise a balance before it is put on its staff; this includes how to prepare the jaws of a poising tool and make timing washers. The staff is then fitted loosely and rotated to the position that gives the best poise for the staff and balance. Finn then looks at adjustment in positions by moving timing screws in and out (dynamic poise). Before doing this he recommends poisoning both the lever and escape wheel. An interesting pamphlet with simple, clear instructions and explanations.
- R934 Fisher, A**
Fisher's annual directory
 of the watch and clockmakers, jewellers and silversmiths of Great Britain
 London:, 1884, 174 pp.
 Makers (English).
- R935 Flammang, B**
A comprehensive catalog of the world's most prestigious watches
Watches, volume 4
 : World Watch Publishing, 1999 (1994), 11 x 9 inch, 400 pp. ill (322 pp, ill).
 Description, price guide (English).

Published in 1994, 1996, 1998 and 1999.

There may be another "annual" with the same or similar title.

Catalogues of high quality wrist watches with 4 watches illustrated and briefly described on each page, many with retail prices.

R936 Flechon, D

Baume and Mercier Geneve 1830

Baume et Mercier Genève 1830

hallmarks of history

Paris: Assouline, 2002, 22.5 x 16 cm, 79 pp, ill.

History (English, French).

Featuring the Memoire des Marques collection. This book follows the history of the Baume brothers, who founded Baume & Mercier in 1830 under the credo "accept only perfection, only manufacture watches of the highest quality." The book has historical information, color photographs of all Baume & Mercier watches, product sketches and other information.

R937 Flechon, D

Fine watchmaking, a tribute to women

Hommage de la haute horlogerie a la femme

Geneva: Fondation de la Haute Horlogerie, 2007, 160 pp, ill.

Exhibition (English, French).

Separate English and French editions.

Forward (by F. Cologni) and 9 chapters: Fine watchmaking, a tribute to women (2 pages); The watch from the 16th to the 18th century, a feminine adornment (10 pages); From the bracelet watch to the wristwatch (16 pages); From the precious watch to the technical watch (10 pages); A new era, the precious technical watch in homage to women (6 pages); Women by the Magnum Agency (2 pages); Beauties of the world (38 pages); Beauties of the day (30 pages); Beauties of the night (38 pages).

[1st edition, fair] This book was produced to accompany an exhibition held in the Salon International de la Haute Horlogerie in Geneva.

After a couple of fairly meaningless pages, there are four chapters giving a brief but interesting history of the wrist watch for women. The following chapters have a few photographs of women followed by photographs of luxury wrist watches made by Audemars Piguet, Baume & Mercier, Cartier, Dubois, Girard-Perregaux, IWC, Jaeger-Lecoultrre, Jean-Richard, Lange, Montblanc, Panerai, Parmigiani, Piaget, and Vacheron & Constantin.

Basically, this book is advertising, a lavish display designed to attract women.

Two statements deserve repeating.

First Cologni, in his preface, writes: "Like all men, I have two loves in my life: women and watches." Unfortunately, relatively few men love watches and there are plenty of men who do not love women. But then, this book is about fashion and a fundamental principle is that feminine displays are directed at attracting men (preferably rich ones). Sadly, this principle is also suspect, but I doubt if fashion writers spend much time philosophising and probing reality.

Second (dated 1905): "There are even fewer women who know how to care for a watch than there are men who know how to care for a baby. Women should be given the kind of large, inexpensive, robust watch one would give to a child."

R938 Flechon, D

The chronograph

Le chronographe

an expression of the modern era

expression des temps modernes

Switzerland: Salon International Haute Horlogerie, 2005, 21.0 x 16.5 cm, 112 pp, ill.

Description (English, French).

Parallel French and English text.

There is also an exhibition catalogue with the same title and author; 38 pp, ill, 2007.

The chronograph makes its debut at the races (35 pages); The chronograph and the physician's art (12 pages); The chronograph the engineer's toolbox (10 pages); The chronograph on the battlefield (4 pages); The chronograph progresses with science (8 pages); The chronograph in the world of sport (8 pages); The chronograph seduces modern man (26 pages); Magic and mystery of the chronograph (2 pages); Bibliography.

[1st edition, fair] "In 2005, the Salon International de la Haute Horlogerie presented its eleventh themed exhibition, entitled "the chronograph, the expression of the modern era".

The exhibition showed around seventy-five pieces staged by Dominique Fléchon and taken from the heritage of brands exhibiting at the Salon and collections from the major Swiss watchmaking museums. In it, the visitor gradually realises that the chronograph measures humankind's progress through almost two centuries.

Over time, it has become the companion of astronomers, engineers, doctors, scientists, great explorers and athletes. Progressively, as the chronograph gave up the graphic recording of time, it changed into the pocket then wrist chronoscope.

Nowadays it is one of the identity codes of modern man and has become the stuff of dreams. For the chronograph has something that other watches do not have: born from progress that it has helped to

generate on earth, on the sea, underwater, in the air or far out in space, it can be brought to life at whim, giving its owner the fleeting impression of dominating time as he stops and reactivates it.”

This book is a fragmented, disordered, vague history of chronographs. Except for 2 pages at the end, there is no technical information. Which is fortunate, considering the hopeless inadequacy of those pages. A few technical terms, such as “heart-shaped cam” appear elsewhere, but they are not explained and so are confusing rather than helpful. The most obvious is “Dubois-Depraz developed a system of cams intended to replace the column wheel”; there is no explanation and the words would be meaningless to the majority of readers. Of course, there is no need to explain anything. As Flechon notes “While quartz might easily measure time to within a hundredth of a second, it did so without the mystery hidden inside apparently complex mechanisms”. So, as the watch owner will never see the mechanism, who cares if he understands it?

We also learn some amazing things. It seems doctors understood engineering and built clocks, presumably to measure pulse rates. And a telemeter can be an aid to travelers who wish to seek shelter from an approaching storm; presumably you hide under it to keep dry! Tachymetric scales indicate speed, but there is no mention of the fact that distance markers are needed. And we learn that a specialist stated “the worst thing that could befall you is to believe the popularity of chronographs is linked to fashion”; but the whole purpose of Flechon’s book is to do just that!

The bibliography clearly indicates the purpose of the book. Of the 14 references, only one concerns chronographs: Chaponniere “Le chronographe et ses applications”, published in 1924 and very hard to obtain. Why Berner’s dictionary is listed but Lecoultré’s book on complications is not, must remain an unfathomable mystery. The other references are just the standard and dubious books extolling individual makers.

As an exhibition catalogue, for the rich owners of modern wristwatches, it is OK, but that does not justify publishing a book.

Flechon is described as “historian and specialist in fine watches” and the French text uses the word “expert”. Unfortunately this book suggests otherwise.

R939 Flechon, D

Two centuries of prestigious timepieces

the watch from 1780-1980

Geneva: , 1997, 100 pp, ill.

Illustration (English, French).

Parallel English and French text.

This book is listed in a bookseller’s catalogue, but I have never heard of it. It may not exist.

R940 Fletcher, DW

Watch repairing as a hobby

USA: Arlington Book Co (London: Sir Isaac Pitman & Sons), 1986 (1947), 19.0 x 12.5 cm, 90 pp, 45 ill (64 pp, 39 ill).

Repair, tools (English).

The first edition was printed in 1947, 1948, 1955, 1956 and 1961 and the second edition in 1964 and 1965. The 1986 reprint is of the first edition.

Seven chapters: How a watch works (16 pages); Tools and how to use them (9 pages); How to take down, clean and reassemble a watch (20 pages); Common ailments of a watch (19 pages); More ailments (10 pages); Shock-resisting devices and the self-winding watch (10 pages); and Conclusion (3 pages including a few suggestions for further reading).

[2nd edition 1965, very good] Written for the beginner, this book covers very basic watch repair; cleaning, replacing mainsprings, loose cannon pinions, crystals and putting watches in beat. Other problems (such as worn pivot holes) are discussed without giving repair details. The book is unpretentious with very clear instructions and diagrams.

Although limited in scope, what it does cover is treated well and it would be a very helpful book for the raw beginner. Most importantly, Fletcher does not confuse and scare the reader by discussing advanced repairs. He has deliberately written a “starter” book so that the beginner can do a few things successfully, and then directs him to de Carle once he has mastered the basics. I wish other authors had been as sensible.

R941 Flint, SR

Mudge memoirs

being a record of Zachariah Mudge and some members of his family

Truro: Netherton & Worth, 1883, 8vo, 250 pp, ill, fld tables.

Biography, history (English).

Probably only 100 copies printed.

R942 Flores, J

Perpétuelles a roue de rencontre

ou montres automatiques, une nouvelle page d’histoire

France: AFAHA (France: Néo Editions), 2009 (2001), 27.0 x 21.0 cm, 160 pp, ill, 2 pp loose insert (160 pp, ill).

History, technical (French).

Two editions.

“Analyse d’un document de L’académie Française de 1778”.

Automatic verge watches.

10 chapters in 4 parts followed by appendices:

Part 1 (4 chapters, 43 pages): Facsimile and transcript of the 1778 document describing an automatic watch with rotor made by Hubert Sarton and the reasons for Flores' view that an automatic watch was incorrectly ascribed to A.L. Perrelet by Chapuis and Jaquet "The history of the self-winding watch 1770-1931".

Part 2 (3 chapters, 38 pages): Comparative examination of 5 contemporary automatic watches with rotors.

Part 3 (2 chapters, 30 pages): Further comparisons followed by reproductions of two articles (by J.C. Nicolet and J.C. Sabrier) and Flores' critiques of them.

Part 4 (1 chapter, 31 pages): Examination of two automatic watches with pedometer weights signed by Breguet and Papillon with the focus on mainspring winding problems.

Appendices (9 pages): These include: Extract from Saussure, 1777; extract from the Committee of Arts, 1777; Description of an automatic watch with rotor signed Berthoud; Explanation of the differential gears within the fusee; Extract from an Antiquarian Horology article, March 1987; Chronology; Discussion of Recordon's patent; Duration of automatic watches with rotor.

The loose sheet has the diagram that accompanied the 1778 document, which was only discovered recently, and an explanation of it.

[2nd edition, excellent] *There are two basic problems with this book.*

First, nowhere does Flores explain what he is trying to achieve. Indeed, I have no idea what aims he has, other than repeatedly discussing the point that the 1778 report and five extant watches all have verge escapements and all run while they are winding, requiring maintaining work in the fusee. Also, he repeatedly questions ascribing automatic watches to Perrelet although he never explains why. Part of the problem is that Flores, true to the title, only considers watches with verge escapements, with central rotor weights and pedometer watches where the weight is supported horizontally at the end of an arm.

Second, it is poorly organised. The reader is often presented with fragments of information without having any clear idea of their significance or otherwise. For example, the basic purpose of Chapter 1 is to present a facsimile and transcript of the 1778 report on a watch made by Sarton. But Chapter 1 is littered with brief notes on points made by Chapuis and Jaquet, an unexpected digression "Which Perrelet?" (which neither asks questions nor answers them) and notes that the portrait supposedly of Perrelet was originally published with the caption "a watchmaker". Most importantly, Flores gives a list of 15 points "chosen arbitrarily" which confirm "the perfect similarity" between the Leroy watch and the 1778 report. (This watch was found by Leon Leroy and is now in the Patek Philippe Museum. It was examined by Chapuis and Jaquet and ascribed to Perrelet.) But at this point we know nothing about the Leroy watch, the report has not been explained, and I very much doubt if the points were arbitrary. So the list is pretty meaningless.

Despite the flaws, I am faced with the same problem as with Chapuis and Jaquet "The history of the self-winding watch 1770-1931". Even though that book contains significant problems, I felt it necessary to give it an "excellent" rating because it is compulsory reading for anyone interested in the history of these watches. The same is true of Flores "Perpetuelles a roue de rencontre". His work on the subject must be carefully considered and analysed, and so I also rate it "excellent" in spite of its faults.

Because of the disjointed nature of the book, I will discuss each chapter in order. This is sensible because the book is actually a collection of disjoint, separate articles. (This is confirmed in Chapter 9 where Flores states "My articles, presented in this work ...".)

Part 1 provides the description of Sarton's automatic mechanism based on the report published in 1778. (This report appears in the English edition of Chapuis and Jaquet "The history of the self-winding watch 1770-1931". See that book for my comments.)

Chapter 1 is described above.

Chapter 2 aims to provide a "technical explanation ... of simultaneous winding and running." First, Flores explains the problem, but, for some unknown reason, does not mention standard fusee maintaining power or that going barrel watches have no such problems. In fact, the chapter does not give an explanation. Instead it explains why Flores concentrates on verge watches which require a fusee and so require maintaining power (unlike going barrel watches), because other escapements were not used in 1780 or earlier, the period apparently under investigation. (The mechanism is described in Appendix 5 which is not mentioned in this chapter.)

Chapter 3 examines the evidence that Chapuis and Jaquet provide to show that the Leroy watch was made in Neuchatel and hence is attributable to Perrelet. That evidence is primarily based on the signature on the mainspring and the hallmarks on the case; neither provide a certain date of manufacture, which could be after 1780. (The date is critical because the 1778 report and other documents clearly show that automatic watches were being made before then.) After a repetitive preamble, Flores raises the 1778 report and asks the question did Sarton plagiarise the design? without answering it. He then raises a more interesting question: If Chapuis and Jaquet had examined the watch signed Berthoud, instead of the unsigned Leroy watch, would they have ascribed it to Perrelet? Flores then provides details of the signature on the mainspring (suggesting that the maker exported springs to other countries) and the case hallmarks (suggesting they show the case was made circa 1820 or later). Again, Flores fails to draw any conclusions and leaves it to the reader to interpret the information. I can only suppose that his aim is to cast doubt on the analysis of Chapuis and Jaquet without offering any alternative explanation for the

watch. Although he does not say so, it seems his aim is to cast doubt on the case and so raise the (faint) possibility the movement was not made in Neuchatel!

Chapter 4 concludes Part 1 of the book and provides a summary, which in fact advances further evidence for dating the case of the Leroy watch. Again, Flores' aims are unclear, but it seems that the only thing he wants to do is to ascribe the design of the Leroy watch to Sarton, even if it was made by someone else. As this is indisputable, in the light of the 1778 report, I really don't know the purpose of this first part.

Part 2 examines four other surviving watches based on Sarton's design; one is unsigned and the other three are signed "Egidius Link, Augsburg", "Berthoud a Paris" and "Mazzi a Loccano".

Chapter 5 begins with a picturesque diary of Flores' visit to Holland and looking at two watches; an unsigned bare movement and a complete watch sign "Berthoud a Paris".

Chapter 6 compares the 5 known movements based on Sarton's design and then describes the system of wheels which allow winding when the weight moves in either direction; I have no idea why Flores did not include a separate chapter to explain the mechanism in detail. Instead he has scattered it around in different places.

Chapter 7 provides details of two movements, the Leroy watch and the movement signed "Berthoud a Paris", both of which were disassembled and photographed by Flores. The description is interspersed with quotes from the 1778 report.

The only purpose of Part 2 is to confirm that the five extant watches are all identical to the watch made by Sarton and described in the 1778 report. Nowhere does Flores discuss dating these watches.

Part 3 has two unrelated chapters.

Chapter 8 comments on the cases, dials and hands of the extant movements. The main point is that Flores argues that the three cased movements have been recased, two obviously. This is important because it means none of the movements can be accurately dated.

Chapter 9 provides translations of two articles originally written in English and published in the magazine Europa Star in 1996, followed by a discussion of them. The first, by J.-C. Nicolet, agrees with most of Flores' analysis. The second, by J.-C. Sabrier argues that Flores is wrong with regard to essential points. Flores reply to the latter is basically a point by point rebuttal. The chapter concludes with photographs of and information about four "intermediate" movements which have the same basic design as pedometer watches, but with the weight pivoting in the centre of the movement; as with other pedometer watches, the weight is held in a horizontal position by a spiral spring and acts between buffers. Flores says very little about them and makes no attempt to date them, presumably because they have virgule and cylinder escapements and so are not interesting to him.

Part 4 has one chapter; Chapter 10, which describes in detail two pedometer-style watches by Breguet and Papillion. This is fascinating. Both have verge escapements and use remontoirs to ensure even power and so overcome isochronal problems. But unlike most remontoirs, which act near the escape wheel, these watches have the remontoir on the barrel and wind the barrel half a turn every 3 hours!

This chapter was written before Flores learned of the Papillion movement. So he argues that it was made by Breguet between 1777 and 1783. But the additional notes on the Papillion watch do not mention the problem that it creates, which is that it means that both watches were probably made by a third, unknown person. In addition, Flores does not consider the implications of the watches for the origins of automatic watches.

The main problem with the writing of Flores (here, in his articles and on internet sites) is that he is not a good historian. He tends to be careless and somewhat self-aggrandising. This to the extent that in one article he has incorrectly dated a piece of documentary evidence making it appear important when it is irrelevant; Osterwald "Description des montagnes et des vallees qui font partie de la principaute de Neuchatel et Valangin", which he dates 1776 when it was, in fact, published in 1766.

Another example, from the English language site, <http://flores.joseph.chez-alice.fr/anglais/index.html>, is that it contains the dare "who will say I am wrong". And he continues "how many people know who invented the anchor escapement, which was used on all mechanical watches? For information, as it is not the point of this paper, it was the Englishman Thomas Mudge in 1754, or again who knows who invented the spiral hairspring? It was the Dutch Physicist Christian Huygens in 1675 and it has had more than three centuries of use." This is stupid; anyone who did not know the answers to such trite questions most certainly would not bother with rather esoteric arguments about automatic watches. The result is that his writing tends to creating some animosity in the mind of the reader. This is a great pity because I believe his fundamental argument is correct.

And, equally important, because he only writes about automatic watches with verge escapements, he ignores the question of who invented the automatic watch with a "pedometer" weight, as used by Breguet and Recordon.

These problems probably relate to his view of historical research. Elsewhere he has written that historians cannot create anything. And as interpretation requires creating a plausible explanation Flores simply does not do it. Instead he provides detailed, factual information about extant watches and documents without any attempt to understand their significance. So the book is essential for the information it contains but nearly useless for anyone who wants to understand the history of automatic watches.

R943 Flower, T

Technology and watch design

USA: Tim Flower, 2006, 23.0 x 15.0 cm, 211 pp, 32 b/w ill.

Aesthetics (English).

In two parts.

Part 1, Looking at watches has four chapters: Recognizing quality (12 pages), Making quality visible, (29 pages) Codifying quality (13 pages), and Making quality invisible (10 pages).

Part 2, Watchmaking and technology, has seven chapters: Watchmaking and the advent of high technology (6 pages), Early precision watches (15 pages), Technical watches (11 pages), Wristwatches (10 pages), The two faces of technological aesthetics (12 pages), The aesthetics of American watchmaking (21 pages), and Full circle, the modernization of American watches (15 pages).

There is a 4-page epilogue, an 8-page bibliography and 11 pages of notes.

[1st edition, fair] I am not sure I should even attempt to review this book. I have a mind biased to logic and rational argument, and I find art difficult to comprehend. I can look at a painting or listen to music and decide whether I like it or not, but it goes no further. I do not understand the "language" of art and find most discussions of it verge on being incomprehensible. Indeed, I am often left with the feeling of having read words without meaning, of knowing no more at the end than I knew at the beginning. So can I usefully comment on a study of watch aesthetics?

The fundamental problem with this book stems from its title. Flower, by using the word "design", has implied a study of all aspects of watch manufacture using technical, as opposed to hand methods. However, the aim of the book is quite different and the title should have been "Technology and watch decoration". This is because the central theme is to examine how "quality" manifests itself in the way watches are decorated. Flower bases his ideas on the design of early precision watches (circa 1790) and attempts to show how aesthetic appearance developed over the following two centuries. (Earlier watch designs, especially the decorative and form watches which preceded this period, are not considered, although there is some mention of "puritan" watches. As decoration in these early watches does not relate directly to quality, and they are covered in books by Cardinal, Boeckh and others, this limitation does not matter.)

On first reading, I found the book interesting and stimulating, but I had the impression of someone groping to find explanations for what he has observed over the years. Reading it a second time resulted in my becoming aware of inconsistencies and contradictions which had caused my vague unease. And I started to realise that the argument is seriously flawed. In part this is because Flower never clearly states his aims.

The first chapter considers intrinsic and extrinsic values. Intrinsic values are defined as those which form part of the watch, and extrinsic values as those derived from association and context. But almost immediately Flower redefines these terms to be features that are a necessary, functional part of a watch and those which are purely decorative, existing for aesthetic satisfaction. Later, this theme is expanded a little, and Flower points out that some aspects of a watch serve both purposes. In particular, he notes that some polishing (within which he includes damaskeening and other finishes) is necessary for the good functioning of the watch, and at the same time decoratively enhances the movement, whereas other polishing is only for appearance. However, this distinction is not developed and little use is made of it later in the book.

It is interesting that we have to wait until page 86 for Flower to mention that unique aspect of American watchmaking, of selling movements and cases separately. This central, extrinsic factor, which explains the graded use of highly decorative damaskeening, is not adequately examined and not satisfactorily compared with the decoration, or lack of it, on watches from other countries. For example, I have a free-sprung English watch which is as good or better than any American railroad watch, but the movement has plain gilt plates and the engraving is of the normal and common standard for English watches; there is nothing about it which suggests any particular aesthetic. Also, American damaskeening is raised inappropriately in the fourth chapter, Making Quality Invisible, in which Flower raises the fascinating question: why were invisible parts of watches, such as those under the dial, decorated? Although Flower is aware that there may be a number of different people to whom decoration might be addressed (the maker, the repairer and the owner) he does not satisfactorily answer this question. I think the problem comes from trying to create an aesthetic framework to explain watch decoration and then being unable to fit reality with theory. Rather than question the underlying premise of the book, Flower glosses over inconvenient facts when they do not easily fit in with his thesis.

The most important aspect of Flower's argument is his penchant for making statements without substantiating them, and which we are expected to accept as fact. At the start of the book we are told "pocket chronometers of the eighteenth century must have been widely known ... but what about their appearance?" Were they widely known? I very much doubt it; they were most likely known only by a small group of wealthy clients, elite watchmakers and astronomers. Later he writes "Breguet's influence is better understood in schematic terms than in terms of particular watches or inventions ... he influenced and inspired other watchmakers in certain kinds of ways." What ways? Flower simply ignores the need to explain and give some examples. I myself am unaware of any non-technical influence of Breguet on watchmaking, and his unique designs have rarely influenced later watches. Even his technical contributions are dubious, remembering that his basic principle, the unique, hand-made watch, flies in the face of the trend for uniformity and mass production. So why should I accept a statement just because Flower wants me to?

To a large extent I believe in "Ockham's razor", preferring simple, obvious explanations which avoid unnecessary and often ill-conceived complications. For example, the shift from jewels burnished in plates or set in chatons to simple pressed in jewellery can be seen as the result of a change in aesthetics, a move

from a visually decorative style to a more mechanistic “modern” appearance. But what is wrong with justifying the change on the basis of a new technology applied to make watches cheaper to manufacture and easier to repair? We do not need a dubious shift in paradigm and a theory about “technical aesthetics” to explain what happened when interchangeable jewels were mass-produced.

Likewise, Flower attempts to consider the relationship between horology and science, posing the questions: “is there evidence of a scientific basis to improvements (in watches)?” and “does the influence of science on horology survive in any visible ways?” But these questions, which he makes no attempt to answer, are meaningless. Watches are very simple machines and the only relevant science (epicycloid gearing, expansion of metals and the behaviour of springs) was completed well before 1750. The problems facing horology were pragmatic difficulties in manufacture, devoid of scientific interest. Indeed the theory of escapements and adjusting is fundamentally intractable, involving such a complex system of forces and friction that it has never been possible to reduce escapement and balance behaviour completely to mathematics; and so the art of watch adjusting remains as horological craft’s highest skill.

Although I made three attempts to understand this book, I failed. I think this is the only book I have read where I cannot come to grips with the argument and I am left with almost no idea of what it is trying to achieve.

R944 Floyer, Sir John

The physician’s pulse-watch

or, an essay to explain the old art of feeling the pulse, and to improve it by the help of a pulse watch
London: Sam Smith and Benj. Walford, 1707, 8vo, xxiv, 440 pp.
Miscellany, medicine (English).

In three parts: The old galenic art of feeling the pulse is describ’d, and many of its errors corrected; A new mechanical method is propos’d for preserving health and prolonging life, and for curing diseases by the help of the pulse watch; The Chinese art of feeling the pulse is described.

[1st edition] “Before watches had hands to record the second, Floyer invented a pulse-watch which was constructed to run for exactly one minute. To begin with, for his timing device, he used either the minute hand of a pendulum clock or a sea minute glass. He then asked Samuel Watson, a watch and clock maker, to adapt a watch for the purpose of timing the pulse. The physician’s pulse watch incorporated a second hand and also a special lever by means of which the mechanism could be stopped. Both these devices were horological innovations. Floyer used this watch as a precision instrument for clinical measurement, checking that it remained accurate by comparing it with the minute glass which he kept at home as his standard. In this way Floyer was the first to count the pulse with the aid of a watch and to make regular observations on the pulse-rate.”

R945 Flückiger & Cie

Fabrique de cadrans

historique de la maison Flückiger & Cie
St. Imier: Flückiger & Cie, nd, 68 pp.
History (French).
History of Flückiger & Cie, manufacturer of watch dials since 1860.

R946 Fluhmann, V; Bugnon, A

Outils d’étampage et d’emboutissage

manuel scolaire
Berne: Fédération des Ecoles de Mécanique et d’Electricité de la Suisse (Fribourg:), 1953 (ca 1930), 30 x 21 cm, 180 pp, 219 ill (167 pp, ill) (129 pp, ill).
Technical, watch making (French).

At least 4 editions, the 3rd in 1946 and the 4th in 1953.

Manual from Ecoles de Mecanique et d’Electricite.

A study of press tools for watch manufacture.

R947 Flume, R

Das Flume buch 1887-1937

Berlin: Michael Stern (Berlin: Rudolf Flume), ca 2000 (1937), 32 x 24 cm, CD Rom (2 volumes in 1, 516 pp, ill and 244 pp, ill).
Catalogue, repair (German).

Reproduced on a CD Rom; see Stern “Horology CD Roms”, CD 1.

Large and complete catalogue published for the 50th anniversary of the company. It contains: repair parts and requirements (296 pages), replacement parts for watch brands (176 pages), display requirements, labels and boxes (44 pages), tools and equipment (212 pages), suggestions for the workshop and tools, tables and laws (32 pages).

R948 Flume, R

Der Flume werk-sucher

Der Flume kleinuhr-schlüssel

Berlin: Rudolf Flume, 1972 (1942), 21 x 15 cm.
Dating, identification, makers (German).

Some editions are:

“Der Flume Werk-Sucher”, Rudolf Flume, 1942, 21 x 15 cm, 88 pp, ill.

“Der Flume Werk-Sucher”, Rudolf Flume, 1947, 21 x 15 cm, 192 pp, ill.

“Der Flume-Schlüssel”, Rudolf Flume, 1955, 21 x 15 cm, 220 pp, ill.

“Der Flume Werk-Sucher”, Rudolf Flume, 1955, 21 x 15 cm, 154 pp, ill.

“Der Flume-Schlüssel”, Rudolf Flume, 1957, 21 x 15 cm, 252 pp, ill.

“Der Flume-Kleinuhr-Schlüssel”, Rudolf Flume, 1958, 21 x 15 cm, 406 pp, ill.

“Der Flume-Kleinuhr-Schlüssel”, Rudolf Flume, 1962, 21 x 15 cm, 456 pp, ill.

“Der Flume-Kleinuhr-Schlüssel K3”, Rudolf Flume, 1972, 21 x 15 cm, 322 pp, ill (reprinted in 1990 and 1992).

Later editions include quartz watches.

Catalogues of movement identification and parts. The German equivalent of the Swiss Watchmakers catalogue.

[1947 to 1963 editions, good] Originally used to order replacement parts it is now of little use for that purpose, as many of the parts are no longer available. However, it is still a valuable reference for identifying movements and makers.

In addition to movement diagrams, the earlier editions also give balance staff, stem and mainspring measurements while the 1963 issue has details of some early electric movements.

R949 Flume, R

Werkzeuge

Berlin: Rudolf Flume, 1944 (nd), 322 pp, ill (260 pp, ill).

Tools (German).

Tool catalogue with price list.

R950 Flury, M

Kartelle und fusionen in der schweizerischen uhrenindustrie

Zurich: Leemann, 1919, 8vo, 105 pp.

History (German).

Cartels and unification in the Swiss horology industry.

Dissertation.

R951 Fogerty, John

Rockford watch company

handbook of key and stem winding quick train watch movements

USA: , 2006, 8 x 5.5 inch, 95 pp.

Dating, identification (English).

Serial numbers of Rockford watches with movement illustrations and production estimates. It corrects errors in Rockford's published serial number listings, and it fills in many of the gaps and omitted runs in the original lists published by Rockford. Also included is a listing for serial numbers above 824,000, reconstructed from observations of surviving watches.

R952 Fogg, A; Jakeman, C

The friction of an oscillating bearing

London: Stationery Office, 1938, 8vo, 28 pp, 20 ill.

Technical (English).

R953 Fontaine, Jules

Code des orfèvres, bijoutiers, horlogers

et autres marchands d'or et d'argent

Paris:, 1845, 351 pp.

(French).

Code of the goldsmiths, jewellers, horologers and other merchants of gold and silver.

R954 Fontenelle, J de; Malepeyre, F

Nouveau manuel complet du fabricant et de l'épurateur d'huiles

végétales et animales

Paris:, 1880 (1866), 8vo, two volumes of 352 pp and 247 pp, 8 fld plates.

Technical (French).

Also described as 320 pp, no ill. See Roret “Librairie Encyclopédique de Roret”.

New complete manual of the manufacture and purification of vegetable and animal oils.

Julia Fontenelle co-authored several Roret books; two others deal with leather processing.

R955 Forget, C

Elsevier's dictionary of jewellery and watchmaking

in five languages

: Elsevier Science, 1984, 516 pp or CD Rom.

Dictionary (English, French, German, Italian, Spanish).

The date is too early for a CD Rom.

Dictionary of some 5700 terms.

“An interesting feature of the dictionary is the inclusion of many incorrect or illegal terms which are still in use in some countries and which are often incorrectly mentioned in gem literature. These misnomers are indicated as such and are cross-referenced to the correct term or expression, as are the many obsolete and ‘fancy’ names, regionalisms, and trade and trademarked names for synthetic stones and artificial products. A highlight of the dictionary for the watchmaker is that there are translations of the terms and expressions that have been introduced with the advent of electronic technology to watchmaking.”

- R956 Forstmann, CW**
Ausführlicher unterricht von zeigenden und schlagenden taschenuhren
 zur Käntniss und Ausbesserung aller vorkommenden Arten der selben, Für solche, die nicht von der Feile, sondern von der Feder Profession machen.
 Halle:, 1779, 8vo, 546 pp, 10 fld plates.
 Repair (German).
 "Complete treatise on ordinary and striking watches, for understanding and improving all existing types; for those whose profession is the pen rather than the file".
 Explanation of the construction of a watch, how to take it apart, clean it and assemble it (about one-third of the book).
 Tools and workshop appliances.
 Watch repair (3 chapters) listing defects and how to repair them.
 Reviewed in *Baillie "Clocks and watches: an historical bibliography"*.
 In Gardner "Catalogue of the Torrens collection" it is said that "the author is the manager of a salt mine ... the approach is that of a low-grade amateur; the technical level that of a provincial busybody". If correct, it doesn't inspire much confidence!
- R957 Fortens, AC**
A collection of watches the property of Fortens
 London:, 1936.
 Collection (English).
 Listed in Tardy.
Auction catalogue?
- R958 Foucher, MP**
Manuel d'horlogerie
Manuale di orologeria
 contenant l'art de faire et de connaitre l'échappement a cylindre, de repasser les montres qui portent cet échappement et diverses notions sur la fabrication des pièces difficiles a faire
 Paris: (Bourges: P. Foucher), 1893 (1850), 8vo, 128 pp, 4 fld plates (80 pp, 4 fld plates).
 Repair (French, Italian).
 Tardy gives three editions in 1850, 1867 and 1893 (6 plates). One source says the 2nd edition has 228 pp.
 The Italian translation is dated 1885 and also includes lever and duplex escapements.
 Manual of horology containing the art of making and knowledge of the cylinder escapement, of finishing watches which use this escapement and various ideas for fabricating pieces which are difficult to make.
Plates I, II and III are reproduced in T.R. Crom "Horological shop tools 1700 to 1900".
- R959 Fourier, T**
Dictionnaire des horlogers de Blois
Les maîtres horlogers de Blois
 France: Mosnes (Indre-et-Loire), La Garmoniere, 2000 to 2005, 8vo, 3 vols of 92 pp, 8 ill (64 pp); 154 pp, 5 ill; and 128 pp, 4 ill.
 Makers (French).
 Volume 1 has the title "Les Maîtres horlogers de Blois, tome I, les origines du règne de Louis XII aux statuts de 1600."
 Volume 3 has the title "Les maîtres horlogers de Blois, tome III, de la révocation de l'Édit de Nantes à la révolution industrielle".
 I assume volume 1 was printed twice, first in 2000 (64 pp) and then in 2001 (92 pp, 8 ill).
 Volume 1 first edition is a limited edition of 250 copies and the second edition is a limited edition of 300 copies.
 Volumes 2 and 3 are limited editions of 300 copies.
 Volume 1 first edition has 504 entries which complement and correct Deville "Les horlogers Blésois aux XVI et XVII siècles".
- R960 Fox, CAO**
An anthology of clocks and watches
 England: C. A. O. Fox, 1947, 22 x 14.5 cm, 68 pp, 14 plates, slip case?.
 Miscellany (English).
 Limited edition of 750 copies.
 An anthology of horological references in poetry and prose including one by Fox. Arranged chronologically from Dante (ca 1300) to about 1900.
 The are indexes of titles, authors and first lines.
 [1st edition, fair] Not particularly substantial and, unfortunately, the few illustrations are poor. However, it is a convenient source of quotations if you need one.
- R961 Fraiture, E**
Uuwerkmakers en uurwerknijverheid in vlaanderer
 2002, 296 pp, ill.
 Makers (Dutch).
 A study of Belgium horology.

R962 [France]

R962 [France]

Bibliothèque de la société de l'école d'horlogerie de Paris

Paris: , 1884, 31.5 x 25.0 cm, 20 pp.

Bibliography (French).

Bibliography listing 419 books.

R963 [France]

Catalogue of repair parts

nd, ill.

Repair (English, French, German, Spanish).

A Cetehor catalogue?

R964 [France]

International Concept Evenement, Swiss Made

Paris: International Concept Evenement, 1995, 464 pp, ill.

Description, history (English, French, German).

Parallel English, French and German text.

Chapters on major companies including Blancpain, Girard Perregaux, Baume & Mercier, etc. Each chapter gives a brief history of the company and includes photographs of watches and chief executive officers.

Presumably an advertising book for a trade exhibition.

R965 [France]

L'industrie française de la montre

France: nd, 27 x 21 cm, 60 pp, 56 ill.

Description (French, German).

With some German text. Undated.

The French watch industry.

R966 [France]

Le marche de la montre en France

Paris: Comite professionnel interrégional de la montre (Paris: Hachette), 1968 (1956), 4to, 205 pp, ill. (French).

R967 Francillon, Andre

History of Longines**Histoire de la fabrique des Longines**

précédée d'un essai sur le comptoir Agassiz

Australia: Richard Watkins (Saint-Imier: Longines S.A.), 2004 (1947), 29.5 x 21.0 cm (29.0 x 21.0 cm), 75 pp, 8 ill (202 pp, 28 ill, 24 plates, 28 tipped in plates).

History (French).

The 1947 printing is a limited edition of 2100 numbered copies, the first 80 being deluxe in a slip case. Most plates have tissue guards. The preface was written by Bernhard Gagnebin.

The 2004 translation by Richard Watkins is distributed as a PDF computer file. It includes the complete text and 8 portraits from the original edition.

Part 1 The comptoir of Agassiz (27 pages): The arrival of Auguste Agassiz in Saint-Imier; The house of Agassiz; The appearance of Ernest Francillon.

Part 2 (152 pages) The Longines factory: Foundation; First samples; The birth of fame; Two critical years (the investigation of Jacques David in the United States); Rise; The private company; A happy time; Other adventures; The Societe Anonyme; Vexations and success; A memorable crisis; Social peace and the 75th anniversary; The present day.

[1st edition, very good] Part 1 is a history of the company founded by Auguste Agassiz in 1838, which was taken over by Ernest Francillon and was the precursor of Longines.

Part 2 continues on from part 1, beginning with the foundation of Longines, and its move away from hand craft to factory based machine manufacture.

This is a clear, delightfully written social and commercial history of the company, which describes the tribulations as well as the high points. The book is non-technical and does not discuss manufacturing methods.

It is a pleasure to read a company history that is not self-promoting advertising. Francillon is a good historian, providing a very interesting study that is well worth reading.

R968 Francillon, Andre

Le 75th anniversaire des Longines

St Imier: Longines Francillon S.A., 1946 (1942), 28.5 x 20.5 cm, 115 pp, ill.

History (French).

Two dates, 1942 and 1946, given.

“Récit de la fête et texte des discours prononcés pendant la manifestation officielle, Saint-Imier, 25 et 26 septembre 1942”.

Account of the celebration and texts of the official speeches.

R969 Francoeur, LB

Traite élémentaire de mécanique

adopte dans l'instruction publique

Paris: Bernard (Paris: Perronneau), 1807 (nd), 21.0 x 13.0 cm, 508 pp, 9 fld plates (459pp, 8 plates).

Technical (French).

3rd edition in 1804 and 4th edition in 1807.

The 1807 edition is available as a Google Book PDF file (plates scanned folded and/or badly, and so useless).

Elementary treatise on mechanics adapted for public instruction.

In four parts: statics, dynamics, hydrostatics and hydrodynamics. Chapter 3 on machines contains 9 pages on wheels, clocks and watches with 8 illustrations in the plates.

[4th edition, mediocre] A superficial discussion of gear trains and their calculation followed by the general principles of clocks and watches mentioning the fusee and the verge and anchor escapements. There is no consideration of the form of teeth.

Uninteresting, but the rest of the book may be more stimulating.

R970 Frankel, NR

N R Frankel's uhrensammlung

Düsseldorf, 1913, 15.5 x 12 inch, 59 pp and 44 plates with 309 ill.

Collection, catalogue (German).

R971 Franklin, A

La mesure du temps

clepsydres, horloges, montres, pendules, calendriers

Paris: Libraire Plon, 1896 (1888), 18.5 x 12 cm, 237 pp, 16 plates, 1 table.

History (French).

One source does not mention any plates.

“La vie privée d'autrefois, arts et métiers, modes, mœurs, usages des parisiens du XIIème au XVIIIème siècle d'après des documents originaux ou inédits”, the private life of the past, arts, crafts, modes, manners, usages, of parisians in the 12th to the 18th centuries.

It was published in 23 volumes between 1887 and 1901 and includes Les soins de toilette; L'annonce et la réclame; La mesure du temps; La cuisine; Comment on devenait patron; Les repas; Variétés gastronomiques; Ecoles et collèges; Le café, le thé et le chocolat; Les médecins; Les chirurgiens; Variétés chirurgicales; Les médicaments; L'hygiène; Les magasins de nouveautés (4 vol); L'enfant (2 vol); Les animaux (2 vol).

Volume 4 contains a transcription of the “Lettres patentes de Francois I” dated 1544 for the Corporation of Paris clockmakers.

See Baillie “Clocks and watches, an historical bibliography” which refers to this work.

R972 Frauenhoff, G

100 plus years of railroad watches

and railroad watch standards in North America

USA: G Frauenhoff, 1999, 11 x 8.5 inch, 44 pp, 13 ill.

History (English).

The author's description is “just facts ... a compilation of lists and mentions of railroad grade watches, railroad approved watches and railroad watch standards from over 60 original sources from 1856 to 1979”. It includes both pocket and wrist watches.

R973 Frauenhoff, G

A reconstruction of the Aurora Watch Company's watch movement production

USA: G Frauenhoff, 1990, 36 pp, ill.

Identification (English).

R974 Frauenhoff, G

Aurora Watch Company grades and production

USA: G Frauenhoff, 1995, 28.0 x 22.0 cm, 111 pp, 15 ill.

History, identification (English).

Limited edition of 150 copies.

Following a 6 page chronology of the company (which produced watches for less than ten years) the book provides detailed information of production (explaining the problems of dating the watches). It then gives a serial number and grade list followed by chapters on specific sizes and private label movements.

[1st edition, very good] A necessary book for this company.

R975 Frauenhoff, G

Fredonia and Peoria Watch Co movements

Serial numbers and descriptions

USA: G Frauenhoff, 2007 (2001), 11 x 8.5 inch, 35 pp, ill (32 pp, some ill).

Description, identification (English).

3 editions printed in 2001, 2003 and 2007. Spiral bound.

A list of serial numbers of over 900 Fredonia and Peoria movements, some with detailed descriptions. It includes historical information, illustrations of movements and ephemera.

R976 Frauenhoff, G

History and products of the Columbus Watch Company of Ohio

USA: G Frauenhoff, 2004, 8.5 x 5.5 inch, 42 pp, ill.

History, identification (English).

History (6 pages), table of grade descriptions (3 pages), company advertisements (29 pages), and material catalog extracts (4 pages).

R977 *Frauenhoff, G*

R977 **Frauenhoff, G**

Pictorial guide to Aurora watches

USA: G Frauenhoff, 1999, 11 x 8.5 inch, 31 pp, ill.
Illustration (English).

R978 **Frauenhoff, G**

Railroad watch inspectors

USA: G Frauenhoff, 2003, 75 pp, ill.
History (English).

R979 **Frauenhoff, G**

Rockford Watch Company primer

USA: G Frauenhoff, 2004, 11 x 8.5 inch, 38 pp, ill.
Dating, history, identification (English).

The contents includes history (8 pages), serial number date table, serial number grade lists, and line drawings of Rockford models.

R980 **Frauenhoff, G**

United States Watch Company, Waltham, Mass

History and products

USA: G Frauenhoff, 2003, 8.5 x 5.5 inch, 33 pp, ill.
Description, history (English).

R981 **Fredyma, James P**

A directory of Maine silversmiths and watch and clock makers

Hanover, USA: Paul J. & Marie-Louise Fredyma, 1972, 26 pp.
Makers (English).

Numbered, limited edition of 500 copies.

A list of silversmiths, watch and clock makers.

R982 **Fredyma, John J**

A directory of Connecticut silversmiths and watch and clock makers

Hanover, USA: Paul J. & Marie-Louise Fredyma, 1973, 60 pp.
Makers (English).

Numbered limited edition of 500 copies.

A list of silversmiths, watch and clock makers.

R983 **Fremont, C**

Files and filing

La lime

Paris: ; England: Sir Isaac Pitman, 1930 (1916), 4to, 148 pp, 221 ill (157 pp, 283 ill).
History, tools (French).

Etudes experimentales de Technologie industrielle 82nd Memoire.

Published in 1916 and 1930 with an English translation of the 1st edition in 1920 (148 pp, 221 ill).

The file.

Gardner "Catalogue of the Torrens Collection" lists books by Fremont but does not indicate if they are general or have horological content, although the author has written one book on clocks.

R984 **Fremont, C**

La vis

Paris:, 1928, 4to, 60 pp, 96 ill.

History, tools (French).

The screw.

Gardner "Catalogue of the Torrens Collection" lists books by Fremont but does not indicate if they are general or have horological content, although the author has written one book on clocks.

R985 **Fremont, C**

Origine et évolution des outils

Paris: Société d'Encouragement pour l'Industrie Nationale, nd (1913), 28 x 21 cm, 157 pp, 322 ill.
History, tools (French).

In the series "Etudes expérimentales de technologie industrielle".

With an undated facsimile reprint.

Tools, their origin, their evolution.

R986 **Frey, JJ**

L'histoire Minerva 1858

Switzerland: Minerva S.A., ca 1993, 15.5 x 22.0 cm, 16 pp, ill.

History (English, French).

Undated, but the text was written in 1993. Probably reprinted when required.

A brief history of Minerva with some illustrations of different calibres.

[1st edition, fair] A useful history of a little known company.

R987 **Fried, Henry B**

Bench practices for watch and clockmakers

New York: Columbia Communications (American Watchmakers Institute Press) (USA: Ken Roberts Publishing), ca 1994 (1954), 21.5 x 14.0 cm, 260 pp, 353 ill.

Repair, tools (English).

In 3 parts: Part 1 (78 pages) covers the manipulation of balance springs. Part 2 (61 pages) is on the repair of regulators, screw making and the use of staking set stumps (punches are covered in the companion book).

Part 3 (116 pages) discusses jewellery, barrel hooks, pivoting, dials, taper pin cannon pinions and replacing wheel teeth.

[2nd edition, excellent] *This is the sequel to "The watch repairer's manual" (which see) and like that book it is not a complete repair manual and covers only selected topics. From inconsistencies in presentation it would seem that it was produced from a collection of notes or articles. With the exception of some of the section on balance springs there is no overlap between the two books.*

The explanations of repair techniques and their illustrations are again excellent, especially the parts on balance spring untangling and screw making. And the topics included are those usually covered inadequately by other books. The only time Fried is less than perfect is when he discusses balance spring overcoiling; his explanatory remarks on overcoil shape and isochronism are too vague and unsatisfactory. But it doesn't really matter in this context because he is concerned with explaining how rather than why.

R988 Fried, Henry B

Invention's debt to horology

New York: National Association of Watch and Clock Collectors, 1969, 21.5 x 14.0 cm, 24 pp, 16 ill. History (English).

Numbered, limited edition of 600 copies published by the New York chapter of the NAWCC.

Introduction and 21 sections: Thermostat, Endless chain, Oblique gearing, The dividing head, Differential gearing, Block chain, The governor, Roller bearings, Cams, The count wheel, Worm gearing, Rack counting, Frictional clutch, Variable speed gearing, Screw thread cutting, Jewel bearings, Oil sinks, Universal joint, Gear hobbing, The split chuck in lathe work, and The feedback principle.

[1st edition, fair] *The basis of this booklet is the statement, in the introduction, that "it is an acknowledged fact that clock and watchmakers and millwrights have contributed more to mechanical inventions than all other sources".*

Each section briefly mentions when and how the particular invention first occurred in horology, and some sections also provide explanations of them.

The booklet is interesting, but the subject deserves a much fuller treatment.

R989 Fried, Henry B

Museum of the American Watchmakers Institute

USA: AWI Press, 1993, 28.5 x 22.5 cm, 185 pp, 250 plates. Collection, technical (English).

Photographs and descriptions of some items in the collection. In addition to general watches, the book shows most of the Packard collection of complicated watches (see also Fried "The James W. Packard collection of unusual and complicated watches") and some of the Gruen collection (see also Gruen "Gruen watches: a special collection"). The latter parts include some clocks, tools and escapement models. There is also a section on Swiss fakes of American watches.

[1st edition, good] *About a third of the book (62 pages) is devoted to the Packard watches and includes technical notes and details of the restoration of two Patek Philippe movements.*

Each item is well illustrated and accompanied by useful descriptive text giving some technical and historical data and a few references.

Unfortunately no indication is given of what else is in the museum.

R990 Fried, Henry B

The cavalcade of time

a visual history of watches

USA: Zale Corporation, 1982 (1968), 22 x 14.5 cm, 126 pp, about 180 plates.

Collection (English).

Catalogue of part of the Zale Corporation collection describing 98 pocket watches.

See also Zale Jewelers "Historical watches".

[1st edition, fair] *Primarily an external view (cases and dials) of lovely watches with some very good illustrations. Each watch is described in general terms with no technical information.*

More a book for the learner or the lover of cases.

R991 Fried, Henry B

The James W. Packard collection

of unusual and complicated watches

USA: Horological Institute of America, 1959, 21.5 x 13.5 cm, 44 pp, 60 ill.

Collection (English).

Unless printed much smaller, this book would contain considerably less than the corresponding section in Fried "Museum of the American Watchmakers Institute".

R992 Fried, Henry B

The principles of waterproofing watches

New York: B. Jadov, 1962, 23.0 x 15.5 cm, 68 pp, 57 ill.

Repair, technical (English).

Illustrations 41A and 41B are missing from my edition, without any great loss.

Ten chapters covering general points, testing, terminology, gaskets, crowns, cases, crystals, condensation and repair tips.

[1st edition, very good] A typical Fried book; clear, simple, well organised. And the only comprehensive information on the topic I have found. It probably should be regarded as excellent, as all his repair books are. But my eyesight is mediocre and I had to use a magnifying glass to read the table and figure captions! I wonder if publishers sometimes forget their products are to be read.

R993 Fried, Henry B**The watch escapement**

how to analyse, how to adjust, how to repair

New York: Columbia Communications (New York: B. Jadow), nd (1959), 21.5 x 14.0 cm (23.0 x 16.0 cm), 191 pp, 201 ill (164 pp, 111 ill).

Repair, technical, theory (English).

The first edition only covers the lever escapement.

The 2nd edition was printed in 1974 (from the Kansas Jewelers Association Journal). There may be later reprintings as only the copyright date is given. The illustrations are numbered I-XXXII, 1-111 and 1-58.

The first edition has three sections:

Part 1, Drawing (68 pages with 40 test questions) gives detailed instructions for drawing a lever escapement including comprehensive explanations of action and design choices.

Part 2, Adjustment (55 pages, 54 test questions) begins with the general consideration of faults and their detection. This is followed by separate chapters on the escape wheel, pallets, fork length, safety action, moving pallet jewels, and a summary.

Part 3, Repair (32 pages, 31 test questions) gives details of escape wheel centering, pallet repair and guard pin repair.

There is a short bibliography and an index.

The second edition is a facsimile of the first with the addition of a fourth section (30 pages) on cylinder escapement repair. This covers action, removing and fitting tampons, replacing cylinders, banking pins, the chariot, escape wheel adjustment, and carriage clock platform escapements. The bibliography is omitted and the index expanded.

[2nd edition, very good] The first part provides a very detailed explanation of how to draw a lever escapement. More importantly, this section defines and explains the action and features of the escapement. I think it would have been better if escapement drawing had been omitted and Fried had simply concentrated on explaining it.

Part 2 covers testing the escapement and determining what adjustments are necessary.

Parts 3 and 4, as noted above, provide specific repair information. As usual, Fried's instructions are excellent and these are the most useful sections of the book.

R994 Fried, Henry B**The watch repairer's manual**

USA: American Watchmakers Institute Press (USA: Chilton Book Co) (New York: Van Nostrand), 1999 (1949), 23.5 x 16.0 cm, 453 pp, 527 ill (327 pp, ill) (307 pp, ill, 1 plate).

Repair, tools (English).

Four editions in 1949, 1961, 1973 and 1986. The 4th edition was reprinted at least once, in 1999.

26 chapters covering cleaning, casing, motion work, mainsprings, motor barrels, balance staffs, balances, the lever escapement, balance springs, general repairs, keyless mechanisms, verge watches and the duplex escapement. Most conclude with a summary and revision questions. These chapters are followed by appendices including a glossary of terms, tables of watch sizes and a bibliography.

See also the sequel volume "Bench practices for watch and clockmakers".

[4th edition, excellent] Fried is reported to have said that to write well one should "plan and draw the illustrations and then write about them". The delight of his books is precisely this. Every illustration is clear and every word necessary to explain the repair processes. This superb book is not a complete repair manual and it covers only selected topics. But what is included is often poorly described in other books (or not covered at all. In particular, the concluding chapters on verge and duplex watch repair, including staff making, are excellent.

If I were only allowed three repair books I think I would choose this one, its sequel and Jendritzki "The Swiss watch repairer's manual".

Unfortunately the few photographs are poorly reproduced in the later edition (a reprint?), but the figures are excellent.

R995 Fried, Henry B**Universal watch parts catalogue**

USA: AWI Press, 1957, 370 pp, ill.

Description, identification, repair (English).

A catalogue of Swiss and European movements, Bulova movements with some instructions, trademarks, shock springs, spring dimensions, and interchangeability of parts, etc.

[Remark] The only reference I have found to this is an advertisement by Fried. I presume it is a printing of WMDAA "Official WMDAA catalog of genuine watch parts", which see.

R996 Fried, Henry B**Watch crown manual**

USA: Clockworks Press (USA: Waldman), 2000 (1964), 21.5 x 14.0 cm, 23 pp, ill.

Repair (English).

At least one modern reprint. It is also in Bestfit "#111A Encyclopedia of Watch Material", part 2. Detailed instructions for selecting and fitting wrist watch crowns and stems.

[1st edition?, very good] A typical Fried book with as much space devoted to excellent diagrams as to the clear text.

R997 Fried, Henry B

Watches with odd vibration rates

USA: AWI Press, nd, 11 x 8.75 inch, 20 pp.

Repair (English).

R998 Fried, Henry B

Wittnauer

a history of the man and his legacy

USA: Parillo Communications, 1994, 21.0 x 21.0 cm, 102 pp, 43 ill.

Biography, history (English).

A history of Albert Charles Wittnauer and his companies, including Longines Wittnauer.

[1st edition, good] This book starts with a brief history of Longines, with which Wittnauer was intimately related for most of its existence. Fried then gives an interesting, well written history of the Wittnauer company, which imported and sold Swiss watches, both Longines and under its own name.

R999 Friedberg, FJ

The Illinois watch

the life and times of a great watch company

USA: Schiffer, 2004, 12 x 9 inch, 272 pp, ill, price guide.

History, illustration (English).

History of the company (including photographs of people and manufacturing in the factory), a compendium of wrist watch production with extensive photographs of wrist watches.

Ten chapters: History (12 pages); The strap watch (4 pages); Loyalty and efficient service (11 pages); Movements (22 pages); Dials (10 pages); Case makers and cases (16 pages); Identification guide (148 pages); Ephemera, memorabilia and miscellany (18 pages); and Notes (2 pages).

Followed by 14 appendices: The Sangamo Electric Company (1 page); Illinois watch movement measurements (3 pages); Illinois watch grade and model numbers, December 1932 (1 page); Illinois mainspring chart, October 1931 (1 page); Materials price lists for 3/0, 6/0, 12/0, 18/0 and 21/0 movements (each 1 page); Production date table (1 page); Jobbers material price list October 1931 (1 page); Factory catalog dial numbers (1 page); Dial foot position chart (1 page); and Dial numeral styles (1 page).

There is a 2 page index.

This book includes a very good history of the company and then examines wrist watch production from 1915 to 1931 in detail.

The bulk of the book, the 148 page identification guide, lists watches in alphabetical order by name. The emphasis is on cases and dials, rather than the movements, with 1 or 2 pages for each case design. There are 2 or 3 photographs of each case and dial, but no photographs of movements.

R1000 Friedrich, A; Favre, P

Histoire de ma montre Casio

: Art & Fiction, 2008.

Novel? (French).

History of my Casio watch.

R1001 Friess; Seeger

Uhren

katalog der uhrensammlung des museums für kunst und kulturgeschichte Kempten

Kempten:, 1991, 28 x 21 cm, 272 pp, 177 ill, 13 plates.

Collection, catalogue (German).

Timepieces, catalogue of 140 pieces in the horological collection of the Kempten museums for art and cultural history.

Only clocks?

R1002 Friess, P

L.U. Ceum traces of time

L.U. Ceum spuren der zeit

L.U. Ceum traces du temps

Munich: Callwey, 2006, 29 cm, 96 pp, 120 ill.

Collection (English, French, German).

Separate language editions. Limited edition.

The sections are: The L. U. Ceum - an introduction and statement of the themes of the collection; The fascination of time; Great achievements that transcend the standards - a fine calendar watch and a one wheel watch; Watches for the Chinese market - mostly Fleurier watches wonderfully decorated and illustrated; Time rotates around itself - tourbillons; The measure of precision - mostly European chronometers and a Potter; Subdivided Time - mostly chronographs with a breathtaking Arnold split second, free sprung keyless fusee example with Earnshaw detent; Traveling with time, 18th century alarm watches.

The L.U.Ceum is a museum in Fleurier which houses the Chopard collection. The driving force behind it is Karl Friedrich Scheufele, owner and managing director of the luxury watch company Chopard.

R1003 Friess, P

R1003 Friess, P

Taschenuhren im Bayerischen nationalmuseum

Katalogisierung und wissenschaftliche Auswertung mit dem Computer.
München, Deutscher Kunstverlag, 1984, 25 x 18 cm, 20, 128 pp, 102 ill.
Collection (German).
Cataloguing and scientific evaluation with the computer.

R1004 Fritsch, P

Besançon horloger 1793-1914 de Jean-Luc Mayaud

1994, 124 pp.

History (French).

Ouvrage édité à l'occasion du bicentenaire de l'industrie horlogère bisontine.

R1005 Fritts, CE

The watch adjuster's manual

Being a practical guide for the watch and chronometer adjuster in making, springing, timing and adjusting for isochronism, positions and temperature
London: Funk and Wagnalls; Philadelphia: Keystone (London: Charles E. Fritts), 1912 (1894), 21.5 x 14.0 cm, 364 pp, 56 ill, tables.
Repair (English).

Four editions, 1894, 1895?, 1904 and 1912, the first published by the author.

The date 1895 may be an error, in which case another edition is needed to make the 1912 printing the 4th. If that is the case then Excelsior "The watch and how to repair it" 1885 (which I haven't seen) may be the "first" edition. The introduction to the 1894 printing seems to contradict this, but such notes are often unreliable.

Tardy lists the first edition as 1875 because he regards Excelsior "A practical treatise on the balance spring" as the 1st edition.

In eight parts: Preparatory (27 pages), Making balance springs (28 pages), Balances (20 pages on making, selecting and finishing), Springing and timing (98 pages), Special compensations (45 pages on cylinder, duplex, lever and chronometer escapements), Isochronism (75 pages), Positions (26 pages), and Temperature (29 pages). There is an index.

[1st edition, very good] This is a much expanded and re-organised edition of Excelsior "A practical treatise on the balance spring" (which see).

The main changes concern adjusting for isochronism on which subject Fritts goes into much more detail. His basic argument is that the primary purpose of terminal curves is to achieve isochronism. He rejects Phillips curves as being abstract ideals which have little relevance for practical adjusting and argues that terminal curves have to be adjusted to suit each individual watch. In particular, the balance spring should be deliberately made non isochronal so that it compensates for other errors. His argument is based on plus and minus balance spring curves, which speed up or slow down the rate of short arcs.

He also points out the great variation in opinions about adjusting, where quite contradictory methods are proposed by different authors. In addition, the same methods are often proposed for positional adjustment as for isochronal adjustment, and I have found that some writers indicate that adjustment is a matter of skill, judgement and meticulous fiddling. This is not surprising, considering that an error of 5 seconds a day, 2 1/2 minutes per month, is an error of one part in 17,280, and so correcting it requires an extremely small adjustment. Although I do not know if Fritts is right, he does point out these inconsistencies and provides good arguments to support his view.

So I think he deserves to be read with care, and even if the reader ends up rejecting his ideas, I have no doubt that understanding them will enhance his understanding of adjusting.

[Remark] Mercer "Chronometer makers of the world" believes this is the longest title in horological literature. It isn't. There are at least two longer titles, and the longest I know off, at 399 characters, is Magdeleine "Traitt d'horlogiographie Contenant Plusieurs Manières de construire, sur toutes surfaces, toutes sortes de horaires: & autres cercles de la sphère. Avec quelques Instrumens pour la mesme pratique, & pour connoistre les heures durant la nuit & l'heure du flus & reflux de la mer. Plus la méthode de couper, en pierre ou en bois, les corps réguliers & autres Polyèdres, par le cube & par le cylindre."

R1006 Fritz, M

Grande complication, the IWC wristwatch**Die grande komplikation von IWC wristatch**

Switzerland: Edition Stemmlé, 1992 (1991), 32.5 x 27.5 cm, 240 pp, 365 ill, 2 loose fld plates, slip case?.
Description, history (English, German).

Separate English and German editions.

The history and technology of the IWC grande complication wrist watch which took seven years to develop, from 1983 to 1990.

Introduction and 6 chapters:

The superlative (12 pages, overview of the watch).

Who was Mister Jones? (24 pages, history of IWC and survey of IWC watches).

The challenge (18 pages, overview of the watch).

The watchmakers from Schaffhausen (48 pages, short biographies of the individuals involved in the development of the watch, together with more detailed explanations of some aspects of it).

Technology writ large and small (96 pages, detailed examination of the design and action of the watch:

self winding mechanism, going train, motion work, escapement, chronograph, repeater and perpetual calendar).

Behind the scenes (28 pages, brief descriptions of different departments within IWC and some of the people working in them).

[1st edition, very good] From my review below I suppose I should rate this book as fair, perhaps even mediocre. But I did learn a lot from it and I have to recommend it. Despite the following criticisms, this book is a very important document and one of the very few that try to examine watch mechanisms in detail. Indeed, it is tempting to rate it as an excellent book simply because everyone seriously concerned with complicated watches should read it.

Reviewing a large book, one with lots of words, requires taking much time and care. It is necessary to clearly understand the author's aims and then to see how well they are achieved, reading and, hopefully, understanding every word. Often such aims are not spelled out and the relevant text can be scattered throughout the book. So the reviewer has to discover them and then keep in mind the progressive development of several themes simultaneously.

In general terms, the aims of a book written about a single watch are quite easy to summarise by means of six questions: Who made it? Why was it made? What is its historical significance? How was it made? What does it do? How does it do it? Of course not all need be considered in any particular book. For example, besides a brief history of Omega, Imai "A time capsule, Omega Speedmaster" only looks at the historical significance of the watch, its use in space exploration. It should also be noted that his book is not about one watch, but about a series of models with the same name. So Imai also provides some information on the different calibres.

In contrast Fritz has written a mammoth book on just one watch, and he considers all of the questions I have posed. Most importantly, he provides detailed explanations of the different functions of this watch: the automatic winding, going train, motion work, escapement, chronograph, minute repeater and perpetual calendar. (In addition, the watch is a hack watch, where the train is stopped during hand setting, and has a moon phase display.) Perhaps with the exception of how the watch is made, the other questions can be answered descriptively. But explaining the actions of the various features requires a thorough study of the mechanisms. At the beginning of chapter 5, Fritz makes his intent clear: "We have been able to explain the watch's internal mechanism in terms that even the layman will readily understand". There are two fundamental requirements for such explanations: they must be intelligible and they must be correct. And so Fritz's text needs to be assessed with these in mind.

The book is very well organised in that it progresses from the general and descriptive to the detailed and technical. And Fritz is a competent writer who makes it easy to read. Chapter 1, The Superlative, simply defines the functions of the watch, why it has 9 hands, and what the buttons and crown do; the sort of information to be found in any watch instruction manual. However, the repeater is introduced by a short history of the conflict between Barlow and Quare. This is a jolly, frequently repeated story which adds nothing to the chapter, but it is a bit of fun. Chapter 2, Who was Mr. Jones, is a good outline history of IWC followed by a pictorial survey of IWC watches. These two chapters answer three of my questions: who made it (IWC), why it was made (to see if it could be done), and its historical significance (Fritz states it was the first grande complication wrist watch, which it wasn't, and there are earlier and more complex pocket watches).

Chapter 3, The Challenge, attempts to take the description of the watch a little further, providing more detail on the train and escapement, chronograph, perpetual calendar and repeater. It fails. There are lots of words that don't say much and it is superficial, adding very little to what we already know. The problem is that there is no easy way to explain complex mechanisms without going into very precise details. Fritz tries to introduce the idea of an escapement with a very bad analogy to a sand glass and follows it with a superficial and very poor explanation of a chronograph. He evades the perpetual calendar by giving us another jolly good story about Caesar and Cleopatra because "to fully understand how the perpetual calendar works, we shall first have to look more closely at ... the Julian and Gregorian calendars." This history of calendars is good and interesting, but not particularly relevant. It certainly has little to do with fully understanding calendar mechanisms. Finally he briefly mentions the minute repeater, a mechanism that simply cannot be explained without going into great detail. But here he writes, while commenting on the number of strokes which are sounded, "the shortest series is a single stroke at one minute past twelve." In different circumstances I would gloss over such a matter, but this crass error (which cannot be a translator's or typesetter's mistake) is very important. If such an error can occur, how confident can we be that Fritz will manage to explain anything else correctly? His very bad analogy of a sand glass for an escapement becomes significant because there are two examples within a few pages of an inability to get detail right. He seems good when writing general history, but inadequate when faced with a need for precision. Hopefully these failings are not symptomatic.

One aspect of Chapter 4, The Watchmakers from Schaffhausen, is simple. Fritz introduces us to the individual watchmakers and engineers who designed and built the watch, providing very short biographies: names, nationalities, what they worked on, and hobbies. It is interesting in that, at least in this case, the real people are not just anonymous figures in the background.

Interleaved with these biographies are additional details of some parts of the watch on which these people worked. Fritz begins with the perpetual calendar, examining the date change system: "It is slightly complicated, but with a little patience it should be easy to understand". It isn't easy to understand, because Fritz does not describe the parts and their interaction clearly enough. Without knowing the

pivoting points of the parts, and then visualising the way they move and the effects of this movement, it is nearly impossible to understand what Fritz is trying to say; so the layman has little chance.

Next there is a piece of superficial journalism about the use of computers and computer controlled tools. Included is a feeble attempt to explain Electric Discharge Machining, but as no concrete information is provided the process remains a mystery.

The third topic is the repeater, and let me assume that the reader understands normal repeater mechanisms (as described by Lecoultrre "A guide to complicated watches"). To begin with, Fritz writes about an illustration: "This drawing already contains one of the basic concepts that was later adopted: the movement of the repeating rack determines the number of hours to be struck." But this is true of all repeaters. He then goes on to describe part of the minute mechanism, providing a diagram and explanation of the interaction of the minute transmission wheel, incidental star wheel and the minute snail. The knowledgeable reader is bewildered! What is called the minute transmission wheel looks like a minute snail without steps; what is called the minute snail looks nothing like a snail; and the purpose of the incidental star wheel is an unexplained mystery. It is immediately apparent that this is no normal repeater mechanism, and what is certain is that, at this point, Fritz's explanation is useless. I know that understanding the repeater is going to take a special effort, so what chance does the lay reader have? None at all. Most would assume, when they failed to understand the mechanisms from the descriptions, that it was their fault, that they were not intelligent enough. In fact their failure is because the explanations are very poor and may even be incorrect in some cases.

The reader is faced with a serious problem. Fritz, in an easily missed aside, points out that the incorporation of several complications in a very small space forced significant re-arrangements of the parts. Consequently, a new design for the minute repeater was necessary, a design which is actually more complex than, and radically different from, the traditional arrangements. This is actually not necessary. There are complicated watches based on traditional going trains and repeater mechanisms. So I am not sure if the IWC design was just a whim or if it was necessary. Either way, it cannot be understood on the basis of the normal knowledge possessed by watch collectors and repairers. It is precisely this problem that unnerved me. I assumed I should be able to understand Fritz's diagram and words, but I could not. So I re-read all the useful books on minute repeaters and spent some hours rediscovering how they work and the inadequacies of the writers (Fritz is certainly not alone!). I still could not understand the IWC mechanism. I thought about reading the full explanation in chapter 5, but decided to defer that until I reached it during my normal progress through the book.

The remainder of chapter 4 is vague journalism; that is, pleasant, very readable, but superficial descriptions of case and dial making, and the manufacture of the movement. Enjoyable, but not informative. The chapter concludes with a interview with Blumlein, the head of IWC which contains a few interesting remarks about company philosophy and the people who buy extremely expensive watches. In it he says that "the man who wears a Grande Complication is also stating that he understands something about watches". However, from the contents of this book it would be more realistic to say that owners know little, if anything at all, about watches and their knowledge must, on the whole, be superficial. After all, if the author, who is presumably competent, can't explain the watch, who else can? (This impolite view is supported by the type of messages that appear on message boards run by IWC and thepurists; the vast majority are from people congratulating others, and themselves, on their good taste, and technical information is almost non-existent.)

Chapter 5, Technology Writ Large and Small, is the core of the book. In it there are detailed explanations of the watch: the automatic winding, going train, escapement, motion-work, chronograph, repeater, perpetual calendar, repeater gongs, and the case. This chapter makes it clear that Fritz has only a partial understanding of mechanisms and, more importantly, he does not recognise the critical features from the less important. When he is describing reasonably simple things, like the automatic mechanism, going-train, motion-work and escapement, his explanations are good (but not devoid of silly errors like saying the watch has a helical balance-spring when it has a flat spiral spring). It is when he tries to explain the complex mechanisms that the book fails.

The description of the chronograph begins with some suggestions for peculiar uses of it. These rather silly ideas indicate that very few people actually need a chronograph and the majority simply want a watch with a very complicated dial and hands which looks good. The description of the chronograph itself is good, but the reader has to do a lot of hard work to understand it. Most importantly, the cam system which drives the chronograph is described, but just how it works is not mentioned. The reader has to visualise its behaviour in order to fill in the gaps before the mechanism makes sense. In addition, the use of a rocking pinion is explained, but no mention is made that this is only one method of activating a chronograph and not the best. What is becoming apparent is the main fault of this book; the mechanisms are described in isolation, without any reference to their history and other designs. By taking the watch out of context, the reader is given a much more difficult task if he wants to actually understand it. Finally, the friction coupling between the barrel and the chronograph hour register is mentioned in passing, as was the motion-work coupling. These two are critically important to the functioning of the watch and should have been explicitly examined.

The next part of chapter 5 describes the repeater. Here, unlike the other sections, there are two separate explanations, the first by Fritz and the second a "technical description" by the IWC watchmakers Robert Greubel and Jürgen King. Fritz says "we shall begin with a detailed description that will enable even the layman to understand the entire mechanism in every phase of its operation"...

I had got to this point about a year ago, when I had already written two long articles about the mechanisms of other repeaters and had reasonably "expert" knowledge. But the descriptions in this book simply did not make sense! And so I spent some months, on and off, studying the mechanism. Finally, after some helpful letters from IWC, I reached the point where the repeater made sense. This effort indicates a crucial point: repeaters are very, very complex and understanding them is very, very difficult. And even more pertinent, it is very, very difficult to explain them in a way that the reader will be able to comprehend. This is especially true when the repeater is examined out-of-context. For example, Fritz states that "IWC devised a completely new method of registering the minutes and quarter-hours", and later he writes "the hour and quarter rack - which is the first of its kind to be designed in this way ..." and "the number of hours to be struck is determined by a method as astonishing as it is unusual". In fact the hour and quarter counting and striking mechanisms were described nearly 250 years earlier (by Thiout in 1741) and form the basis of all simplified quarter repeaters, including that described 40 years earlier, in 1943, by Lecoultré; they are in no sense new. I don't know if Fritz was deliberately misled (because the IWC watchmakers must have read Lecoultré's book if not Thiout's) or if he deliberately distorted the truth; either way the statements he makes are utterly wrong and unacceptable.

If the reader has previously understood the far simpler quarter repeater then much of the IWC minute repeater becomes fairly easy to comprehend. But the rest, mainly the minute counting and striking, remains very hard to grasp. Part of the problem is created by Fritz describing components in the wrong order or incompletely. For example, the quarter and hour snails are introduced, describing how they are advanced, without any explanation of how they are used. And the isolator and the all-or-nothing mechanism appear near the beginning, when the reader and Fritz are not able to comprehend their importance and their purpose properly. The result is that Fritz is completely wrong in suggesting that a layman could understand "the entire mechanism in every phase of its operation". After gaining a very good understanding of other repeaters and after writing a long article on the IWC repeater, I could understand the description in the book; but not before. (In fact it took 20 months!)

Unfortunately the technical description, written by two IWC watchmakers, does not help. It is, of course, correct and fairly complete, but it is equally obscure unless the reader has a good grounding in the concepts and designs of repeaters. Again, on first reading it made almost no sense, but after enough study and writing my own explanation I could read between the lines and work out what the writers were trying, unsuccessfully, to say.

Similar difficulties occur with the description of the perpetual calendar. This is a far simpler mechanism which has only one conceptually difficult feature: how to advance a date indicator by 1, 2, 3 or 4 days depending on the month and the 4-year cycle. Again Fritz fails to tackle what is important directly, and intermingles vague descriptions of other, quite trivial aspects; and, as a result, he never clearly explains how this central problem is solved. But because the perpetual calendar, like the chronograph, is a simple mechanism, he manages to get close to a reasonable explanation.

The rest of the book is, like some of the early chapters, handled very well, simply because they are almost devoid of technical content. There is a very interesting discussion of the design of repeater gongs and the case. And then a brief guided tour around some departments in IWC; parts manufacture, case making and polishing, engraving, watch records, spare parts, quality control, apprentice training and sales. Finally, Fritz ends with a couple of pages of enjoyable but superficial philosophising about the meaning of time.

As I wrote above, the purpose of this book is, first and foremost "to explain the watch's internal mechanism in terms that even the layman will readily understand". It fails. Well, it gets part way there and much of the watch can be understood. But the repeater and perpetual calendar, and some fine details, cannot. Whether this matters or not is doubtful. The primary use of the book has been to give it to purchasers of Grande Complication watches, and many of these owners are not interested in how the watch works; it is the self satisfaction and status of owning one that really matters, not how it works. In this context I am sure many people get pleasure from the book, at least by looking at the pictures and reading about the people involved in its manufacture. Indeed, it is probably better that they don't understand it because then they will have a warm, fuzzy feeling of mystery and excitement, a feeling that might dissipate if they understood the mechanics. Perhaps the problem is that people, like me, who don't own complicated watches shouldn't be allowed to read it! But I did learn a lot from it and, despite its flaws, I must recommend it.

[Remark] *My description of the repeater appears in Watkins "The repeater".*

The same repeater mechanism has been used in other IWC watches, with one important change. The original design included an isolator, used to hold the minute-counting system out-of-action unless the repeater was activated, and this is described in the book. However, in 1992-93 it was realised that the isolator did not work properly and was very difficult to adjust, and so it was dropped from the Grande Complication and all later repeaters. As the repeater mechanism is hidden from view in all IWC watches with the exception of the Portuguese skeleton, the majority of owners would not know anything about this change.

R1007 Fritz, M

Reverso, the living legend

Reverso, la légende vivante

Reverso, die legende lebt

Heidelberg: Jaeger LeCoultre, 1993 (1992), 33 x 24 cm, 343 pp, 719 ill, slip case.

Description, history, identification (English, French, German).

Separate English, French German editions.

“An account of the ‘quick-change artist’ of the watch world, this ‘Living Legend’ has been a genuine piece of Art Deco ever since its invention in 1931, symbolizing the elegance of one of the world’s last true watch factories, Jaeger-Le Coultre. A sizeable appendix reproduces the original 1931 patent and provides the collector with information about Reverso’s former and present mechanical movements.”

R1008 Fritz, M; Bilal, E; Coelho, P

IWC Schaffhausen, engineering time since 1868

England: Thames & Hudson, Germany?: Benteli Verlags, 2010, 34.5 x 25 cm, 540 pp, 500 ill. (English, French, German).

Separate English, German and French editions.

History: Foundation (1868); Florentine Ariosto Jones (1841-1881); The Rauschenbach dynasty (1881-1905); The period of the Homberger family (1905-1981); and The Blümlein era (1981-2002).

The modern watch manufacture: Probus Scafusia; The road ahead.

Seven stories about time written by Paulo Coelho, illustrated by Enki Bilal.

Watch families of IWC: Pilot’s watches, Portuguese watches, Ingenieur watches, Aquatimer watches, Portofino watches, Da Vinci watches, and Watch treasures.

Calibre catalogue.

Also: technical details, authors’ biographies, list of names, list of watches and index.

“A magnificent book with a lively text on the homage of the founder and the long lasting years of IWC. The historical text is accompanied by narratives written by the bestseller author Paulo Coelho and illustrated with the drawings of the artist Enki Bila.”

I have not seen this book, but I am not sure I want to buy it for three reasons.

First, Tolke and King “IWC International Watch Co, Schaffhausen” is an excellent book, so is another needed? Certainly Tolke and King is twenty-three years older and some updating might be desirable, but I doubt if there is enough new information to justify a new book. Second, as a student of horology, do I really want to read some short stories about time, which are most likely enjoyable but irrelevant? And third, it would appear that technical aspects are a minor part of the book, behind the history and the stories, and may be little more than the usual and unsatisfactory dial views and superficial summaries. But, for me understanding mechanisms is very important and should be central to the book. So I will not be parting with my money until I learn more.

R1009 Frodsham, Charles

A few facts connected with the elements of watch and clock making

London: Frodsham & Co, nd (1862), 18 x 11 cm, viii, 41 pp, ill, 1 plate (viii, 41 pp, ill).

Technical, tools (English).

Two editions, both undated, but the preface in both gives the date 1862.

Brief descriptions of the vernier gauge, fusee adjusting rod (with tables of mainspring strengths), Lancashire and Frodsham’s gauges for watch sizes and pillar heights, the use of the slide rule and the calculation of wheel and pinion sizes. The last 11 pages give assorted tables, including pendulum lengths, weights and measures, expansion of metals, steel tempering temperatures and alloys of gold and silver.

[1st edition, mediocre] A rare and perhaps interesting bit of puff by a famous maker. The primary purpose is to explain Mr. Charles Frodsham’s fusee adjusting rod and his new gauge for watch sizes (based on tenths of an inch).

The preface is an eloquent and justified exhortation to read and learn. But the pamphlet presents “facts” devoid of insight and does nothing to advance the cause. This is clearly shown in a table of “useful” numbers where diameters, areas and circumferences of unit circles are given, but without the formulae they are useless and misleading. Likewise, he remarks that he has discovered the cause of middle temperature error but gives no details; he may have done so, but more often than not such unsubstantiated claims are mere hopeful fantasies. Indeed the style of the book suggests Frodsham had little mathematical understanding and relied on rote application of rules (although he may have been hiding his abilities from the reader).

The book has some interest because of Frodsham’s opinions, which were overtaken by Aaron Dennison, the Swiss and the collapse of the English industry at the time he was writing. His plea for standardisation was bound to fail in a fragmented cottage industry devoid of coordination, organisation and meaningful education.

[2nd edition] This is almost identical with the same pagination; there is an additional heading, changes to a table layout and modification to the text of the footnote on page 29. The copy of the second edition I have seen also has a frontis plate, showing two gauges, which may not be in the the first edition.

R1010 Frodsham, Charles

Laws of isochronism of the balance spring

A history of the marine chronometer, with the laws of isochronism of the balance spring, as connected with the higher order adjustments of watches and chronometers

London: Frodsham & Co (London: Institution of Civil Engineers), 1871 (1847), 7.0 x 4.5 inch (20.0 x 13.5 cm), 40 pp, 2 ill (33 pp, 2 ill).

Theory (English).

It was reprinted in 1849 and 1871, the latter with the title “A history of the marine chronometer ...”.

Also published in Institution of Civil Engineers, Volume VI, 1847, pp 224-254 (the original). This edition is available as a Google Book PDF file.

A brief history of marine chronometers (10 pages) followed by an address explaining balance spring behaviour with suggestions for achieving isochronism in helical and flat springs by adjusting terminal curves.

[1871, fair] The text, which is mathematically naive, includes a little history (well written, mainly adulation of Hooke, but of no great merit) and some personal observations. The majority of it is concerned with explaining the concept and importance of balance spring isochronism with a few, not particularly useful remarks on how to achieve it. It is interesting to note the only mention of Breguet overcoil springs is an aside in the following discussions (which unfortunately only appear with the original address).

Other than very minor changes and the addition of bibliographic footnotes, the text is the same as that of the original address.

The pamphlet is of some historical interest.

[Original address] Published in the Institution of Civil Engineers Minutes of Proceedings in 1847 (although Frodsham gives the date 1843). The paper consists of 16 pp, 2 ill and is followed by 15 pages of discussion by Farey (who produced the drawings for Rees' Cyclopaedia), Vulliamy and Frodsham. Farey considers testing balance springs by tiny weights attached to a hair wrapped round the balance, elimination of the fusee from pocket watches and methods for tapering balance springs. Vulliamy and Farey remark on the effects of different oils and a method of testing them. The discussion is more interesting than the paper.

R1011 Frodsham, MG; Soelberg, EM

Frodsham, the descendants

USA: MG Frodsham & EM Soelberg, ca 1985, about 200 pp.

History (English).

A photocopy collection of information, including a list of the descendants of Edward Frodsham and Sarah Crosley.

Irrelevant?

R1012 Fromberg, EO

Das abziehen, ausputzen, reparieren und regulieren oder stellen des taschenuhren

nach den anweise ausgezfranzos künftler eines Berthoud, Couet, Gaudron und anderer

Quedlinburg:, 1894 (1850), 8vo, 66 pp, ill, 1 plate.

(German).

The disassembly, cleaning, repairing and adjusting or regulating of pocket watches, with references to the distinguished French artists Berthoud, Couet, Gaudron and others.

R1013 Fuller, Eugene T

The priceless possession of a few

USA: National Association of Watch and Clock Collectors (USA: Eugene T Fuller), 1974, 22.5 x 15.0 cm, 63 pp, 52 ill.

History (English).

A limited edition of 650 copies was printed by the author and it was reprinted in the same year as NAWCC Supplement No. 10.

A history of the Gruen Watch Company with an appendix containing the text of the Gruen advertising booklet "The priceless possession of a few" (which see).

[NAWCC supplement, very good] This book examines how Gruen concentrated on high quality watches, culminating in the 50th Anniversary watch, and the competition in the prestige watch market with Waltham, Elgin and Howard. It has, as its focus, the advertising and sales policies of the company. Although there is little technical information, Fuller provides a very good and well written study of the influences of design and advertising on company development.

Unfortunately the photographs are mediocre.

R1014 Gable, C

La compatibilité de l'horloger-bijoutier

1944, 179 pp, ill, fld plates.

Business (French).

The operations of the horologer and jeweller.

R1015 Gagnant, L

Compas de proportion

Genève: Administration du Journal Suisse d'Horlogerie, 1904, 8vo, 22 pp, 5 ill (42 pp, 13 ill, table).

Technical (French).

Tardy indicates 22 pp, 5 ill. Pertuch gives 42 pp, table, 13 ill with Houriet and Grosclaude as co-authors; that copy may contain more than one pamphlet.

The sector.

R1016 Gagnant, L

Dimensions des engrenages

des montres et des pendules

Paris: Librairie Centrale des Sciences, Besançon: , 1923, 24.5 x 16.0 cm, 22 pp, ill.

Technical (French).

Dimensions of the gears of watches and clocks.

R1017 **Gagnant, L**

R1017 **Gagnant, L**

Éléments de calcul de rouages

des montres et des pendules

France: (Cluses:), 1920 (1903), 8vo, 72 pp (62 pp).

Repair, technical (French).

At least 10 printings.

Calculation of trains.

R1018 **Gagnant, L**

L'outil aux dixièmes de millimètres et aux douzièmes de lignes

Genève: Journal Suisse d'Horlogerie, 1905, 24 x 15.5 cm, 31 pp, 12 ill.

Tools (French).

The tool with tenths of millimetres and twelfths of lignes.

R1019 **Gagnebin-Diacon, C**

La fabrique et le village

la Tavannes Watch Co 1890-1918

Porrentruy: Cercle d'études historiques de la Société jurassienne d'émulation, 2006 (1996), 21 x 15 cm, 170 pp, ill (134 pp, ill).

History (French).

2 editions. Cahiers d'études historiques, no 2

History of the Tavannes Watch Company.

R1020 **Galizia, Michele**

Military wristwatches, sky land sea

Italy: Chronomania, 2008, 372 pp, 1030 ill.

Illustration, makers (English).

Details of 274 military wristwatches used by the armed forces of 30 countries. Each watch has movement and case illustrations and is described with an explanation of the service markings. The majority of the watches included were made after World War II.

R1021 **Gammenthaler, A**

L'achevage de l'échappement a ancre après dorure

Geneva: Journal Suisse d'Horlogerie, 1911, 24 x 15 cm, 20 pp.

Technical, watch making (French).

Finishing the lever escapement after gilding.

See also Switzerland "L'achevage de l'échappement a ancre".

R1022 **Gammenthaler, A**

Le remontage du rouage

Genève: Journal Suisse d'Horlogerie, 1912, 24 x 15 cm, 20 pp, no ill.

Technical (French).

R1023 **Gammenthaler, A**

Petit manuel de réparateur-decoteur

avec le concours de E. Degallier

Bienne: E. Magron, 1926, 18 x 12 cm, 16 pp, 1 fld plate.

Repair (French).

Repair of pocket watch cases.

R1024 **Garbani, C; Piovano, E**

Essai sur le groupe Seiko

Switzerland: Federation Horlogère Suisse, Division des Affaires Economiques, 1980, 4to, 119 pp, ill. (French).

"Confidentiel (Doc. de Travail interne)".

R1025 **Gardner, M; Torrens, DS**

Catalogue of the Torrens library

England: Malcolm Gardner, 1971, 21.5 x 14.0 cm, 138 pp, no ill.

Bibliography, collection, catalogue (English).

Gardner also produced catalogues for the sale of other noteworthy collections, including those of Baillie and Ditisheim (catalogue VIII, 1952).

"Catalogue XVI: horology, printed books, MS, etc. on clocks, watches, chronometers, turning, engineering and other allied subjects."

A catalogue of 2053 items sold on behalf of the executors of David Torrens.

[1st edition, very good] Torrens, who died in 1967, had one of the great horological collections of books and tools.

This catalogue contains a wealth of information, including a number of peripherally relevant books not listed here. Indeed, it is equivalent to or a better reference than Tardy.

Although this and other bookseller catalogues provide an invaluable source of information, they are not free from significant errors; see Camus "A treatise on the teeth of wheels, pinions" for an example.

See also Crom "Early Lancashire horological tools and their makers" for information about the tool collection.

R1026 Gardy, E**Les montres de tir**

au point de vue historique, décoratif

Geneva: Journal Suisse d'Horlogerie, 1910 (1908), 8vo, 56 pp, 89 plates (52 pp, 73 ill).

(French).

"avec la collaboration de Scheider, Probst, Marti, Bruggman, Ditisheim, Francillon, Brandt, Favre Jacot, Rauschenbach".

Historical and decorative survey of shooting watches.

See also Martin "Swiss shooting watches 1836-1939" and "Swiss historical watches".

R1027 Garnier, J**Nouveau manuel complet du ciseleur**

contenant la description des procédés de l'art de ciseler et repousser tous les métaux ductiles

Paris: Roret, 1859, 8vo, 254 pp, no ill, 1 fld plate, 91 pp ads.

Case making (French).

It is available as a Google Book, but it is badly scanned and the plate is scanned folded and so is useless.

New manual on the art of chasing and repousse work.

The table of contents suggests that there is nothing directly related to watches.

R1028 Garnier, P**Catalogue des horloges et montres du XVI au XIX siècle**

compassant la collection B-G, provenant en partie de la collection Paul Garnier

Paris: Baudoine, 1925, 28.0 x 19.5 cm, 17 pp, 6 plates.

Catalogue (French).

Auction catalogue describing 75 lots.

R1029 Garnier, P**Catalogue des livres anciens de la collection Paul Garnier**

livres a figures sur bois recueils d'estampes relatives a l'orfèvrerie et la bijouterie

Paris: Georges Rapilly, 1916, 25.5 x 17.0 cm, 24 pp.

Collection, catalogue (French).

Auction catalogue? Description of 57 lots.

R1030 Garnier, P**Catalogue des objectés d'art et de haute curiosité**

du moyen age, de la renaissance de XVII, XVIII siècles et autres émaux peints de Limoges, ivoires, horloges et montres

Paris: Henri Mauger, 1916, 28.5 x 19.0 cm, 123 pp, 16 plates.

Collection, catalogue (French).

"... porcelaines, orfèvrerie, bronzes, vitraux, compassant la collection Paul Garnier".

Auction catalogue of 649 lots.

R1031 Garon, Tobias**My watch has stopped, why?**

Detroit: Tobias Garon, Chicago: Paulson & Co., 1946 (1932), 30.5 x 23.0 cm, 15 pp, 54 ill.

Description (English).

The publisher has been given as Tobias Garon, Paulson & Co., or Jewelers' Circular Keystone.

"The purpose of this book is to enable the watchmaker to explain to you why your watch has stopped". There are 53 numbered paragraphs, each with an illustration, the majority showing faults which can cause a watch to stop. The 54th illustration, accompanying the introduction, is of a watch movement signed Tobias Garon.

[1946, fair] There is no overview of a watch movement and how it works, just illustrations of parts and remarks on how they can be damaged. For example, the roller and broken roller jewel are discussed, but there is no explanation of what they do; the customer would have no clear idea what was being talked about. The book's main use, unless the watch repairer used it in conjunction with the customer's watch, would be to create admiration of the repairer who understands such tiny, clever bits.

A quite nice aid for the watchmaker, but it is of little value otherwise, except for book collectors.

R1032 Garrard, FJ**Watch repairing, cleaning and adjusting**

USA: Arlington Book Co (London: Crosby Lockwood and Son), 1996 (1903), 19.0 x 13.0 cm, 214 pp, 210 ill.

Repair, tools (English).

Tardy notes 14 printings to 1943 and there are reprints in 1988 and 1996. All printings to at least the 8th (1928) are facsimile reprints of the 1st edition.

Nineteen chapters covering:

Basic techniques: 6 chapters, 53 pages on materials, tools, turning, and making tools.

Watch repair: 9 chapters, 122 pages on cleaning, barrels and fusees, wheels, escapements, balances and balance springs, motion work, cases, keyless work, and faults.

Advanced topics: 4 chapters, 33 pages on escapement conversions, marine chronometers, striking work and chronographs.

There is an index.

[1st edition, excellent] A very clear, well written book on watch repair with very good illustrations. It is especially useful because it gives excellent information on contemporary methods for repairing 19th century Geneva and English fusee watches.

The reader needs a bit of knowledge because Garrard is writing in the context of the English apprenticeship system and makes a few assumptions. Also, the chapters on escapements and complications only provide a general overview. But otherwise this book is recommended.

R1033 Garuffa, E

Orologeria moderna dell'ingegnere

Milan: Ulrico Hoepli, 1931 (1894), (15 x 11 cm), 552 pp, ill (302 pp, 276 ill).

Technical (Italian).

At least 4 editions including 1894, 1907 and 1931.

R1034 Gaumont, C

Mécanique appliquée horloges, montres, chronomètres

Paris: Dubuisson, 1869 (1860), 12mo, 190 pp, 16 ill.

Theory (French).

No date. Tardy gives the first date as 1860 and Graffigny as 1861.

Mechanics applied to clocks, watches, chronometers.

R1035 Gautier, E; Hoser, V; Matthys, H

Le barillet de la montre et son ressort-moteur

Genève: Journal Suisse d'Horlogerie, 1896, 24 x 16 cm, 56 pp, 25 ill, 1 table.

Technical, repair (French).

The watch barrel and its mainspring.

R1036 Gautier, R

Le service chronométrique à l'Observatoire de Genève

et les concours de réglage

USA: Kessinger Publishing (Geneva: Aubert-Schuchardt), nd (1894), 9 x 6 inch, 171 pp.

History (French).

The reprint is a "print on demand" book.

Gautier has also produced a number of booklets titled "Rapport sur le concours de réglage de chronomètres" for particular years; including 1900, 1908, 1915 and 1919.

R1037 Gazeley, WJ

Clock and watch escapements

USA: reprint (London: Heywood & Co, Princeton: Van Nostrand Co), 1995 (1956), 22 x 14.5 cm, 294 pp, 192 ill.

Watch making, tools (English).

First printed in 1956 with reprints in 1973, 1975, 1977, 1980, 1982, 1992 and 1997.

In two sections, clock escapements (106 pages) and watch escapements (149 pages), with two additional chapters on the depthing tool (2 pages) and polishing (28 pages). The seven chapters on watch escapements cover the verge, Mudge remontoir, cylinder, virgule, duplex, lever and chronometer. These chapters contain some repair notes, but the focus is on escapement construction.

[1st edition, very good] This book is purely practical and has no theory. It is best viewed as an escapement maker's handbook.

Unlike his other book, "Watch and clock making and repairing", this one is firmly centred and consequently much more coherent. Except for some notes on repair, it describes escapement making; the repair information is mainly concerned with rebuilding escapements, and so is just an extension of their construction. The chapter on polishing only describes the polishing of escapement parts.

It is a very clear, very professional treatise on the subject.

R1038 Gazeley, WJ

Watch and clock making and repairing

London: Robert Hale (London: Heywood & Co), 1998 (1953), 22.0 x 14.5 cm, 425 pp, 314 ill (423 pp, ill). Repair, tools (English).

Printed in 1953 (1st edition), 1958 (2nd edition), 1965, 1971, 1973 (4th edition), 1975, 1993 (4th revised) and 1998. The photographs are poorly reproduced in the 1993 reprint.

Sixteen chapters and an appendix. The chapters are: Tools and equipment (25 pages); Materials (9 pages); Watch movements (18 pages); Clock movements (30 pages); Filing and making drills, taps and screws, and methods of polishing (15 pages); Turning (41 pages); Gearing and making wheels and pinions (19 pages); Watch escapements (43 pages); Clock escapements (14 pages); Keyless work, self-winding mechanisms and motion work (27 pages); Balances and balance springs (31 pages); Pendulums (9 pages); Striking mechanisms, repeaters, clock-watches, musical and alarm watches (18 pages); Chronographs and stop watches, calendar watches and clocks (21 pages); Chronometers, tourbillons and karrusels (36 pages); and Cleaning clocks and watches, and practical hints (39 pages).

The appendix is an 11 page table giving causes of faults and bad timekeeping in watches and clocks. There are only about 67 pages on clocks.

[4th edition revised, good] This book contains nothing about watch and clock making, indeed almost nothing about clocks at all. Most of the explicit repair instructions concern making escapement levers, cylinders, rollers and detents, making balances and balance springs, and making fusee keyless work. The other "repairs" covered are turning arbors from pinion wire, pinning and overcoiling balance

springs, pivoting, and fitting jewels to bezels. There is a little theory on gears and isochronism, some very bad and some simply wrong. But most of the book is descriptive. Much of the first half covers basics; tools, materials and calibres. Nearly all the second half (keyless work, motion work and complications) describes with only passing reference to repair.

But the practical advice is excellent and most of the descriptive material informative.

[Remark] I find the book odd and I am not sure what to think of it. Gazeley's original preface is not in my copy and so I don't know what his aims were. The title is no guide. Surely someone who wants to make a chronometer escapement detent has already mastered filing, turning and the basics of timepiece design? So why are these topics present? Alternatively, if the reader needs to learn these things surely he will not have the skills and experience to make the pallets for an English lever escapement?

The approach makes a little sense if Gazeley had gone through the English apprentice system and was writing for apprentices working under a master. But it may be more realistic to assume he wanted to explain how to make escapement parts and the rest of the book was included for completeness. Either way, he frequently assumes considerable skill and knowledge and yet includes much that is elementary. So it is not a good book for the learner and the experienced watchmaker will only find a few pages of use. I suspect Gazeley didn't know who he was writing for.

R1039 Geikie, A

Annals of the Royal Society Club

the record of a London dining-club in the eighteenth and nineteenth centuries

London: Macmillan, 1917, 23.0 x 15.0 cm, 504 pp, 39 plates.

Miscellany, history (English).

A history of the Royal Society Club from its formation in about 1743 to 1902. There are 14 chapters, each covering the period of a different president-ship of the Royal Society.

[1st edition, good] The Royal Society Club was a small group of people who met each week for dinner. Most, but not all, were fellows of the Royal Society and members were allowed to bring guests to the meetings.

The book is based on existing minutes of meetings. It was primarily a social club and the minutes concentrate on who was present and the food served. Geikie has included only some of the meetings and provides biographic and historic contextual information.

References to horologists are rare. This is not surprising as horologists were tradesmen, not scientists, and few would have mixed with the people who did attend. However, Graham and Ellicott are mentioned. An enjoyable and fascinating book which should not be here, except that it provides information about Lalande.

R1040 Geissler, G

Der uhrmacher

oder lehrbegriff der uhrmacherei

Osnabrück: Verlag Kuballe (Leipzig: Erusius), 1980 (1793), 25 x 18 cm, 10 parts in 5 volumes, over 1478 pp, 87 fld plates.

(German).

Printed in ten parts between 1793 and 1799.

Some plates are reproduced in T. Crom "Horological shop tools 1700 to 1900".

"The clockmaker or system of horology taken from the best English and French sources and other writings with remarks and communications by German artists".

Said to be largely reproduced from the works of Berthoud and Lepaute.

See Baillie "Clocks and watches: an historical bibliography" for a mixed review.

R1041 Gelcich, E

Die uhrmacherkunst

und die behandlung der präzisionsuhren, handbuch für uhrmacher

Vienna: Hartleben, 1981 (1892), 23 x 16 cm, 636 pp, 249 ill.

Technical? (German).

Volume 2 in the publisher's "Mechanisch-Technische Bibliothek" series.

"Handbuch für uhrmacher, hydrographen, nautiker, techniker, angehende astronomen, beisende geographen und naturforscher, sowie für besitzer von präzisionsuhren (besitzer von zeitwarten, meteorologischen beobachtungsstationen usw)".

R1042 Gelcich, E; Dietzschold, C

Die tabellen der uhrmacherkunst

nebst einer sammlung mathematischer hilfstaftel für uhrmacher

Vienna: Hartleben, 1892, 8vo, 231 pp.

Technical (German).

Tables and supplementary mathematical tables for horologists.

R1043 Gelis, E

Exposition de la verrerie et de émailerie moderne

1923, 36 pp, plates.

Exhibition (French).

Listed in Tardy.

Exhibition of modern glassware and enamel.

R1044 Gelis, E**L'horlogerie ancienne - histoire, décor et technique**

Paris: Librairie Grund, 1949, 23.0 x 18.0 cm, 254 pp, 82 ill, 28 plates, errata sheet.

Collection, history (French).

Numbered limited edition of 1,500 copies.

A catalogue of the author's collection which is in the Musee Saint-Raymond or Musee Paul Dupuy, Toulouse, depending on the source.

In three sections:

Introduction (58 pages): Short history, The decoration of time pieces, The craft of the horologist, and Horology in Toulouse.

Description of the collection of 130 items (170 pages): Watches (86 pages), clocks (46 pages), pendulum clocks (16 pages), regulators (6 pages) and other objects (16 pages).

Tables and indexes (26 pages): Values of old currency compared with the franc in 1927, Technical index, Biographical index, Alphabetical index, and Table of illustrations.

[1st edition, very good] *The introduction includes a brief history, decoration of watches, the organisation of horologists in France and a history of horology in Toulouse.*

The description of the collection covers 65 watches (followed by clocks and miscellaneous items, including a few coach watches and a watchmaker's bench). The majority of the watches are 17th century with a few later pieces. Not all are illustrated, but most have detailed descriptions. Although some black and white illustrations are fair, the colour plates of enamel cases are excellent. It includes facsimile pages of patterns for hands, enamel cases, cocks, etc.

The final section includes a bibliography, glossary and a table comparing the value of French currency between 1450-1893 and the franc in 1927.

[Review by Joseph Sternfeld] *Having served in his youth an apprenticeship as watchmaker and later devoting much time to the study of the development of horology from early days, Edouard Gelis combines in one person the technical and historical knowledge of his subject.*

Through his accomplishments he became acquainted with collectors who possessed watches of the 16th and 17th centuries which they permitted him to examine. When the late Garnier bequeathed his collection (in 1916) to the Louvre, Gelis was entrusted with the cataloguing. He became technical adviser to the Conservatoire National des Arts et Metiers and was co-author with Alfred Chapuis of the book "Monde des Automates."

During the years, Gelis formed a collection which in effect constituted a history of horology. From it over four hundred selected items have been transferred to the museum in Toulouse, and this selection forms the basis of the present book which is divided into three major sections.

The first, in four subdivisions, comprises a brief historical review, decoration, the trade of watchmaker, and watchmaking at Toulouse. The second section is in the nature of a descriptive catalogue with commentary based on the illustrations, and takes in watches, table-clocks, pendulum-clocks, regulators, and miscellaneous items which last embrace automata, dials, special cases, etc. The third section, in six parts quotes statistics, a glossary of technical terms, bibliography and indexes.

In the historical review Gelis expounds his ideas as to the origin of the spring-powered movement, with especial reference to what he calls the "Henlein legend," and which he is not ready to accept. Included with the descriptive material there is a variety of remarks, specific and general, and interspersed with the descriptions of the Breguet watches are some interesting personal comments concerning this master. Among the statistical items in section 3 is a table of coefficients by which a comparison of money values from 1451 to 1927 may be established. Not the least interesting part of the book is the foreword in which information is recorded about the gathering and disposition of earlier collections.

The plates illustrating the enamelled watches are in color and in numerous illustrations the watches portrayed are shown in three views, face, back, and opened to the movement. The edition consists of 1500 numbered copies in French language and is a decidedly valuable addition to horological literature.

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R1045 Gelis, E; Dupuy, P**Horlogerie et instruments de mesure du temps passe**

musée Paul Dupuy

Toulouse: Musée Paul Dupuy, 1978, 24 x 17 cm, 176 pp, 73 plates with 155 ill.

Collection, description (French).

Items from the Musee Paul Dupuy.

R1046 Geller, CB**A study of E Howard & Co watchmaking innovations 1858-1875**

USA: National Association of Watch and Clock Collectors, 2005, 27.5 x 21.5 cm, 90 pp, 97 ill.

History (English).

NAWCC Special Order Supplement No. 6.

NAWCC Special Order Supplements 5, 6 and 7 were first published as a set under the title "Boston: cradle of industrial watchmaking".

In two parts:

Part 1 (27 pages) The origin and evolution of the E. Howard & Co. divided-plate key wind movement: Background and terminology; Origin of the divided-plate key wind; First production run; Total

production; Variations; Conclusions; and Notes and references.

Part 2 (62 pages) The development of the E. Howard & Co. three-quarter-plate movement: Background to 3/4-plate production; Sources of information; Why three-quarter plates?; The drive for quality; Overview of early Howard three-quarter-plate production; Variations; Escapements; Other movement technical features; Movement grades and rare grade production data; Dials and hands; Summary of new findings; Notes and references; and Tables.

[1st edition, very good] Part 1 contains a detailed study of Howard's divided-plate key-wind watches. The core of it is the author's analysis of style variations and serial numbers leading to his coherent and sensible explanation of serial number discrepancies.

The aim of Part 2 is "to establish a classification system for Howard watches. However, this system is defined in a table at the end of the book, and rarely made use of in the text; indeed, in one place a different nomenclature is used. In fact, Geller writes around the topic, providing detailed information about different aspects of Howard watches and illustrating the great diversity of the production, thus indirectly justifying his system. However the great variation, almost to the extent of each watch being unique, tends to confuse the reader, even though Geller is careful to structure his discussions.

Two major sources which Geller uses are a data base (originally developed by George Townsend) and original factory records. Unfortunately Geller does not reference these and provides no information on how the reader might access them. In fact most of the information in the factory records can be accessed on the internet (I think only omitting the name of the purchaser). It should be noted that these are sales records. Howard, like Waltham, must have had detailed movement records to enable replacement parts to be made. But, like the Waltham "record", it seems these records have disappeared.

This book must be compulsory reading for anyone interested in Howard's watches. However, there is not much for the general reader who is not concerned with the finer details of small variations which are often just decorative.

[Remark] For me, the most fascinating aspect of this book is the failure to mention calibers.

A rough but adequate definition of a caliber is the specification of the size, going train and escapement of a watch. That is, the wheel and pinion counts, the wheel and pinion sizes, the positions of all pivot holes on the plates, and the vertical relationship between wheels and pinions. As well as these we can add the basic structure of the frame; the positions of pillars and the space between the plates. In addition, because different escapements require different arrangements of the escapement components, at least the type of escapement must be specified. There are two important consequences of defining a caliber. First, components are potentially interchangeable. That is, allowing for relatively small variations in pivot diameters, arbor lengths and so on, plates, wheels, pinions, screws and other components can be switched. Second, the tools and machines to make the components of one caliber may be significantly different from the tools and machines to make the components of another caliber; certainly the set-up of some machines, such as wheel cutting engines, must be different.

However, two watches of the same caliber need not be identical. Obviously visual aspects are irrelevant, and watches may have different finishes (gilding or damaskeening) and different open spaces (cut-outs in the plates). Also there may be different jewelings and different escapements (plain or compensation balances and even variations in lever and escape wheel design) and the watches still belong to the same caliber. A good example is a Valjoux chronograph movement. This might turn up in a cheap, basic watch or in a Patek Philippe masterpiece. The caliber is the same, but the finishing is completely different.

However some changes are not possible. So a watch in which the fourth wheel is over the third wheel is a different caliber from a watch in which it is under the third wheel, even though the watches are virtually identical in other respects.

Initially, specifying the caliber of a watch was of little consequence to anyone other than the watch maker. However, when spare parts became available, it was necessary for the watch repairer to be able to specify calibers. In some cases (such as Howard and Waltham watches) this was done by providing the serial number, which enabled the manufacturer to determine the caliber. In other cases (including virtually all Swiss wrist watches) caliber identification symbols were punched into the plates. Either way, parts which would suit a particular watch could be ordered and fitted.

Which leads me to the question: Are all Howard divided-plate movements of the same caliber? Geller puts much effort into describing features of these watches, but they are nearly all concerned with external appearance, in particular the shape of the edges of the plates, the position and number of case screws, and the type of regulator. But these features tell us nothing about the caliber, because the underlying movements could be the same or different and still exhibit the same external variations. Likewise, variations in jewelling and some escapement changes (such as brass or steel escape wheel) may simply reflect different grades of the same caliber or appear on different calibers. Geller also mentions different types of lever escapement and a significant change to the design of the pillar plate, and states that "no two balance staffs seem to be exactly alike". But it is not possible to decide whether these indicate different calibers or not.

The same question applies to the three-quarter plate movements examined in Part 2. However, here Geller raises two interesting points. He states "numerous significant differences exist among movements nominally of the same model", but it is not clear what these differences are; perhaps just the decorative and variations in optional extra such as regulators. And he provides information on movement heights (the distance between the plates) which shows considerable variation.

The most significant statement is: "Howard may have considered the new protective barrel easier to

implement with a right-hand stem winding and setting mechanism than Reed's left-hand wind barrel." As the reversal of mainspring rotation necessarily requires a reversal of the train, this indicates at least two calibres. Which is the case, as some photographs clearly show movements that are, in effect, mirror images.

The problem is complicated by whether movements are man-made or machine-made. There is little doubt that many hand made watches were produced on the basis of a single calibre, but with notable variations caused by making parts using very simple tools and with little or no concern for interchangeability; the variations being catered for during finishing. In contrast, the tolerances in machine made watches are far smaller and it is easier to recognise differences which reflect a change in caliber, even if just a change from version "a" to version "b" of the one basic design.

And so, as Howard's watches were made by a mix of machine and hand work we can expect "significant" variations within a caliber, in which case the differences in balance staffs, for example, may merely reflect the relatively poor tolerances of hand work. But may be they indicate different calibers. We don't know. Admittedly, it would be very hard to answer the question: one caliber or more? Unless there is some obvious feature, determining calibers requires gathering together a number of watches, disassembling them and measuring every component; which would be extremely hard to do, as the small number of known watches are scattered about in individual collections.

R1047 Gendron, D

Its time to make more money with watch repairs

USA: Dan Gendron Horology, 2004, 8 x 5 inch, 436 pp, ill.

Business, repair (English).

A revision of "Its time to make money" with "Keys to successful selling" and "Start your own watch business".

R1048 Gendron, D

Simplified mechanical watch repair for profit

USA: Dan Gendron Horology, 2003, 21.0 x 13.5 cm, 256 pp, 275 ill, ads.

Repair (English).

The book begins with an 82 page glossary, defining watch terms and listing tools, and then has sections on: How a mechanical watch works (37 pages); Clean, oil and adjust procedure (63 pages, cleaning without fully disassembly the watch); Correcting other problems (42 pages, balance staff replacement, damaged jewels); Diagnosing problems (10 pages, fast and slow watches); Watch sizes (1 page); and Reference books (11 pages, explaining how to use Bestfit to order replacement parts).

[1st edition, fair] The approach taken in this book is sound. The aim is to develop a basic understanding of movements and then explain basic repairs in great detail using a step-by-step recipe book approach based on excellent photographs.

Other than cleaning, it is assumed that you are repairing watches for which replacement parts, balance staffs in particular, can be ordered from supply houses and these parts are interchangeable so that no fitting is required. In the preface Gendron writes "Making a staff or removing one with a lathe today makes as much sense as using leeches for bleeding to cure plague". So the author explicitly excludes all watches except for American pocket watches and wrist watches; indeed, this is a book written by an American for Americans and primarily about American watches. But as most American pocket watch parts are not fully interchangeable the repair instructions are inadequate.

Unfortunately the book marred by errors and an excessively simplistic approach, most obvious in the glossary. Gendron notes that the book is "written without techno-speak or jibber-jabber", but the glossary is 82 pages of techno-speak and jibber-jabber! Every field of endeavour is based on technical terms which exist so that people can precisely communicate about the subject. In horology there is a vast number of technical terms, many of which are ordinary words endowed with special meanings; for example, staff, click and balance. Indeed, despite Gendron denying the need for such words he forced to start with 82 pages of definitions of them!

Unfortunately some of his definitions are simply jibber-jabber or wrong. For example, apparently balance timing screws can "slow the escapement by causing drag" which is nonsense. Likewise beat is "the time difference between the lock action and slide action of the escapement" which is almost unintelligible and wrong. Also, the glossary also contains words that an American would understand but which are pretty meaningless to others; such as crazy glue and sharpie marker.

There is nothing wrong with the idea of trying to avoid excessive terminology, but unfortunately Gendron sometimes uses words incorrectly. For example, he talks about end shake when he means side shake and watch hallmarks when he means trademarks and calibre numbers.

The explanation of how a watch works (which surprisingly includes mainspring measurement) is marred by the poorly reproduced diagrams. It gives a crude description with an incomprehensible discussion of the lever escapement.

In contrast, the explanation of cleaning is very good, if simplified. Gendron explains how to partially disassemble a movement, clean it in an ultrasound cleaner, oil and assemble it. Other cleaning methods are mentioned, but full disassembly of movements is not described. This is followed by a general discussion of timing machines and how to adjust beat and the regulator; no other adjustments are covered.

In line with the aims of the book, balance staff replacement using a staking tool and a factory-made staff is covered very well. Jewel replacement is more descriptive and too vague to be of much use, especially as adjusting end shakes is not mentioned. He also requires us to use UV glue instead of shellac, which is

fine if it can be removed later but a disaster if it cannot.

The last section on problems tersely mentions watches that run slow (check the mainspring and canon pinion) and fast (oil on the balance spring or magnetism).

Finally, there are only two reference books listed. One, "American illustrated manual of watch movements" is listed without explanation. The other, "Bestfit #111 encyclopedia of watch material" is followed by an explanation of how to look up a movement to find the part number for ordering from a supply house. One reader of this book wrote "most watch makers covet their sources and refuse to let outsiders in"; I can only presume that he has read very few of the books listed in this bibliography, if any. But this secretiveness is exactly what Gendron does by refusing to list other repair books. Also the book has been described as a "very helpful business tool" and "if you are in it for money, Dan's your man". As the book is devoid of business information I have no idea how anyone could get this impression; perhaps he was reading a different book?

There are a number of good repair books, in particular Jendritzki, Bulova and Fried. This book is not one of them.

R1049 Gendron, D; Gendron, S

Its time to make money

the fine art of making watch repairs profitable for you
USA: Dan Gendron Horology, 1999, 8.3 x 5.4 inch, 318 pp.
Business, repair (English).

R1050 Générale Ressorts SA

Catalogue ressorts GR 2

Switzerland: Générale Ressorts SA, 1974, 350 pp.
Repair (French).

Catalogue of balance springs for over 16,000 calibres.

R1051 Geneva Watch Case Co.

Catalogue manufacture genevoise de boites de montres

ca 1920, 12mo, 32 pp, ill.
Catalogue (French).

R1052 [Geneva: Musée d'art et d'histoire]

Uhrenmuseum Genf

Geneva: Musée d'art et d'histoire, 1990 (1978), 25.5 x 21.5 cm, 88 pp, ill (66 pp, ill).
(German).

"Illustrated catalogue of over 60 of the best quality and interesting horological exhibits, including a rabbit! at Geneva."

R1053 Genoud, H

Breitling the book

Switzerland: Breitling, 2009, 30 x 24 cm, 336 pp, 450 ill.
History (English, French, German, Spanish, Italian).

"Based on new historical research and enlivened by more than 450 images, including numerous original documents, Breitling The Book is destined to become a must-have reference work for brand lovers, as well as for devotees of watchmaking, chronographs and aviation."

"Breitling The Book describes 125 years of passion for chronographs, reminding readers of the crucial role Breitling has played in the technical development of this type of watches - from the first pocket watches created by Leon Breitling from 1884 right the way through to today's "instruments for professionals", and along the way the invention of the first independent push-piece in 1915, the separation of the "stop/start" and "reset" functions in 1923, the invention of the second independent push-piece in 1934 and the first self-winding chronograph in 1969."

R1054 Georg Jacob

Ein blick genügt werkerkennung

Leipzig: Georg Jacob, 1942 to 1948, 15 x 21 cm, 399 pp, ill.
Identification, catalogue (German).

Published in several parts and complete in 1 volume:

Part 1 wristwatches, 1942, 44 pp, ill.

Supplement to Part 1, 1946, 112 pp, ill.

Part 2 pocket watches and pocket alarm watches, 1943, 44 pp, ill.

Part 3 chronographs and automatic watches with supplement to Part 2, 1948, 120 pp, ill.

Part 4: alarms.

Parts 2 and 4 have been printed together.

One look is sufficient. Parts catalogues produced by the Georg Jacob company.

R1055 Georg Jacob

Werkzeuge und maschinen für uhrmacher und goldarbeiter

fournituren, uhrketten, ringe, ...

Leipzig: Georg Jacob, 1911 (nd), 32 x 22 cm, 848 pp, ill (466 pp, ill).

Catalogue, tools (German).

Catalogue of tools, parts and findings produced by the Georg Jacob company.

R1056 Georgi, E**Handbuch der uhrmacherkunst**

eine gründliche anleitung zur anfertigung und reparatur aller arten von uhren

Osnabrück: (Hamburg: G. Kramer) (Altona: Verlags-Bureau), 1981 (1867), 19 x 14 cm, 632 pp, 235 ill (577 pp, 232 ill).

Repair, watch making (German).

Two editions in 1867 and 1883 with a modern reprint of the 1st edition.

“Basic instruction for making and repairing all types of clocks and watches with regard to all new findings and advances”.

Said to be a standard work for the repair of 19th century clocks and watches.

R1057 [Germany]**100 jahre staatliche uhrmacherschule Furtwangen**

Furtwangen: , ca 1950, 30 x 21 cm, 63, (3), 12, 43, 3 pp, ill.

History (German).

100 years of the Furtwangen horology school.

R1058 [Germany]**Das monogramm für die uhren und edelmetall-gravierung**

mit einem anhang von schriften

Berlin: Verlag C. Marfels, 1900, 31 x 23 cm, 1 pp, 141 plates.

Repair (German).

The monogram for timepieces and precious metal engraving, with an appendix of scripts.

R1059 [Germany]**Das war, das ist Glashütte**

1957, 21 x 15.5 cm, 151 pp, b/w ill.

History (German).

That was, this is Glashütte.

History of Glashütte from 1506 to 1956 with essays by Eichhorn, Klemmer and others. It includes the Deutsche Uhrmacherschule, the Glashütte watch and clock industry, the calculating machine industry, etc.

R1060 Germany**Der neue englische uhrmacher**

oder vollständige anweisung alle geh schlag und repetier uhren richtig zu berechnen und gehörig zusammen zusetzen, nebst der beschreibung einer universal sonnen-uhr

Frankfurt: Johann Gottlieb Garbe (Frankfurt & Leipzig:), 1781 (1768), 17.0 x 10.5 cm, 12, 154, 22 pp, 4 plates (170 pp, 3 plates, 4 tables).

Technical (German).

There is no author. Baillie lists the later edition and attributes it to Kaestner, noting that the author is dubious. One source suggests an earlier date of 1753.

The new English horologist, or full instructions on how to calculate and assemble all going, striking and repeater timepieces, with the description of a universal sundial.

Foreword (8 pages including a bibliography of 13 books), table of contents (4 pages), text (154 pages), tables (18 pages), and chapter index (4 pages).

There are 10 chapters: Basic mechanics, Wheels, Pendulums (including cycloid cheeks), The going train of a clock (43 pages), The striking train of a clock (21 pages), Repeater work (8 pages), Description of a universal sundial (17 pages), Pendulum clocks and pocket watches (7 pages, equation of time), Judging and testing pocket watches (11 pages), and Calendar of the path of the sun from 1700 to 1800.

Chapters 8 and 9 refer to pocket watches.

R1061 [Germany]**Die uhrensammlung des staatlichen museums Schwerin**

Germany: Das Museum, 2000, 21 x 15 cm, 152 pp, 10 ill, 55 plates.

Collection (German).

Horology collections of the Schwerin state museums.

R1062 [Germany]**Exklusive armbanduhren**

Germany: Heel, 2008, 22 x 18 cm, 432 pp, 600 plates.

Description (German).

Exclusive wrist watches from TAG Heuer, Omega, Patek Philippe and Chopard.

R1063 [Germany]**Fortschritte der uhrentechnik**

durch forschung festschrift für ehrenhalber Reinhard Straumann

Stuttgart: J. F. Steinkopf, 1952, 8vo, 253 pp, ill.

History (German).

Progress in technical horology through research, anniversary publication honouring Reinhard Straumann.

Straumann was an engineer who, like Guillaume, studied metallurgy. He developed Nivarox for balance springs, an ovalising balance and a timing machine.

- R1064 [Germany]**
Gemessene zeit
 uhren in der kulturgeschichte Schleswig Holsteins
 Schleswig: The Museum, 1975, 307 pp, ill.
 Collection, makers, bibliography (German).
 Measured time, timepieces in the cultural history of Schleswig Holstein.
 Including a bibliography and list of makers.
- R1065 [Germany]**
Lexikon der 1000 uhren
 Germany: Sybex-Verlags, 2006, 19 cm, booklet, CD ROM.
 Dictionary, illustration (German).
 "Technik, präzision, eleganz. Ihre lieblingsuhren als bildschirmschoner."
- R1066 [Germany]**
Organisation der uhrenmacherschule in Furtwangen
 Baden: Ministerium des Innern, 1858, 44 pp.
 History (German).
 Organisation of the Furtwangen horological school.
- R1067 [Germany]**
Prüfungsanforderungen
 für die meisterprüfung im uhrmacherhandwerk
 DDR:, 1966, 21 x 15 cm, 22 pp.
 Description, technical (German).
 The requirements for the German master's examination in horology.
- R1068 [Germany]**
Staatlicher mathematisch-physikalischer salon
 Dresden: Staatlicher Mathematisch-Physikalischer Salon, ca 1977, 14.5 x 21 cm, 32 pp, 44 ill.
 Collection, illustration (German).
 A brief introduction to the collection with only four watches illustrated.
[1st edition, mediocre] Not interesting, but the back cover photograph of the beautiful building housing the Salon makes me a bit sad I live in the Antipodes.
See Grotzsch for a fuller work on the Salon.
- R1069 [Germany]**
Wertvolle alte taschenuhren
 sammlung komm-rat Kretzschmar Berlin
 Frankfurt: Bangel, 1923, 20 pp, 26 ill.
 Collection, catalogue (German).
 "Valuable old pocket watches".
 Auction catalogue.
- R1070 Gerschler, M**
The clock and watch pronunciary
 USA: The Wag on the Wall, 1983, 23.0 x 15.5 cm, 254 pp, ill.
 Dictionary (English).
 A dictionary of English, French and German horological words and their pronunciation.
[1st edition, very good] This is a reasonably comprehensive listing of English, French and German horological words and their pronunciation. Except for some ambiguities (what does "a" in "ask" sound like?) it is clear, simple and very handy. It is a pity Spanish and Italian are not included.
The first time I ordered a glass of Cockburn port was no trouble for me, of English descent. But I expect many a foreigner has stumbled, just as I have made an ass of myself with French words and names. A useful book!
- R1071 Gey, Karl**
Untersuchung uber den gang von taschenuhren
 Weida i Th: Thomas & Hubert, 1909, 23 x 15 cm, 63 pp.
 Technical (German).
 Inaugural-Dissertation zur Erlangung der Doktorwürde der hohen philosophischen Fakultät der Universität Leipzig
 Examination of the running of pocket watches, with examples from Assmann and Lange & Söhne.
- R1072 Ghidoni, C; Ribolini, G**
The chronograph investigated, Il cronografo
 Milan: Edizioni Gold, 1991, 30.5 x 21.5 cm, 279 pp, 5 figs, 275 ill.
 Description, history (English, Italian).
 English and Italian text. The illustrations are not numbered and 275 is probably a guess.
 Four sections:
 Introduction (14 pages, Time and the chronograph, Technical evolution of the chronograph, The single and two button chronograph, The split seconds chronograph, Reading chronograph dials).
 The epochs of the chronograph (230 pages, from the early 1900s, to the 1970s).
 The chronograph today, the 1980s (18 pages).
 Historical profiles of major companies (6 pages).

The is a glossary and a short bibliography.

[1st edition, fair] *The introduction is a terse, non technical history and description of chronographs. There are detailed illustrations of mechanisms without explanations and a list of dial types without illustrations!*

The bulk of the book consists of 2-page spreads for each watch; the left page has a movement view and description, and the right page shows a dial view of the watch superimposed on a pictorial background. All are wrist watches and are arranged in chronological order. The photographs are very good, but the descriptions are superficial. On most pages the text ends with a remark suggesting a social context and which explains the choice of background. These remarks are usually pointless and meaningless.

In contrast, the section "Chronographs of today" only shows dial views, one per page.

The company profiles are very short, with three bi-lingual summaries on each page. They are primarily a starting date and a recitation of the names of some watches made by the companies.

This book is an excellent example of those "coffee-table" books that are very beautiful and very pointless. Indeed, I expect that many years from now you will be able to buy a mint copy without difficulty. After being scanned to see if your chronograph is in it, it will be retired to some obscure corner of a bookcase.

The most interesting part of the book is the foreword, which contains some marvellous prose. For example, "Since our conception of horology is first and foremost closely linked to that of time ..." is superficially one of the most blatantly stupid comments I have read in a long time. But maybe the intended readers use their watches to show status or sophistication and not the time? The authors go on "We therefore invite the reader to abandon him or herself to an existential type of reading, listening to and perceiving the chronograph ..." My existential reading is that I perceive the need for an afternoon nap.

The bibliography in my copy only goes to Meis and so it may be an incomplete copy missing a last page 280, although I have been told 279 pages is correct. As the bibliography is a rather meaningless collection, the absence of half of it makes no difference. After all, the people most likely to desire this book are very unlikely to want to know any more about chronographs than the maker and the dial appearance.

R1073 Gibbs, JW

Buckeye horology

a review of Ohio clock and watch makers

Pennsylvania: Art Crafters, 1971, 11 x 8.5 inch, 128 pp, 58 ill, map.

Makers (English).

A survey of Ohio clock and watch makers with genealogical data, extracts from directories and advertisements.

[Review by Henry B. Fried] *Few people who collect American clocks and watches suspect that Ohio produced so many watch and clock makers, some of historical importance. Yet, Mr. Gibbs has researched county records, old newspapers, trade journals, and has made countless personal contacts and other sources for this work.*

The author traces the origin of the State and the events which attracted skilled craftsmen to the area, among whom were clock and watch makers. The author also states that there were "some of repute as craftsmen equal to the best in the East."

While many listed as clock makers merely pasted their own labels in clocks made in New England, Gibbs asserts that many, however, made the complete clock.

The Gibbs book lists all the known clock and watchmakers by Ohio's eighty-nine counties with the Cincinnati and Marietta area covered separately. The book abounds with many fine photographs of Ohio clocks (many reflecting the New England clockmakers' influence). These include pillar-and-scroll, hollow-column, pillar-and-splat, tall clocks and others.

Luman Watson was a well-known clockmaker whom Gibbs recounts with greater details than covered previously. This includes Watson's association with Ephraim Downs. Photographs of various attractive Watson clocks are shown.

In reflecting, Gibbs states: "With a substantial number of settlers coming from Pennsylvania and Connecticut we need not be surprised that Ohio acquired from these settlers a higher percentage of clockmakers per thousand of population than from any other migration." It also drew horologists from the revolutionary-torn France and from Virginia and Maryland.

The stories of other Ohio timepiece makers such as Webb C. Ball, Dueber, Gruen, Columbus Watch Company, Bostwick and Burgess ("Columbus clock") are mentioned as well. A list of jewelers, repairmen and dealers is listed together with the addresses and the years in which they worked.

An additional section of this book deals with the St. Albans clock factory of Granville, first started in 1825. Photos of a product of this factory show a handsome tall, wooden works clock.

Mr. Gibbs documents the development of the Gruen Watchmakers Guild as written by Frederick G. Gruen (who died in 1940), which enriches this book.

In another chapter, Mr. Gibbs also lists "Ohio Patent Holders In The Field Of Horology." Here the inventor, the title of the patent, his residence, the patent number and the issue date are listed. One wishes too that a short description of these patents or the more important ones might have been included.

A selective index of makers as well as a bibliography is also included. The book concludes with some copies of city directories showing pages classified by makers, listing of horologists.

This volume reflects the affectionate care and dedication of an experienced and well-known researcher and writer. Collectors of American clocks and watches should be indebted for this comprehensive segment of American horological history.

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R1074 Gibbs, JW**From Springfield to Moscow**

the complete Dueber-Hampden story

Philadelphia: JW Gibbs (Philadelphia: Adams Brown Co) (Philadelphia: National Association of Watch and Clock Collectors), 1986 (1954), 22.5 x 15.0 cm (9 x 6 inch), 120pp, 44 ill, facsimiles of catalogue pages (64 pp, ill) (64 pp, ill).

History (English).

Sources are vague about the printing history. The first edition of 64 pages was titled "The Dueber-Hampden Story". It was produced as NAWCC Bulletin Supplement D and republished by the author. A second edition of about 80 pages was printed (perhaps just a reprint in 1971 or 1960?) and a revised edition of 120 pages in 1986.

In the revised edition, the first 46 pages are the text, interspersed with extracts and facsimiles of documents. There are no chapter divisions, but a table of contents indicates the structure: The case and watch antecedent companies; Operation in Canton; Moscow; Reflections.

The remainder of the book consists of appendices: receiver's report, CBS radio broadcast, catalogue reproductions, photographs of watches, movement prices in 1917, serial numbers, patents, advice to buyers, and bibliography.

The text of the 1986 revised edition refers to the early 1950's, suggesting that it is unchanged from the earlier printings, with the addition of most of the appendices reproducing catalogues.

[revised edition 1986, fair] *Although very interesting and roughly organised, I found the history of the companies to be somewhat disjointed. I think this mainly stems from Gibbs rather naive analysis based on uncritically citing sources. For example, he quotes an "independent" journal, the Watch Dial, which supported Dueber's stance against a cartel of case makers and jobbers, but then says that the "Dueber Company has seen fit ... to pay us liberally for legitimate advertising ..."! Gibbs ignores this possible conflict of interest, providing no analysis or alternative information on which to judge Dueber's actions. Consequently, reading this book in isolation, I am not sure if Dueber was a knight in shining armour or a cunning, nasty business man, especially when Gibbs quotes an attempt by Dueber to steal secrets from the Keystone case company.*

This failure of Gibbs to tackle interpretation of events means the book is a rather contradictory collation of facts and anecdotes. The quotes, often not clearly distinguished from the relatively few words of Gibbs, are fascinating, but the lack of interpretation is unsatisfactory. However it is a good source of information, especially about the later development in Russia which I haven't seen discussed anywhere else.

R1075 Gibbs, JW**Pennsylvania clocks and watches**

antique timepieces and their makers

Pennsylvania: Pennsylvania State University Press, 1984, 10 x 8.75 inch, 312 pp, ill.

History, makers (English).

[Review by Henry B. Fried] *The State of Pennsylvania had as diverse a population as any other in the United States with the possible exception of New York. This diversity and its rich mineral and farmland resources resulted in an equally diverse group of products which included clocks and watches.*

James W. Gibbs is a foremost authority on Pennsylvania horology and an author in this area. As a Philadelphian, he has studied and investigated the clocks, watches and their makers of that state. His current effort is a definitive book comprehensively covering this subject. Thus, the history of Pennsylvania horology is covered from William Penn's time up to the second half of this century. Emphasis is on the productive period between 1700 and 1840.

Connecticut, the author states, was the American home of mass production, while his home state created individual pieces by craftsmen of "such ability that technological advances were neither necessary nor created."

This book is divided into seven main sections, each containing the horological history of a region in that state. The first section being "William Penn Country" which includes Philadelphia County, Directory List of Names, Dr. David Rittenhouse, Watch Case Makers, Bucks County, The Ellicotts, The Solliday Family, Chester County, Montgomery County, Jacob Detweiler, and Custer.

Another section, "Dutch Country", includes the six counties of Berks, Lancaster, Lebanon, Lehigh, Northampton, and York. Other sections titled, "Center of The Commonwealth", "The Scenic Northwest", "The Western Frontier", and the "Other Pennsylvania Counties", include those with no horological activity. Another is titled "Collateral Horological Activity in Other Counties".

Of the 67 counties in Pennsylvania, 40 had some horological activity. Mr. Gibbs list each maker in alphabetical order and with some makers, photos of their products. Well known horological personalities such as Matthias Baldwin, Benjamin Chandlee Doull, Isaiah Lukens, and many others, are discussed in authentic detail, quoting most often from contemporary notices.

The listings, being alphabetical and by geographic regions, do not cover makers by historical progression. In this manner, one can read about Eugene Paulus and his controversial Philadelphia Watch Company, followed by a Germantown clock maker of the early 18th Century. Rittenhouse, of course, is well covered. Quaker clockmakers and Lancaster watchmakers receive the same treatment with good descriptions and photographs. A report that Dr. Christopher Witt probably built the first tower clock in America in 1735;

this by an author of several books on religious sects in that state, is corrected by Mr. Gibbs who puts that statement into its proper perspective. Watch case makers are listed in some detail with an easily understood chart of their industrial geneology. Cabinet clock casemakers and dealers are also included together with some of their clocks pictured. These indicate a high aesthetic and craft standard.

The Ellicotts of Bucks County, their scientific and clockmaking occupational accomplishments, are well documented. This book also states that Joseph Ellicott constructed a repeating watch about 1765 "which may establish him as America's earliest known watchmaker." The horologically prolific Solliday family is nicely recorded with pictured examples of their numerous clocks and watches.

Clockmakers who doubled as politicians, dentists, instrument makers, surveyors, and architects in that state are listed with factual recordings of their activities.

The book maintains the interest of the reader with the inclusion of numerous vignettes of both obscure and famous makers. The many photographs of clock cases, movements, and dial types increase this book's usefulness as a fine reference on styles, products, makers, dates, and general background.

The chapter on Lancaster County is totally devoted to watchmaking. The author explains that this county's clock history is adequately covered in the Stacy Wood-Stephen Kramer book, "Clockmakers of Lancaster County and Their Clocks", and Snyder's, "A Study of Lancaster County Clock Cases". Mr. Gibbs covers this exclusive watch chapter with text and photographs of the Lancaster, Keystone, Ezra Bowman, Hamilton, and Dudley Masonic watch companies.

In recounting the sale of the Dudley machinery and unfinished movements to the New York firm, XL Watch Company, the author mentions Mr. Menche as the buyer. Actually, the XL Watch Company consisted of both Mr. Menche and Mr. Kolton, the latter most often omitted in these accounts because Mr. Menche survived Mr. Kolton by many years. Mr. Kolton and Menche ordered many missing parts from Switzerland to specifications in order to complete many of these watches.

The Apostolic clock in the Hershey Museum in Dauphin County is adequately mentioned and pictured, although this clock has received more detailed descriptions in other articles.

The oldest tower clock in this country is pictured and reported to have been made in Germany in 1650, being transported here with some German religious sect about 1800. This clock is now in the Harmonie Museum in Butler County and is kept in running condition.

This book's usefulness is enhanced by inclusion of eight pages of horological patent listings to Pennsylvanians. A five-page bibliography and a nine-page index complete this volume.

This book reads well, is researched expertly, and should serve the serious collector as a definitive reference of Pennsylvania's varied and individualistic horological products and those who made them.

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R1076 Giebel, K

Der einfluss der hemmung auf den gang der uhr

Berlin: Michael Stern (Berlin:), 1906, 8vo, 58 pp.

Technical (German).

Listed in Robertson "The evolution of clockwork". Probably reproduced on CD Rom, see Stern "Horology CDs", CD 9.

The influence of the escapement on the working of timepieces. May be only clocks.

R1077 Giebel, K

Trigonometrische berechnungen in der uhrmacherei

Berlin: Michael Stern (Halle: Wilhelm Knapp), 1950 (1943), 21 x 15 cm, 72 pp, 42 ill.

Technical, theory (German).

Probably reproduced on CD Rom, see Stern "Horology CDs", CD 9.

Trigonometric calculations in horology.

R1078 Giebel, K; Helwig, Alfred

Die feinstellung der uhren

Berlin: Michael Stern (Berlin: Verlag Technik), 1952, 21 x 15 cm, 607 pp, 502 ill.

Description (German).

Probably reproduced on CD Rom, see Stern "Horology CDs", CD 9.

The fine regulation of time pieces.

An introduction and reference work, in two parts.

Said to be mainly clocks, but it includes pocket and wrist watches.

R1079 Gillam, DJ

An elementary introduction to watchmaking

La Chaux-de-Fonds: Ecole Superieure de Commerce, 1956, 21.0 x 15.0 cm, 27 pp, no ill.

Description (English).

Nine sections: Standards of time, Instruments for measuring time, The watch movement, Cases, dials and hands, Timing, Lubricating the watch-movement, Special types of watches, Manufacturing watches, and Works consulted.

[1st edition, poor] Gillam is very helpful, because he precisely states his reasons for writing this booklet. To quote the preface: "Some years ago, Mr Edward Heaton published his well-known introductory courses in horology for students of English. Though primarily intended for the use of his own pupils at the Commercial High School at La Chaux-de-Fonds, these bilingual works have rendered valuable service to a much wider public. They have been out of print for a considerable time, and if they now seem obsolete

in certain respects, this is due to the astonishingly rapid progress made by the watch-industry in recent years. The other bilingual or multilingual works that have come to our notice are not only outdated for the same reason, but are full of grammatical errors and mistranslations, and are therefore unreliable. It has thus become urgently necessary to prepare a new and up-to-date course, and this is our reason for publishing the present work."

The book then tries to explain watches and watchmaking without any illustrations and, except for a couple of errors, Gillam does a reasonable job. However, a lot of the information is probably unintelligible to novice because he never gets beyond "name dropping", using terminology without adequate explanation. The result is no better than Heaton's book "A new course on modern watchmaking" and both are too superficial to be worth reading. Neither book is adequate for an introductory course in horology for English speaking students. Indeed, I have no idea why anyone would bother printing them.

R1080 Giono, J**La pierre**

La Chaux-de-Fonds: Meroz, 1955, 32 x 23 cm, 61 pp, 25 ill.

History (French).

Limited edition of 600 copies. Published for the 75th anniversary of Meroz, manufacturer of horological jewels.

R1081 Girard Perregaux**Watchmaker by vocation****Horloger par vocation**

La Chaux-de-Fonds: Etablissements Girard-Perregaux, 1991, 22 x 29 cm, 89 pp, 150 ill, slip case.

Description, history (English, French, Italian).

In three languages.

Commemorative publication with a history of the Girard Perregaux company and descriptions of their watches.

R1082 Girard Perregaux; Carrera, R**Tourbillon with three golden bridges****Tourbillon sous trois ponts d'or**

Switzerland: Girard Perregaux, 1983, 24 x 17 cm, 47 pp, 24 ill.

Catalogue (English, French).

R1083 Girard, MC**Au temps jadis - horlogers de la Sagne**

St-Imier: Grossniklaus, 1944 (nd), 8vo, 119 pp.

History (French).

The 2nd edition in 1944.

The title has also been given as "Horlogers de la Sagne, récits vécus".

R1084 Girardet, F**Emotions gourmandes, art culinaire, art horloger**

même passion, même précision

Lausanne: Editions Favre, 2000, 29 x 23 cm, 205 pp, ill.

Miscellany (French).

Cookery book.

Perhaps it is about isochronal food.

R1085 Girault, C**Eléments de géométrie**

appliquée a la transformation du mouvement dans les machines

France: A. Hardel, 1858, 8vo, 292 pp, ill.

Technical (French).

It is available as a Google Book PDF file.

Elements of geometry applied to the mathematics of the movement of machines.

Part 1 includes the theory of cycloids and epicycloids (12 pages). Part 2 includes epicycloid gears (6 pages).

R1086 Gitelman, HM**Workingmen of Waltham**

mobility in american urban industrial development 1850-1890

Baltimore USA: Johns Hopkins University Press, 1974, 8vo, 192 pp, ill, tables.

History (English).

Historical study of the social aspects of urbanization, using newspapers and public records.

R1087 Glaser, G**Handbuch der chronometrie und uhrentechnik**

band II - mechanische uhren

Stuttgart: G. Glaser, 1980 to 1989, 30 x 21 cm, seven ring-bound parts of about 3000 pp, ill.

Technical (German).

R1088 Glaser, G; Finster**Lexikon der uhrentechnik**

Ulm: Kempter, 1984 (1974), 23 x 16 cm, 593 pp, ill.

Dictionary (German).

R1089 Glasgow, David

Watch and clock making

London: Cassell & Co (London: Cassell & Co), ca 1897 (1885), (17.5 x 11.5 cm), 341 pp, 69 ill.
History, description, repair, watch making (English).

A volume in the "Manuals of Technology" series of books. There are two modern reprints; a 1977 hard back and a more recent American paper back.

The 1885 1st edition is available as a Google Book PDF file (USA only?).

The book is said to have been produced in several editions in 1885, 1891, 1893 and 1897. There is also series of articles with the same author and title which appeared in "The technical educator" (4 vols, London: Cassell & Co.). The "Technical educator" was produced in at least 2 editions with the same title, but different contents. The only distinguishing feature is that the internal page headings are either "The Technical Educator" or "The New Technical Educator" and Glasgow's articles only appear in the latter.

The first edition has 24 chapters in roughly 6 sections.

Section 1, general: 6 chapters of 79 pages on time, history, movements, gears, trains and motive power.
Section 2, watch making: 3 chapters of 43 pages on chronometer and watch making, watch examining, and jewellery.

Section 3, escapements: 5 chapters of 82 pages on verge, cylinder, duplex, chronometer and lever escapements.

Section 4, balances and balance springs: 4 chapters of 53 pages on balance springs, spring making and compensation balances.

Section 5, keyless work: 1 chapter of 16 pages.

Section 6, clocks: 5 chapters of 58 pages on pendulums, escapements and house clocks.

[1st edition, excellent] *This book, rather than being a treatise on watchmaking as we might view it today, discusses general principles and then describes in detail the processes of finishing and examining English watches and chronometers. It assumes the watchmaker is supplied with a frame and a set of wheels, and it is his task to finish them and build the escapement, with the help of other trades.*

Glasgow believed the well-made English watch was held in high esteem and asked "what would become of this esteem if we were to compete with the slop trade of Switzerland or America?" This is not simply arrogant disdain. Throughout the book he looks at both good and bad designs and methods, including some scathing criticisms of English practices of the time. His purposes are to argue that England should only produce high class watches and chronometers (leaving cheap mass-production to others), and to justify his view that the best watch would be a three quarter plate English lever with reversed fusee.

The first section has these objectives as its focus. Glasgow gives his opinions on English education, methods of hand and machine manufacture, the apprenticeship system, faults in full plate calibres, and the design of gears, trains, fusees and mainsprings. The second section then describes the finishing of rough movements and examining (the final finishing and casing). Although brief, Glasgow is precise and provides specific instructions.

The section on escapements covers verge, cylinder, duplex (of which Glasgow thinks highly), chronometer and lever escapements. In it he includes escapement design together with excellent instructions for making and setting them up.

The chapters on balance springs examine isochronism and include full instructions for making and pinning springs (with remarks on why Breguet springs should always be free sprung) and a note on demagnetising.

The first of the two chapters on balances contains a detailed discussion of middle temperature error and chronometer testing. The following chapters on balances and keyless work are more descriptive, but include clear explanations covering most auxiliary compensation balances and several systems for fusee keyless work.

The scarcity of illustrations and the unfamiliar terminology make the book somewhat difficult to follow (for example, the very good but obscure explanation of snailing). But it repays the effort by providing an in-depth discussion of watchmaking methods in England laced with valuable practical advice.

In addition to his opinions, criticisms and methods, Glasgow provides some interesting history. In his survey of lever escapements one remark stands out: "... the introduction, by another Liverpool man, of what is now called the table roller". This throw-away comment on the origin of the English lever tells us the "inventor" was not Massey, but unfortunately sheds no light on who it was.

A purely practical book almost devoid of theory, it is one of the best I have read. I think it is the only good 19th century English book other than Rees, and last good English book written until Daniels.

["New Technical Educator" edition] *This consists of 21 articles written by Glasgow. Articles 1 to 19 have the text and illustrations of Glasgow's book with significant omissions:*

The first 3 chapters of 43 pages have been replaced by 1 page on movements (what a movement is, and that movements are manufactured in Prescott).

The remaining 21 chapters have been reproduced with many short omissions. But there are also several omissions of up to 12 pages, including much material on mainsprings, barrel arbors, the duplex and chronometer escapements, and balance springs.

13 illustrations have been omitted.

Consequently, the book is to be preferred.

Articles 20 and 21 contain new material which is not in the book. This covers two topics: Turret clocks

and Watchmaking by machinery and includes 4 new illustrations.

The information on watchmaking by machinery concerns English makers, although there is one mention of Waltham (because it displayed at the 1885 London exhibition). It includes Ingold, Wycherley, Guye, the Lancashire Watch Co. and Rotherhams, and has 3 illustrations of machinery used at Rotherhams. There is also information on dial making and female workers. Although it is interesting, it does not really justify buying a set of four books to read 5 pages.

R1090 Glashütte Original

Entdecken sie die zeit

ein ausflug in die manufaktur Glashütte Original

Germany: Glashutte Original, nd, CD Rom.

Description (German).

Discover time, an excursion into the manufacturer Glashütte Original.

Provided with the purchase of a Glashütte Original watch.

R1091 Glasmeier, A

Manufacturing time

global competition in the watch industry 1795-2000

USA: Guilford Publications, 2000, 23.5 x 15.5 cm, 311 pp, 25 tables, 7 figs.

History (English).

A volume in the series "Perspectives on economic change".

A geo-economic history of watchmaking in England, Switzerland, USA, Japan and Hong Kong.

There are 12 chapters: From keeping time to keeping pace (14 pages, introduction and plan of the book); The need for constraints on change (25 pages, general discussion of factors affecting industries); The organizational development of the world watch industry (24 pages); The burden of being first (24 pages, England); Why Switzerland (19 pages); The American system of watch manufacture (23 pages); More than one way to win a war (25 pages, late 19th century to mid 20th century competition between America and Switzerland); An unexpected competitor (23 pages, Japan); Only the young survive (25 pages, America after World War II); Going electric (39 pages, Hong Kong); Can one man save an industry (18 pages, Swatch); and Success goes to the nimble (15 pages, conclusions).

These are followed by notes, a long bibliography and an index.

[1st edition, mediocre] This book has two intertwined aspects; a history of watchmaking from 1500 to the present and an examination of this history in the context of formal (economic?) criteria. For me it is unclear if the terminology is economic and I had to be careful that my unfamiliarity with it didn't prejudice me; just because I don't fully comprehend Glasmeier's economic arguments does not necessarily mean she has failed in her endeavour, but it does mean that it is difficult for me to fairly assess her book, as I must do so on the basis of a perhaps incomplete understanding.

If the book was simply a history of industrial watchmaking then I would think it fairly good. Chapters 4 to 6 deal with early developments in England, Switzerland and America. This part is largely a descriptive summary of standard history culled from horological books and, although a reasonable analysis, Glasmeier appears to have a fairly superficial understanding of horology and there are a number of errors and simplifications (which I will discuss later). The following post-industrialisation chapters appear to be far better, mainly because the focus moves from watchmaking to industrial production and an understanding of what is being produced becomes less important. However, Glasmeier does not clearly organise her history by region or chronologically, and on some occasions her unexpected jumps through time and space confused me; several times when talking about the "war" I was not sure which war she was referring to. Also, her writing is ponderous for people like me who don't know their industrial trajectories from their Kondratiev cycles, but presumably the book is written for economists who would feel at home with such terms. If so, it is doubly important that the history presented should be accurate as such people probably won't read other horological books.

However, Glasmeier states in her prologue that her book will be useful for planners, economists and policy analysts. As a scientist this means to me that she must present arguments that have a predictive aspect. Although analysis of historical events is essential to understanding systems, without a model or theory for predicting future events the work cannot be of much practical use; just as observing falling apples or swinging lanterns may be fascinating, but without the mathematical laws of gravity and pendulums such observations are useless three or four centuries later. Glasmeier appears to agree with me because she begins her book by saying that a man from the Jura asked her a "deceptively simple question": "How can one of the world's preeminent regions of industrial precision reposition itself in the face of technological change?" This obviously complex and extremely difficult question asks about the future, and it can be rephrased as: What model of industry will enable a region to determine the best (perhaps optimal) way to redevelop? Another reviewer (Mike Harrold, NAWCC Bulletin, April 2002) also noted this, saying "Manufacturing time is intended for those with more at stake". But nowhere in the book does Glasmeier attempt to answer this question. Indeed, her brief and vague conclusions are descriptive and there are no concrete, theoretical specifications which would allow her argument to be transposed from watch making in the past to some other industry in the future. In them she discusses technological lock-in and path dependency, but nowhere does she define these terms precisely and they remain convenient short-hand notations for rather vague generalisations about industry behaviour. In fact the conclusions are primarily an uninteresting tautology: in order to cope with change an industry needs to be nimble (capable of change). In this respect the book fails and it becomes merely an interesting story without much

relevance to today.

If the book had simply been a comprehensive history written in layman's terms it would, except for the errors, be quite good; as Mike Harrold said, it would have been "a magnificent soap opera ... fascinating entertainment". However, I feel this is generous because the imprecise, almost pseudo-technical, terminology and the fanciful claim of a predictive analysis of industrial models means it is neither a good history nor a satisfactory formal study. It is useful and worth reading, but it achieves little.

Because I have read many books on horology I can view Glasmeier in the context of a reasonable understanding of watchmaking history. However, as I have suggested, the book is not written for horologists and it is necessary to assess it in the context of economics, planning or industry modelling. Despite Glasmeier's failure to develop models I believe the intention of the book is to be a tool for that purpose, a point reinforced by the fact that her writing clearly focuses on how and why industries grew and declined, and migrated from one region to another. So I need to view her history in this light.

Perhaps a reasonable comparison is with weather forecasting. The ability to predict weather depends on the gathering of large amounts of precise data which is analysed by computer models. Even with current sophisticated techniques such predictions are largely short term and only approximate. One longer term prediction is that of the el Nino which is based on ocean temperature variations, the behaviour of which was not understood until recently when sufficient data was available to enable modelling. As the long term behaviour of industries and regions must be equally complex, the development of predictive tools (even informal descriptive ones) must surely depend on the quality of data available and the development of models that successfully reflect that data. Then it might be possible to use the model in novel circumstances with some chance of useful outcomes. Consequently, I believe it is fundamentally important that the data collected by Glasmeier must be precise and complete if it is to have any validity as a basis for planning.

Chapter 4, "The burden of being first", describes the development of watchmaking in England, which was not actually the first but near enough. It is vague, often incorrect waffle that arbitrarily confuses time periods and events. Glasmeier begins with a superficial and inaccurate description of a mechanical watch. Then she briefly remarks that the objective of manufacturers was precision, ignoring the fact that (except for very limited specialist areas) the first 200 years was the production of expensive baubles for the rich and precision really didn't matter until the 1870s and railways (and promptly ceased to matter, in the context of mass production, with the introduction of the dollar watch a few years later; I am deliberately ignoring marine chronometers). Despite relying on Landes, she seems to be unaware of the irrelevance of accurate timekeeping in societies based on purely local activities controlled by the sun and seasons, and the need for stricter time developing from larger social organisations, fast transport and the consequent creation of time zones. Likewise her suggestion that the first technological advance in the 20th century was the electric watch indicates that she has no conception of the problems and the significance of the design of practical wrist watches. (It is interesting that Rolex doesn't rate in this book when surely that company's survival and continuing success is centrally relevant to the theme.)

Although the description of the system of putting out in Lancashire is adequate, it does nothing to advance an understanding of causes. For example, Glasmeier makes no attempt to examine why watchmaking did not develop elsewhere in England, and so she cannot distinguish let alone isolate critical factors. And to talk of the failure "to produce a uniform product" is to either miss the point of the uniqueness of jewellery or to fail to comprehend the engineering problems of interchangeability (about which I will comment later). Much of what she writes seems to be predicated on a stance, that the only manufacture worth writing about is mass production, which would explain the omission of niche markets, such as marine chronometers and Rolex Oysters. In conclusion she makes one concrete statement: "A highly fragmented system is vulnerable to external shocks that reorder the economic environment in which firms must operate".

Chapter 5, "Why Switzerland", provides a reasonable if confused social history gleaned from standard horology books and the excellent history of the same name by Steinberg. But again the concept of interchangeability is lacking, and although Glasmeier remarks on the loss of US markets and the 1876 Philadelphia Exhibition, she fails to mention the Swiss reports and their implications (Jacques David and Favre-Perret, quoted by Landes who is quoted in turn by Glasmeier).

The author's fairly frequent confusion, mistakes, and reliance on the more standard texts, all suggest that she has no real knowledge of horology and these chapters are then, as one would expect, rather immature summaries of very complex histories. (One of the most annoying errors is that Glasmeier does not know the difference between a chronometer and a chronograph, most painfully illustrated in chapter 9 when discussing Hamilton. Although an occasional slip can be accepted, consistent misuse of terminology indicates an inadequate understanding.) Again she appears to have no grasp of interchangeability (confusing the existence of machines such as lathes with it); she does not realise that keyless winding (which for some unfathomable reason she calls side-winding) was extremely difficult for the British because of their use of a fusee; and she overlooks the point that mass production requires a shift away from watchmaking to precision engineering. Another oversight is not mentioning the fact that much of the Swiss late 19th century manufacture was of cheap cylinder watches which were directed at a quite different market to the English output and included vast quantities of small movements which later became a valuable entry point to wrist watches. In conclusion Glasmeier says that "the weight of empirical evidence suggests that culture, institutions, and geographical concentration combined to yield an industrial structure that demonstrated great flexibility ... and a heightened sense of the importance of

competition to preserve systemic nimbleness". Interestingly, she makes no direct comment comparing the two horizontally fragmented systems of the British and the Swiss, one of which failed whilst the other succeeded, implying that industry organisation may not be part of a useful model.

Chapter 6, "The American system", examines American watchmaking from its beginning to the end of the 1800s. In it there are short but acceptable accounts of Waltham, Elgin and dollar watches, followed by notes on railroad standards and Hamilton. But again Glasmeier appears to miss the point about the American system as applied to watchmaking and makes no mention of its starting point: "In the fall of the year 1849, Aaron L. Dennison commenced to study out machinery for the manufacture of watches on the interchangeable system" (I quote from Abbott "A pioneer"). So it is no great surprise when she says there was "a limited knowledge pool, based around British watch models ... as a consequence, there was a great deal of uniformity in early watch design"; she thus ignores the common base of machine tools, the common base of itinerant engineers and watch designers, and the fact that all simple watches are superficially identical. And later she blithely talks about the use of machine tools in the 18th century without any consideration of their role in the watchmaking process. In her conclusion to the chapter, Glasmeier does not offer any objective statements, but simply summarises the points she has raised. She does however, contend that there was "continued movement towards true interchangeability (a quest not achieved until the mid 1930s)". Although there is some validity in this statement, the failure to define interchangeability, let alone true interchangeability (in the same way that she does not define what she means by "precision"), reduces it to merely an interesting aside

In chapter 3, "Organisational development", within a discussion of collective capitalism and other economic subjects, Glasmeier considers the American system and quotes a rather tautological definition of it: "the sequential series of operations carried out on successive special-purpose machines that produce interchangeable parts". She goes on to note that "interchangeability could be created by hand-manufacturing methods" and "excessive claims about ... the ability to generate interchangeable parts". The former of these notes is true but patently ridiculous in practice for watch manufacture. The second note may be true but of no meaning unless interchangeability is defined. (She also fails to comment on "special purpose". Later, when writing about sunk capital, there is no discrimination between the problems associated with special purpose machines as opposed to general purpose ones.)

I have harped on this point because I simply cannot see how anyone can draw conclusions unless they have gained a comprehensive and valid understanding of all the factors influencing historical events. It is not difficult to argue that without interchangeability there is simply no need for centralised production or complex business organisations. Uniqueness means that, as Glasmeier notes, there are advantages in a flexible putting out system and small, independent finishing firms built around a single master. In contrast, interchangeability minimally requires three basic factors. Firstly, expensive semi- or fully automatic machines which produce large quantities of parts in a short time. Secondly, a large, reliable power source (a steam engine) to drive the many machines necessary to create watch parts. And thirdly, a sufficiently large market to buy the relatively vast quantities of goods produced. The second limits us to after the industrial revolution and the third requires sufficient wealth throughout a reasonably large population, something that I suspect did not appear until well into the 19th century. But it is the first condition that most interests me.

Tarasov "Technology of watch production" is the only serious engineering text dealing with watch manufacture that I know of, and it is the only book that formally explains interchangeability in that context. To quote his introduction, the "solution to the problem of interchangeability is thus seen to be more difficult in the mass production of watches than in any other branches of instrument and tool making" and he goes on to note that "watch production is characterised by the considerable amount of manual work involved, mainly in assembly operations". The first point forms the basis of Tarasov's book and the first 31 pages are a detailed mathematical and statistical study, a major part of which defines acceptable tolerances. That is, interchangeability is not absolute and there is no such thing as true interchangeability; it is manufacture within certain stipulated tolerances and the ability to achieve interchangeability depends on the magnitude of the acceptable tolerances, which vary from one component to another (and from one industry to another). Viewed in this light, the ability to achieve interchangeability can be determined by comparing such acceptable tolerances with the actual accuracy of existing machine technology; and there is little doubt that suitable semi- or fully automatic machines capable of performing complex functions to the needed tolerances simply did not exist before 1850. Although superb workmanship of very great accuracy had occurred before that time, all such work was the result of one-off manual creation of individual and unique parts. One simple example is the problem of forming epicycloid wheel teeth. The difficulty of manufacturing very small cutters, all the same and with a precise profile (which varies with the number of teeth), would have been beyond all but a very few experts, and the proliferation of teeth the shape of a bay leaf or of a thumb probably as much reflects the inherent difficulty as ignorance. Another example is that it was not until the mid 1800s that a lathe was designed (with a split collet and sliding spindle) capable of automation. Because acceptable tolerances vary with the component and its function, some processes, such as stamping plates, were introduced well before interchangeability became practicable. However some processes, in particular adjusting escapements to time, have such small tolerances that they have never been automated, and mechanical watches have always required manual finishing.

In part, Glasmeier is unable to validly explain horological history because she has been unable to tackle this fundamental engineering problem. Also she talks about "jeweled interiors", the visually obvious,

presumably because she lacks the depth of knowledge necessary to appreciate the underlying and far more critical aspects of watch design. Lacking this depth makes it inevitable that she fails to note the fundamental importance of interchangeability to dollar watch production (and that consequently Roskopf only had half the answer in his principles, which she quotes).

In chapters 4 and 5, discussing England and Switzerland, Glasmeier asks, and attempts to answer the questions: why didn't England and why did Switzerland eventually move to mass production?

Although a partial answer is spelled out in her studies of the three countries, she seems to miss an important point, probably because she never asked the fundamental question: why did America in the first place? Although the answer depends upon Dennison's insight, a major factor is likely to be the lack of any alternative. America was a horological vacuum in the sense that there were almost no watchmakers (who made new watches) and almost no semi-skilled workers (who made new parts); America was completely reliant on imported watches. Consequently, in 1850 there was no pre-existing alternative to either compete or hinder. Indeed, the probable impossibility of training and establishing horizontally fragmented networks of semi-skilled labour (to manufacture components) and watchmakers (to assemble and finish) suggests that Dennison's solution was the result of him recognising this situation and asking: what alternative is there?

England, in contrast, had a large, established pool of semi-skilled workers in Lancashire and very large numbers of watchmakers each operating their own, independent finishing establishments. Now, the crux of interchangeability is that the system for doing it employs only one watchmaker and few semi-skilled workers to produce very large numbers of copies of a prototype. The vast majority of workers in such a system are engineers, tool makers and unskilled machine operators. Consequently, if England moved to such a system, be it on the Swiss or American model, nearly all the existing workers in the industry would become unemployed. Such a social disruption was not possible in America (there being no-one to become unemployed) but the effects of a move to mass production in England may have been catastrophic, and the resistance of the horological community had as much to do with income preservation as conservatism. Switzerland also had a large, established pool of semi-skilled workers in the Jura (and France over the border in Besancon) and very large numbers of watchmakers operating in small independent finishing factories, but their organisation differed in one important respect; they made ebauches. Lancashire in England produced movements "in the grey". These movements were simply a collection of plates, wheels and other parts, all of which had to hand finished by the watchmaker (a process very well described by Glasgow). In contrast, the Swiss system (like the American factories) made ebauches which were complete working movements. These ebauches were then cased and adjusted by firms of *établisseurs*. (The use of the term "watchmaker" by most writers hides important distinctions. The vast majority of English watchmakers never made a watch; they were jobbers who bought and repaired watches. The smaller number of watchmakers operated much like *établisseurs*, but their work was much more complex and individual. A good example of an *établisseur* from a later date is Rolex, who used ebauches from Aegler and cases and dials from other firms.) The Swiss response to the 1876 Philadelphia Exhibition was to take an existing small factory system making ebauches and mechanise it without having to alter the other parts of the industry.

Chapters 7, 8 and 9 are much better than the earlier attempts at explaining watch manufacturing history because, as I have noted, the focus is more on industrial history and less reliant on a good understanding of watchmaking. However, I wonder if my impression of improvement is related to my relative ignorance of the topics covered? For example, in chapter 7, "More than one way to win a war" on the resurgence of the Swiss industry, Glasmeier comments on the flexibility of "the vertically specialised, horizontally fragmented system of production ... relative to the US model". But is this not fundamentally the same as the English model that was inflexible and died? There are differences, as I have noted, but the differences do not appear in Glasmeier's text. Also she mentions (in an end-of-book footnote) that in the late 1800s watchmaking accounted for 20% of Swiss exports, yet I don't recall any consideration of the effects of industry size; whereas watchmaking in England and America was an important sideline in the economies, in Switzerland it was fundamental to the survival of the country. Another unconsidered question relates to Rolex, a company dismissed in a couple of lines (not to mention Patek Philippe, Longines and other Swiss companies). Glasmeier discusses the problems of the vertically integrated US companies with large amounts of sunk capital and their failure to survive. But Rolex has just such an organisation and not only survived but flourished through the quartz revolution. Surely its singular performance, running against the trend of the book's argument, deserves careful consideration for its possible relevance to Glasmeier's initial, predictive question?

This sort of oversight becomes more important in chapter 8, "An unexpected competitor" (an interesting study of the Japanese industry) where she says the Japanese "adoption of this farsighted strategy of superficial product variation beat the Swiss and Americans by almost 20 years"; however, Rolex had been doing just that since the 1920's, 30 years before the time Glasmeier is referring to! At the end of the chapter Glasmeier again comments on "vertically integrated firms" superficially appearing to contradict previous conclusions about the success and failure of different structures in other countries and at other times. Perhaps this apparent inconsistency relates to other oversights. For example, Landes suggests the failure of Waltham was largely due to Dumaine deliberately destroying the company for personal gain and short-term profits, a point not even mentioned by Glasmeier (but see my review of Kenison "Frederic C Dumaine, office boy to tycoon". (But then, I think Waltham failed many years earlier when Ezra Fitch changed the emphasis from research and development to sales.)

This lack of care continues in chapter 9 “Only the young survive” when Glasmeier says that in the mid 1950s Hamilton “introduced a self-winding watch, followed quickly in 1957 with the introduction of its electric watch, which was simply a mechanical watch powered by a small battery”. However, the self-winding watch was at least 20 years too late and the electric watch deserves far more respect than such a dismissive remark. Likewise, to say a few pages later that the Accutron was “the first truly nonmechanical watch movement” is much too superficial, and these three statements clearly indicate an inadequate understanding of horology. (The first non-mechanical watch was, I presume, the Pulsar which had no moving parts. The only non-mechanical part of most watches today is, ignoring the stepping motor, the escapement and, besides that component, watch trains are fundamentally the same as they were 400 years ago - except, of course, in terms of whether the train drives the escapement or vice-versa, and the use of plastics. Because Glasmeier does not - is not able to? - analyse escapements, the significance of changes and their relative importance is not examined let alone explained.)

The remainder of the book concentrates on quartz watches and so is not relevant to this bibliography. However, the discussion of Hong Kong highlights Glasmeier’s failure to appreciate and discriminate features of horology. As Tarasov notes, this industry has two facets; manufacture (of movements and cases) and assembly. But Glasmeier simply talks about manufacture without distinguishing between these components. Yet assembly requires high labour, little capital and can be distributed, whereas movement production requires high sunk capital, large factories and relatively little labour. (Case making, which has never been studied as far as I know, appears to be intermediate between these two extremes.) As the industry in Hong Kong appears to be primarily assembly of imported and sub-contracted components, it is hardly surprising that it was far more flexible and could come into existence very rapidly, whereas the manufacturing suppliers had utterly different problems. Similarly, although Glasmeier talks about both mechanical and quartz watch manufacture in Hong Kong she fails to clearly distinguish the types and natures of these two branches and never discusses why mechanical watch production has survived at all. I also found a passing mention of consumer preferences and perceptions. This brief aside is, I think, the only place that consumer psychology is (indirectly) recognised as a factor influencing industry, but the psychology of management is not considered at all. Another related consideration, which is completely overlooked, is the conflict between directing profits to shareholders and management, and directing them to savings for future recapitalisation in case of change.

This incomplete catalogue of faults might be seen as nit-picking; after all, except for some problems with the economically oriented explanations, the book provides a comprehensive, interesting survey of the history of watchmaking. And it would be nit-picking if surveying history was Glasmeier’s expressed aim, but it is not. She has explicitly stated that her intention is to provide information of predictive value. However, as I have argued, such an aim requires precision, detail and accuracy which Glasmeier has not provided. The data she gives allows general, vague conclusions to be drawn which cannot be relied upon because they are based on an incomplete and partially incorrect set of data. If more precise information was provided the same or different conclusions might be reached, but either way there is necessarily a lack of certainty in Glasmeier’s analysis which seriously degrades it. Perhaps this is why she frequently poses questions without answering them?

[Remark] Glasmeier’s deceptively simple question “How can one of the world’s preeminent regions of industrial precision reposition itself in the face of technological change?” has been answered by the Swiss industry without any help from her. Indeed, it began long before she wrote her book. Before the quartz crisis, the Swiss industry manufactured vast numbers of ordinary watches. After the crisis it manufactured none. However, before the crisis it also made relatively small numbers of expensive watches for collectors and as status symbols. And after the crisis it continued to do so. In fact, the Swiss industry did nothing but succumb to inevitable pressures. It did not “reposition” itself, but simply shrank dramatically to the point that it merely satisfied the niche market that mass production could not satisfy, and then expanded this very lucrative field as the numbers of very rich people grew. It also continued and developed the need of less wealthy people to emulate the rich by producing relatively cheap but collectable watches; the also lucrative field filled by Rolex, Longines, Omega and even Swatch. Repositioning did not require the sophisticated predictive analyses of economists, it just happened.

R1092 Gobbi, P; Vinardi, F

Il cronografi Rolex, la leggenda

Rome: Sondep, 2004, 31 x 23 cm, 450 pp, 1200 ill.

Illustration, identification (Italian).

Limited edition of 2000 copies.

High quality illustrations of around 150 Rolex chronographs from 1930 to 2000, with accompanying descriptive text.

Italian version of “Rolex chronographen, faszination durch präzision”?

R1093 Gobbi, P; Vinardi, F

Rolex chronographen, faszination durch präzision

Munich: Callwey, 2004, 413 pp, 1200 ill.

(German).

Limited edition of 1444 copies.

R1094 Godet, P

R1094 Godet, P

Zenith, une industrie neuchâteloise

Neuchâtel: Attinger, 1908, 24 x 16.5 cm, 46 pp, ill.

Description, makers (French).

Zenith, an industry of Neuchâtel.

R1095 Golay, A; Dubois, G; Dubois, J-P

90 années d'horlogerie compliquée

Switzerland: Dubois Depraz, 1991, 156 pp, col ill.

History (French).

"90 years of complicated horology" published on the 90th anniversary of the company Dubois Depraz which produces calibres of the highest quality for the most prestigious houses.

See also Dubois "Un siècle d'horlogerie compliquée et d'indépendance au lieu".

R1096 Golay, CA

The valley of Joux and the LeCoultre watch factory**La Vallée de Joux et la fabrique Lecoultré**

tresors de mon pays, historique

Switzerland: Griffon, 1959 (1958), 4to, 100 pp, ill.

(French, English).

R1097 Golay, LS

Des horlogers combiers du passé au présent

Preverenges: Louis-Samuel Golay, 1986, oblong 12mo, 136 pp.

History (French).

"Les Audemars, les Piguët, destins et souvenirs d'horlogers esquissés par des anecdotes savoureuses".

R1098 Goldberg, B

The new collector's guide to pocket watches

USA: B Goldberg, 2002 (2000), 11 x 5 inch, 40 pp, 41 ill (32 pp, ill).

Collecting (English).

The second edition has a preface followed by 18 sections: A brief history of timekeeping, Basic terminology (a glossary), Parts of a pocket watch movement, What's the difference between grade and model?, How are different watches set?, How do you open the back of a watch?, What size is my watch?, What are watch jewels?, What does adjusted mean?, Railroad watches, What is a fusee?, What do those funny words on my watch mean? (a glossary of French terms), Gold or just gold filled?, Real silver versus fake, Asking experts for information about your watch, Most common American watch companies, Where can I get my pocket watch repaired?, and Other sources of information.

The first edition does not include the sections A brief history of timekeeping, Parts of a pocket watch movement and Most common American watch companies.

[2nd edition, good] The author describes his book as "full of all the things I wish somebody had told me when I first started collecting", and he has written a book to do just that.

It contains basic information about watches with a strong emphasis on American watches. Indeed, the sections that discuss non-American watches seem to be added for completeness rather than being an integral part of the book.

Being very short, there are few places where information is simplified to the point of being wrong, but these are inevitable and do not detract from the otherwise very good summary of watch features. The only serious criticism I have is the lack of useful references. Only Shugart "Complete price guide to watches" and Ehrhardt's books are listed, and these contain very little to enhance a person's knowledge. Goldberg should have included a few suggestions for books to read next, which expand the novice's understanding.

R1099 Goldberger, J

100 superlative Rolex watches**Sammlertraume, die hundert berühmtesten Rolex uhren**

Italy: Damiani, 2008, 32 x 25 cm, 264 pp, 700 ill.

Illustration (English, German).

Published to celebrate centenary of the founding of Rolex in 1908.

The 100 watches are illustrated with photographs of dial, movement, case and bracelet.

R1100 Goldberger, J

Omega sports watches

Italy: Damiani, 2007, 11.75 x 8.5 inch, 144 pp, ill.

Illustration (English, German).

"Omega was entrusted with timekeeping at the Los Angeles Olympic Games in 1932 and has since been the official timekeeper at 22 Olympics. That association has led to more than half a century of pioneering developments in timers and watches, from the first water-resistant photoelectric cell to the first photo-finish camera (an innovation that resolved the problem of group finishes in track events), and "contact pads" inside the pool at swimming competitions. They have continued to innovate, most recently with real time results online, available as soon as a swimmer hits the pool wall at the end of a lap. Yet it is the most tangible, touchable, wearable results of all this that brings Omega watches from the workplaces of athletes (including Michelle Wie and Michael Phelps) into the homes of design aficionados. John Goldberger, the editor of Omega Watches and Longines Watches here presents more than 50 years of rare and beautiful sport designs from the Omega line."

R1101 Goldberger, J**Omega watches**

Italy: Damiani, 2005, 11.75 x 8.5 inch, 256 pp, ill.

Illustration (English).

Nine sections: '10 to '50 (56 pages); Chronograph (26 pages); Olympic (10 pages); Automatic (14 pages); Seamaster (42 pages); Constellation (46 pages); Speedmaster (30 pages); and Design (8 pages)

"Omega Watches covers the history of more than 240 vintage models, with emphasis on their outer aspects (including the shape and outline of each case and its dial and movements), which are governing features for the collector, as well as clues to exceptional internal design."

R1102 Goldberger, J**Patek Philippe steel watches**

2010, 32 x 25 cm, 440 pp, 900 ill.

Illustration, history (English, French).

In an aluminium card-box with damasked effects and a cork cover! Limited edition of 2000 copies.

Twelve chapters: Pocket Watches and Clocks; Round Wristwatches; Rectangular Wristwatches; Water-proof Wristwatches; Chronograph Wristwatches; Perpetual Calendar Wristwatches with moon phases; Military Watches; Self-Winding Wristwatches; Amagnetic Wristwatches; Nautilus; Modern Wristwatches; and Watch parts

The book begins with twenty steel pocket watches and some quartz clocks. Each model has 4 to 5 photos to present in detail their features.

The final chapter relate the history of the beginning of the Stern brothers company and end with small photos of watch parts and photos and index of references.

With the recent publication of two book on steel watches (this and Sabrier & Rigot "Steel time") it seems cheap cases have become collectable.

R1103 Goldberger, J; Negretti, G**Longines watches**

Bologna: Damiani Editore, 2006, 30 x 22 cm, 308 pp, ill.

Description, illustration (English).

"This new monograph from the author of "Omega Watches" tells the story of the renowned Swiss watchmaker Longines, active since the nineteenth century. Longines timepieces, each one marked with a winged hourglass, have been made after the designs of Charles Lindbergh and became favorites of Audrey Hepburn and Humphrey Bogart, not to mention contemporary stars and athletes. This photographic record of Longines's continuing elegance and technical superiority includes pieces among the most precious and refined ever made. The luxurious watches are photographed with exquisite detail, displaying their dials, movements, relative calibers and accompanying cases. A one of a kind, complete collection for collectors, insiders or enthusiasts."

R1104 Goldsmiths and Silversmiths Co**Watches and clocks**

USA: Arlington (London: Goldsmiths and Silversmiths Co), 1994 (1900), 10 x 7.2 inch, 54 pp, ill (48 pp).
Catalogue (English).

Produced in at least 1900 and 1901. The reprint is of the 1901 edition.

Catalogue of watches, clocks and accessories with prices.

R1105 Goldstein, M**QuickFit materials systems**

USA: Max Goldstein, 1961.

Repair (English).

Catalogue of watch material including calibre listings and movement identification.

R1106 Gondy, J**L'art de connaitre et de réparer**

les montres et les pendules

Lyon: A. Stork, 1904 (1899), 19 x 12 cm, 319 pp, 107 ill (273 pp).

Repair (French).

The title has been given as "L'art de connaitre et soigner les montres et les pendules".

Two editions.

The art of examining and repairing watches and clocks.

R1107 Gondy, J**Manuel d'horlogerie**

Paris: Bailliere & Fils, 1910, 8vo, 388 pp, 108 ill.

Repair (French).

A general practical and theory book.

R1108 Good, Richard**Watches in colour**

Poole: Blandford Press, 1978, 20 x 14 cm, 218 pp, ill, 86 plates, ill.

Collection, description, history, illustration (English).

Re-published in 1985 as Nicholls and Good "Clocks and Watches in Colour", combining it with "Clocks in Colour" by Andrew Nicholls.

A concise history, illustrated mainly by examples from the British Museum collection, followed by a

glossary of terms.

[1st edition, good] *A nice introductory book. The writing is clear and the historical development of styles and cases well done. Most importantly, the colour plates are very good and the watches chosen apt. Unfortunately the discussion of technical aspects is rather vague. Good tries to describe watch trains without diagrams, and later gives diagrams of escapements without adequate explanation.*

R1109 Goodrich, Ward

The watchmakers' lathe - its use and abuse

USA: Arlington Book Co (Chicago: North American Watch Tool & Supply Co) (Chicago: Hazlitt & Walker), 1999 (1903), 21.0 x 13.5 cm (20.0 x 14.0 cm), 264 pp, 233 ill (266 pp, 229 ill).

History, repair, tools (English).

Two editions in 1903 and 1952 with three (?) reprints of the second edition (1987, 1994 and 1999).

The table of lathe chuck sizes is reproduced in American Jeweler "Watchmakers tables 1914".

"A study of the lathe in its various forms, past and present, its construction and proper uses; for the student and apprentice".

Fourteen chapters: A brief history of the lathe (16 pages); The construction of the watchmaker's lathe (27 pages); The construction and use of the split chuck (26 pages); Face plates and large chucks (11 pages); Cement chucks and cementing work in position (10 pages); Chucks for special purposes (11 pages); Hand rests and slide rests (17 pages); Various forms of tailstocks and their uses (21 pages); Cutters, drills and how to make them (28 pages); Turning with the graver and slide rest (13 pages); Grinding, polishing, snailing, damascening (14 pages); Multiple edged tools for continuous cutting (14 pages); Wheel cutting attachments for the watchmaker (21 pages); Turning and pivoting long, thin work with the steady rest (5 pages); Idler pulleys, belts, counter shafts and foot wheels (12 pages); and The development of the watchmaker's bench (9 pages).

[1st edition, very good] *First and foremost, this book describes the American lathe and its attachments in detail. In the process Goodrich explains why it enables work to be done faster (but not better) than by workers using turns or European lathes. He says little about lathe use. Other than a discussion of how to teach students to use a graver, the practical content concerns shaping cutting tools, making drills and milling cutters, and making a universal dividing head. The remainder concentrates on the design of lathe components with general remarks about use.*

The flavour of the book is given in the introduction, where Goodrich says "the American watchmakers lathe, and its several attachments, stands supreme". I agree and everything that follows clearly explains the validity of this statement. The book gives a comprehensive, detailed and well-argued study of the lathe and its accessories with a few historical remarks. Like de Carle "The watchmaker's lathe and how to use it", Goodrich is not a good book for learning how to use a lathe. But it is excellent for learning about its possibilities.

[2nd edition] *The two editions are almost identical. The main changes in the 2nd are the omission of some impolite remarks about non-American lathes and the addition of a couple of pages on electric motors.*

The reproduction of the illustrations in the 1994 facsimile is mediocre.

J. E. Coleman says that Ward L. Goodrich was the pen name of C. E. Walker (of Hazlitt & Walker). He also says that Walker was a writer rather than a practicing horologist and relied upon research and help from others to compile his book. Many illustrations are from Abbott "American watchmaker and jeweler, an encyclopedia for the horologist", his partner both in business and in borrowing the words of others.

**R1110 Gordon, G
Cartier**

a century of Cartier wristwatches

Hong Kong: Timeless Elegance, 1989, 31 x 24 cm, 552 pp, ill, 450 ill, ads, slip case.

Dating, description, history, identification, illustration (English).

Tipped in, numbered certificate of ownership & edition statement.

Covers 1002 wrist watches from 1904.

"A Century of Cartier Wristwatches. Roll of Honour. Vintage Cartier Wristwatches. Dials, Cases and Movements. Original Designs of Cartier. Colour References. Black and White References."

[Review by Henry B. Fried] *This is a large book in an elegant binding and paper quality in keeping with the vibrant colors of over 250 of the 750 watches that are shown. Its eight pounds of visual and textual information is divided into ten pages of text. These contain the 153-year old history of the Cartier enterprise.*

It is the oft-repeated story of Louis Cartier, who has "been given credit for creating the first man's wristwatch in 1904 when he designed a watch for his Brazilian friend and aviator, Alberto Santos-Dumont (1873-1932)." In this respect it might be said that not many others have claimed inventing the wristwatch - only as many baguette watch pallet arbors that could fit under a thumbnail. Regardless, the Cartier watch designs have always been elegant and ageless. The so-called tank watch designed by Louis Cartier has remained in style since its inception eighty-six years ago. His many watch designs are truly horological art.

Fifteen pages are devoted to a chronological listing titled, "Roll of Honor," which by dates, starting in 1888 show the horological debuts of various Cartier models, the first "3 Ladies' gold and rose diamond wristwatches." The last entry is dated 1989 with a two-time zone wristwatch.

For 1913, the book lists a rock crystal, platinum cased curvex wristwatch. The tank watch in gold and

platinum is listed as 1917. In the chronological listing is "Genre Tortu in gold wristwatch." Reverso-type watches followed in 1926, a minute repeating "Tortu" wristwatch in 1928, an 8-day, numerous novelty designs, and others in diamonds and other precious gems are shown as well.

In the listing of various watches and types with initial appearance dates, the author, it could be said, superciliously mixes his descriptions with French terms for shapes, colors, attachments and materials. Why can't these writers simply say, "tile" instead of "tuile", "oval" instead of "ovoide", "cousin" when the term "cushion" (shaped) is more easily understood by those not familiar with another language, especially French. Isn't a stirrup-shaped case more commonly understood than the book's designation of "etrier"? These samples and many more detract from its prime purpose of educating and informing. Yet while he sprinkles these beautifully sounding and impressive, if not strange, terms throughout the book, in many places there are photos of the watches to which he refers. Despite these slight distractions the book is an excellent catalog of Cartier's wristwatch productions for the past hundred years.

The 29-page section on Vintage Cartier wristwatches contains portraits of a comprehensive collection of watches produced in this form. In examining this section, one's eyes are treated to views of both men's and ladies' watches. One gets the impression that none of the watches, whether made in 1912, 1916, 1920, or any following decade, would appear outdated if worn today; so much of the Cartier styling and design features remain original and attractively modern. Some of these are pointed oval ladies watches with exposed balances; others have extremely curved cases and dials, while still others are Dali-esque amorphous cases. There are many with backwind movements and others that wind at the edge of long baguette-types movements for pendant purposes. Also included are chronographs and even 8-day men's rectangular watches.

Movements for the most part were produced by their European watch and clock branch. Others came from the shops of Audemars Piguet, Valjoux, LeCoultre, Jaeger among others. Enameled cases in many colors and shapes are found among their past products.

Many of the design features mirror the imaginative minds of their designers with elliptical, rectangular, ultra-curved, "banana-sided" yellow gold cases, ringed cases, reversible cases, platinum and many such metaled and gold cases with diamonds encrusted heavily throughout.

Dials for the most part are black figures on silver-white faces. The figures were not merely painted or printed on but as this reviewer recalls in repairing these years ago, the dials were first engraved or etched deeply with the Arabic or mainly Roman numerals, Then these recessed figures were filled with powdered ceramic enamels, then fired to melt to form a hard enamel surface.

To refinish these dials, the dial was heated and quenched in dilute sulphuric acid or cyanide or else the cyanide or sulphuric acid was brought to a boil with the dial immersed. This brought up a new layer of linen-white silver without disturbing the hard enamel figures. In some of the newer Cartier watches, one of the thin parts of the dial's Roman numeral VII is formed by the letters C-A-R-T-I-E-R. In the section, "Dials and Movements and Cases," some exceptional quality movements are pictured together with their cases. These include backwind baguettes, chronographs, pendant with winding at the elongated edge, an 8-day watch movement and case, self-winding movements and their cases, duoplane movements and their cases, and other very well-made movements and cases. Strangely, in this section no text or explanation of any kind is made of any of these, even on their opposite facing blank, white pages.

Original designs cover an 80-page section showing the contemplated watches in finished artwork from the pens and brushes of these designers. The artwork is in full color. Each page has a printed title for each type.

"Color References" is the title of another section of 32 pages of watch models dating from 1910 to 1980. A last section, "Black and white references," does likewise with other models in "plain" but excellent photography. These are watches dating from 1904, the first watch shown, to number 452, the last.

In all, a very fine encyclopedic essay of over 750 different Cartier products covering a century. While it is an expensive book, this weighty volume is a worthy addition to the growing library of books on the products of prestigious makers.

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[Remark] I find it difficult to reconcile this review with my reviews of "Rolex 1905-1989" and "Twentieth century wristwatches". Having not read this book I cannot comment, but I suspect Fried is being generous.

R1111 Gordon, G

Rolex 1905-1989, timeless elegance

Das Rolex buch

Hong Kong: Zie Yongder, 1988, 31.0 x 23.5 cm, 311 pp, 292 ill, 4 fld figures, slip case.

Description, history, illustration (English, German).

One printing. The certificate says the book was published in 1988 but the copyright notice is dated 1989. Both dates are used by book sellers.

This book has the following sections: Hans Wilsdorf and the evolution of time (12 pages); Roll of honour (6 pages); Advertisements (18 pages); Certificates (6 pages); Jubilee collection (54 pages); Vintage wristwatches (148 pages); References (14 pages); Latest models (12 pages); Dial, cases, movements (30 pages); and Original design of Rolex (4 folding pages of illustrations).

[1st edition, poor] The book begins with a ten-page history of Rolex which is superficial and adulatory. This is followed by an equally superficial, 4-page chronology. The rest of the book consists of illustrations, many with short captions. There is no text.

The tone of the book is set by the fake and showy limited edition certificate. The book is pretty, but completely devoid of information. As one reviewer wrote "a classic case of 'all that glisters' as there is little depth".

The illustrations may be of some use, but I doubt it. The absence of date, serial and case number information, seriously detracts from their value.

Some years after writing the above I had a look at copy 08502 which I had made the mistake of buying. I won't bother looking at it again. Dowling and Hess "The best of times - Rolex wristwatches an unauthorised history" is a vastly superior book. But then, Gordon's book could be useful to bludgeon a stray cat to death.

[Remark] *The term "limited edition" is largely irrelevant and quite often its only function is to increase prices. Even 1000 copies of a book may be excessive and some limited editions are so readily available the limitation is simply not important. The impression is that at least 20,000 copies of this book were printed, assuming they were numbered from 1, but I find it hard to believe that there are so many people who would waste money buying it.*

R1112 Gordon, G

Twentieth century wristwatches**La danza delle ore**

Hong Kong: Timeless Elegance, 1990 (1989), 31.0 x 23.5 cm, 357 pp, ill, plates, 11 pp ads, slip case.

History, illustration (English, Italian).

Only one printing. The two dates occur because the copyright notice is dated 1990 but the "certificate" is dated December 1989. The information in the certificate includes the advertisements at the back, regarding them as an integral part of the book.

English and Italian text.

The first 103 pages are a bilingual preface followed by an introduction and 6 chapters: The first steps 1900 to 1920, From Harwood to Rolex 1920 to 1930, The successful years from Hollywood to the Olympics 1930 to 1940, The war years reconstruction and chronographs 1940 to 1950, The mythical fifties a new golden age 1950 to 1960, and The twenty most difficult years from crisis to boom 1960 to 1980. The English text occupies 47 pages, of which 11 are reproductions of advertisements, and the Italian (presumably identical) text occupies 43 pages, of which 11 are reproductions of advertisements. The remainder of the book gives colour photographs of dial views of watches: Patek Philippe (105 pages), Rolex (50 pages), Vacheron (15 pages), Cartier (9 pages), LeCoultre (9 pages), Movado (17 pages), Longines (15 pages), and Assorted (38 pages).

[1st edition, mediocre] *This is a "certified limited edition", like Gordon's Rolex book, with a meaningless, tipped-in certificate (my copy is number 06687). As with the Rolex book, this sets the tone for an opulent volume with minimal information and maximum "wow!". It is clear that Gordon knows nothing about watch mechanisms and probably all his horology is quoted (or misquoted) from other sources.*

However, the text, although brief and with a few startling errors, provides a terse, readable history of wrist watches with a non-technical summary of the main, obvious developments (subtle changes such as elinvar are naturally overlooked). This approach is a bit inadequate; for example, the mention of perpetual calendars fails to give any indication of why they are significant complications.

Gordon writes "these classic (mechanical) watches have returned to their former leading position in the market". This glib comment seems to have an element of truth, because the book only considers that which the rich and famous (and their imitators) wear and it ignores the billions of watches worn by ordinary people (except for an unexpected mention of Timex). But actually they haven't "returned", they have always been manufactured. There will always be wealthy people who want to show off their good taste and it is for them that the book has been written; so that hopefully they can find a photograph of their watch and so feel a warm glow of satisfaction.

Another reviewer said "Rambling and poorly written. I can only recommend it to those that are looking for the photographs of rare and unusual pieces." Perhaps this is a bit harsh.

R1113 Gordon, G

Wrist watch collection, catalogue of a private japanese collection

2003, 319 pp, ill.

Catalogue (English, Japanese).

"Very good pictures describing mostly chronographs. Translated from Japanese into English."

R1114 Goudge, E

The dean's watch**Das testament des Mr Adams**

New York: Coward-McCann, England: Hodder & Stoughton, nd (1960), 20.5 x 13.5 cm, 350 pp (350 pp). Novel (English, German).

The story of a clockmaker set in a small English cathedral city in the 1870's. He works on a watch made by George Graham, and clocks by famous makers.

[1st edition, fair] *A well-written romance about the struggles of the characters to come to terms with the cathedral, God and love. The horological aspects are marred by vagueness and errors (the Graham watch is in the wrong style of case and the clockmaker manages to carry pendulum clocks around the city whilst they tick). But the characters (even though strongly typecast and extra-ordinary) are well drawn, imperfect humans engaged in real conflicts. An enjoyable, if forgettable, book where everything, unrealistically, ends happily.*

R1115 Goudsmit, SA; Claiborne, R**Time**

New York: Time Inc, 1969 (1966), 11 x 8.5 inch, 200 pp, ill.

History (English).

This book is a philosophical treatment of the subject of time. The nine chapters are:

The elusive nature of time (years, months, minutes); Life's remarkable rhythms (the biological clock); Subdividing the year (the riddle of the calendar); Ticking off the hours (the long search for perfect timing); Segments of the second (measuring what the eye cannot see); Fixing the start of "long ago" (reaching backward in time); The Einstein revolution (the great relativity bomb plot); The arrow of time (man versus clock, the unequal struggle); and Perfecting the clock (the innards of a watch).

There is a bibliography.

[Review by Henry B. Fried] *This book is excellently illustrated and like all Time and Life books, made easy to read with "picture essays" of each chapter. The book's format resembles a bound copy of "Life" magazine with its superabundance of pictures, mostly in color.*

Of immediate interest to readers of this review are the chapters on timekeepers such as clocks and watches. The invention of the escapement here is attributed to Su Sung's clock. Some will disagree in that Su Sung's clock escapement was not mechanical but a sort of mechanical clepsydra. Most authorities agree that the mechanical escapement was a European invention with the advent of the verge and foliot. This contention of Su Sung's being the first escapement is repeated a few times which may irk some readers, especially when the book's authors say, "... incorporated a crucial device similar to Su Sung's water clock: the verge and foliot escapement."

The authors also have been careless in making some errors and in perpetuating older ones. In a fine color drawing of the foliot and verge, both hour and anachronous minute hands are shown although without the dial train. Another illustration shows a drawing of the anchor escapement and here the escape wheel is referred to as the crown wheel both in the text and in the drawing. When the teeth of the verge's escape wheel point upwards as a coronet or crown, then correctly should that wheel be called a crown wheel. However, when escape teeth are radial as with the anchor escapement, the correct term is simply "escape wheel." The authors also have perpetuated another fallacy in calling the early watches "Nuremberg Eggs" That such a term, applied to early 16th century watches is incorrect is conclusively proven in Baillie's book "Watches" (1929) in which he states Dopplmayr's (1730) "Eyerlein" (little egg) was a misreading of "Ueurlein" (little clock) appearing in the 1690 German edition of Rabelais "Gargantua-Pantagruel" and furthermore that 16th century watches were not egg shaped, the oval form not becoming common until 1600. Champions of Robert Hooke may disagree with the outright statement that it was Christian Huygens who invented the hairspring. However, these differences detract only a little from the excellent format of the book and its readability.

Its explanation of the theory of relativity is excellent. Pictures, drawings and the style are all excellent.

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[Remark] *Elsewhere this book is described as a general "coffee table" book on time with some information about watches. Certainly Fried's review politely suggests its content may be very far from perfect.*

R1116 Gould, RE**Testing of timepieces**

USA: National Bureau of Standards, Circular C432, 1941 (1931), 23.0 x 15.0 cm, 27 pp, 9 ill (24 pp).

Description, technical (English).

An earlier booklet on the same topic, US Bureau of Standards "Measurement of time and testing of timepieces", was published circa 1914. This is listed separately.

A detailed description of the tests and computation of performance for watches and chronometers at the U.S. National Bureau of Standards.

[2nd edition, good] *Different tests are specified for class A, class B, railroad, business and stop watches as well as marine chronometers. Interestingly, up to 1941 there were no testing procedures for wrist watches.*

The booklet concludes with general remarks on submitting watches for testing, their use and care and watch sizes.

R1117 Gould, RT**The marine chronometer**

its history and development

London: Antique Collectors Club (London: Holland Press) (London: Holland Press) (London: J. D. Potter), 1989 (1923), 23.0 x 15.0 cm (8vo), 401 pp, 150 ill (287 pp, 85 figs, 39 plates).

History, technical (English).

Reprinted by the Holland Press in 1960 (facsimile of 1st edition), 1971, 1973 and 1978. Then by the Antique Collectors Club in 1989.

An introduction outlining the problem of determining longitude (18 pages) is followed by two parts and two appendices:

Part 1 The early history of the chronometer, 1530-1829 (112 pages) has 8 chapters covering early work, John Harrison, Kendall and Mudge, Le Roy and Berthoud, John Arnold and Thomas Earnshaw.

Part 2 The later development of the chronometer (122 pages) has 6 chapters which survey the development of the chronometer: the escapement, balance spring, balance, auxiliary compensation, miscellaneous

developments and a description of the modern chronometer and its care.
 Appendix 1 (14 pages) discusses the methods and results of early trials at Greenwich.
 Appendix 2 (6 pages) is an account of the going of Mudge's first timekeeper in 1777.
 The is a general index (12 pages) and an index to technical terms (3 pages).

[1973 reprint, excellent] *Part one, the history of chronometers, is relevant to watchwork in general, primarily for its very good survey of the development of the detent escapement from Le Roy to Earnshaw. Part two has, to my mind, the clearest explanation of the development of balance springs and balances. It is especially noteworthy for its examination of auxiliary compensation methods for the middle temperature error and the discussion of good and nonsensical "improvements" to the basic design of chronometers. The first appendix has a very good history of the Greenwich chronometer trials. Deja vu! The importance of this book can be judged by the fact that much of it was familiar to me. The first part has been so often quoted, paraphrased and used for a film script, with or without acknowledgement, that I felt I had read it before. And this is not surprising as it is a superb, clear account. It should be read by all because it is much better as a whole than the extracts appearing elsewhere. The second, more technical part has been ignored by popularisers, but is equally good. It has an outstanding explanation of balances and balance springs to complement Chamberlain "It's about time". A delight to read.*

[1989 reprint] *This has additional material, but it is apparently missing one plate and has other problems. It is said to be "rather inferior".*

[Remark] Mercer "Mercer chronometers, radical Tom Mercer and the house he founded" notes that it was Bill Godman, an employee of Mercer, who reconstructed John Harrison's H1 and H3 on behalf of Rupert Gould.

R1118 Gouraud, Julie

The adventures of a watch

Dublin: James Duffy, 1864, 12mo, 83 pp, 2 ill.

Prose (children) (English).

A children's tale.

[1st edition] *Although the watch is not personified, as in Reed and Borsendorff, it is an integral part of the story.*

R1119 Government Training Centre

Clock and watch repairing

London: NAG Press, nd, ill.

Repair (English).

A 45 week training course

Described as "rather crudely produced for government training centres".

R1120 Graf, Johannes

Der Kunstreiche uhrmacher

kostbarkeiten aus der bibliothek des deutschen uhrenmuseums

Germany: Deutsches Uhrenmuseum, Furtwangen, 2010, 29 x 21 cm, 190 pp, 261 b/w ill.

Bibliography (German).

Volume 3 in the series "Furtwanger Beiträge zur Uhrengeschichte, Neue Folge".

Treasures from the library of the German clock museum – catalogue of the temporary exhibit November 15, 2010 to March 20, 2011.

A comprehensive catalog of early german horological literature.

R1121 Graffigny, H de

L'horlogerie des amateurs

Paris:, ca 1900, 8vo, 127 pp, few ill.

Repair (French).

Vocabulary of technical terms: tools, repair, sundials, history.

R1122 Graffigny, H de

Manuel de l'horlogerie

et du mécanicien amateur

Paris: Hetzel & Cie, 1894 (nd), 18.5 x 12.0 cm, xii, 324 pp, 224 ill (336 pp, 225 ill).

Repair, bibliography (French).

"Bibliothèque des professions, industrielles, commerciales, agricoles et libérales", Series G, No. 32.

My 3rd edition (1892) states 225 figures but there are only 224 numbered illustrations.

Tardy lists four editions.

"Guide pratique à l'usage des ouvriers rhabilleurs et repasseurs de montres et de pendules des apprentis horlogers".

Ten chapters: Definitions and history, Elements (of mathematics, drawing, mechanics, etc), Power sources and escapements, Tools, Work of the repairer, Electric horology, The amateur's workshop, Horology for the amateur, Procedures and recipes, and Vocabulary of technical terms. There is a 4 page bibliography.

[3rd edition, fair?] *Chapter 1 (31 pages) provides a potted history of horology including calendars, sundials and manufacture by machine in America (quoting Favre-Perret). Chapter 2 (42 pages) gives a too brief summary of facts covering arithmetic, geometry, mechanics, gears, physics and chemistry. Chapter 3 (26 pages) summarises mainsprings, pendulums and escapements; the most interesting part is*

a long footnote giving the French regulations for chronometer testing. The book becomes more interesting at Chapter 4 (37 pages) where tools are discussed. Here Graffigny provides some details and good illustrations of a wheel equaliser and wheel cutter designed by Modeste Anquetin, and a boring/milling tool and a planing machine by VA Pierret, amongst other small tools. Chapter 5 (25 pages by Anquetin) outlines fault finding in watches. Chapter 7 (23 pages) lists and describes the tools an amateur mechanic needs in his workshop. Chapter 9 (39 pages) contains an interesting collection of information including old French measures, currency conversions to francs, coefficients of expansion, specific gravities and useful formulae for fluxes, solders, etc.

One source said the book is “full of off-beat information and well worth the effort reading”. I have only skimmed it, but I don’t get the same impression. There appear to be some odd bits which are unusual in amongst what appears to be a fairly straightforward catalogue of facts and I doubt if it is worth putting too much effort into finding a copy to read.

“L’horlogerie des amateurs” may be an earlier edition. See also R. Marquis “Manuel de l’horlogerie et du mécanicien amateur”.

R1123 Graffigny, H de

Manuel élémentaire de l’horloger

Paris:, 1921, 64 pp, ill.

Repair (French).

Listed in Tardy.

R1124 Grafton, E

Horology

or a popular sketch of clock and watch making

London: Aylett and Jones, ca 2010 (1846), 16.5 x 11.0 cm, 62 pp, 8 ill, 5 pp ads (36 pp).

Description, history (English).

Printed in 1846 and 1849 with the 1849 printing stated to be the 3rd edition; this 3rd edition is not dated, but sources give the date as 1849. The cover has the title “The newly-invented independent seconds watch, Edward Grafton, inventor and manufacturer”.

There is a modern reprint of the 3rd edition.

Continuous text without chapters, roughly divided into the following topics:

Time, sundials and mechanical timepieces (4 pages); Clocks, pendulums, repeaters, equation of time, clock escapements (12 pages); Compensation pendulums (8 pages); Watches, chronometers, compensation (6 pages); Fusees (4 pages); Watch escapements (5 pages); Watchmaking (9 pages); How to buy a watch (4 pages); Caring for a watch (1 page); and Table of local times in the United Kingdom (4 pages).

A little of the book is quoted in “The illustrated exhibitor” (see Mallet “Record of the international exhibition 1862”).

[3rd edition, fair] In the preface “To the public”, Grafton writes: “True, there have preceded the publication of these pages sundry brochures touching the subject of Horology ... but these have uniformly been of the nature of advertisements; at the same time their meagre and spiritless character, as regards information, has been remarkable.” He continues: “Let it be understood then, that with all due conviction of British supremacy in the art of Watch-making, the author of the following pages never ceases to direct his earnest attention to the state of the foreign manufactures, and to devote his best endeavours to bring to the English market the most valuable Horological specimens that emanate from the Swiss school.”

These quotes are provided to indicate the style of writing and also to raise a preliminary point. In the advertisements at the back of the book, it is suggested that “The author is a London Watch Manufacturer, of considerable celebrity” and “This clever sketch is stated to be the first of a series of publications on Horology.” However, I have never heard of Grafton, this is his only book, and I am confident he never manufactured watches, although he may have finished some, and he mainly imported and sold Swiss watches, probably the cheaper ones.

Anyway, Grafton has asserted that he will do much better than other writers, so did he succeed?

The book, with two exceptions, is purely descriptive. Gridiron and mercury compensation pendulums are explained clearly with 2 diagrams. And fusee maintaining power is described without a diagram (and hence obscurely). Watch escapements are illustrated by inadequate, small drawings, but as they are not explained the reader only learns their names and general appearance.

The history and descriptions are adequate until, near the end, Grafton lapses into poetic fantasy, as when describing the “son of toil ... partaking of his frugal meal, or repairing, at eve, to his humble cot” and mentioning Paley’s theology.

There is an in-text two-page advertisement for Grafton’s independent seconds watch, which is a two-train jump-seconds watch where the second train can be started and stopped independently of the going train (but not reset).

In 1850 I expect this book would have been useful for people interested in watches. However, it is dull and, despite his claims, not as good as Thomson “Time and timekeepers”. Like most of these books for lay people, this one is well past its “use-by-date” and will only be of interest to book collectors and the curious.

R1125 Grainer, J

La mesure du temps

France: Presses Universitaires de France, 1948, 18 x 12 cm, 120 pp, 15 ill.

Technical (French).

A book in the series “Que sais-je?”

Grainer also wrote "Mesure des petits intervalles de temps" (159 pp, 89 ill, 1940).

See also Decaux & Guinot "La mesure du temps".

R1126 Graupmann, E

The finishing of the watch case

Le finissage de la boîte de montre

Manuel de l'horloger praticien

Australia: Richard Watkins (London: Rita Shenton) (Geneva: Journal Suisse d'Horlogerie), 2004 (1910), 29.5 x 21.0 cm (24.0 x 15.0 cm), 11 pp, 25 ill (20 pp, 25 ill).

Repair, tools (French, English).

Reprinted in 1989, possibly more than once; the original reprint is said to be a limited edition of 50 copies, but my copy gives no limitation.

The 2004 English translation by Richard Watkins is distributed as a PDF computer file.

Finishing watch cases. In 8 sections: introduction, the dome, the middle, the back, the cover, the bezel, the pendant, and final tasks.

[1st edition reprint, good] The title is a little misleading as some of the advice concerns case repairs, such as removing dents.

Graupmann takes us step by step through the process of ensuring a case is well made and well fitting. He starts with the dome (the inner hinged cover over the movement) ensuring it fits well and has a good snap, providing good instructions for fitting the joint pin. Then the middle or body of the case is examined, but here I found some of the instructions and tool illustrations for dent removal a bit vague. The back offers special problems if it is decorated or enamelled, both requiring much care to fit it properly, but again the main point is the quality of the snap. Then the hunter cover and secret spring, bezel and pendant are examined. Most of the tools are illustrated.

An interesting essay with some good information, despite being a bit vague in places.

R1127 Grazzini, G; Caboli Gigli, N; Gregati, G

La montre

Paris: Ars Mundi, 1992, 4to, 112 pp, ill.

(French).

The first part has 3 sections: "The origins of the watch" by Grazzini; "The watch for women" by Caboli Gigli; and "The point of view of the expert" by Gregati.

The second part has a review of famous brands and "Watches through the ages" to 1920.

R1128 Green, RA

Jewellers trade cards 1800-1900

USA: RA Green, 1989, 11 x 8 inch, 286 pp, 165 col ill, 360 b/w ill.

(English).

Also given as 9 x 6 inch.

Includes watch and clock trademarks, silver marks, watch cases, and 30 categories of cards.

[Review by Eugene Fuller] This fascinating book takes its reader on a pictorial journey through one of the most popular forms of 19th century advertising used by retail jewelers - the often humorous, but always colorful trade card. Its author wisely chose to minimize his own copy and to let the original copy on the trade cards play the major role.

Watch enthusiasts will find a wide variety of cards promoting watch case companies such as Keystone, Boss, Crescent, Dueber, and Crown, and watch manufacturing companies such as Illinois, Aurora, Hampden, Seth Thomas, Waterbury, Fredonia, Trenton, Ingersoll plus Rockford, Waltham and Elgin.

While watch oriented cards outnumber clock trade cards, clock fanciers will still find Tell Tale & Starter's Clocks by Silas Fournier of New Orleans and Ansonia "Peep O' Day" Alarm Clocks with their unique 19th century verses most interesting. And two trade cards featuring the Engle Clock, now a part of the NAWCC Museum collection, are also illustrated.

The book is divided into 12 chapters and includes a comprehensive bibliography as a concluding 13th chapter. The earlier chapters set the stage by explaining how the trade card evolved through the 18th and 19th centuries, identifying some of the major pioneer collectors and the present locations of their collections, and defining major types of trade cards. For example, the author has identified three distinct types of Keystone and Boss watch case company trade cards: (1) Keystone die cut cards in the shape of their logo with some 30 different subjects used by over 150 different retail jewelers, (2) rectangular Keystone cards, which contain the Keystone logo, not used as frequently as the die cut version, and (3) a rectangular Boss card with some 65 different designs.

Watch collectors will especially find Chapter 4 useful. It is a 16-page reprint of American Watch, Imported Watch, and Watch Case Company trademarks taken from the 1896 edition of "Trade- Marks of the Jewellery and Related Trades" published by the Jewelers Circular Publishing Company.

Watch manufacturing companies found it very practical to provide uniform advertising material at no cost, or little cost, to their retail jewelers in the quieter days before TV and other forms of mass media. For example, a relatively scarce Waterbury trade card is illustrated which is printed on the back; "these cards will be sent free of cost in lots of 525, to any recognized retail watch dealer desiring the same ... there will be no printed matter upon the backs, the entire space left for each dealer to utilize as may be desirable." A large number of cards are shown with custom designs by individual retailers, including such well known firms as Benedict Brothers, New York; M. S. Smith & Co., Detroit; Henry Abbott of Abbott's Patent Stem Winding Device fame in New York; Reed & Barton, New York; and W. G. Dunseath of Pittsburgh.

These and other trade cards provide an important mirror to the practices, pride and prejudices of their times. Citing just one interesting example, a jewelers trade card with an illustration of Abraham Lincoln proudly announces their \$1.00 charge for cleaning a watch.

While the central focus of this book is the trade card, other types of ephemera such as watch papers, watch boxes, and jewelers advertising mirrors are also very briefly discussed and illustrated.

Three of the concluding chapters can be especially valuable in identifying the "private label" designations used by American watch companies on many of their products. These chapters are devoted to a classification with design categories of trade cards used by some 1800 jewelers and related trades identified by the author in his research, an alphabetical listing of these companies, and a geographical listing broken down by the states where the firms did business.

This book is a must and also best buy for anyone interested in this vanishing part of watch and watch case manufacturing company, retail jewelers, and advertising history.

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R1129 Greenlaw, J

Swansea clocks

watch and clock makers of Swansea and district

Wales: Joanna Greenlaw, 1997, 25 x 17.5 cm, 125 pp, ill, 12 col plates.

Makers (English).

Limited edition of 1000 copies, but not all so marked.

Contents: Introduction. The area. The measurement of time. A brief account of horology in Wales. Clock cases. Longcase clock dials. The clockmaker's tools. The clockmaker's workshop and his day. The clockmaker's apprentice. Care of clocks; Buying and selling. Comprehensive list of watch and clockmakers in Swansea and district. Appendix.

"A comprehensive list of watch and clock makers for Swansea and neighbouring towns with notes on the development of horology in Wales. The book also has short chapters on the clockmaker's workshop and the clockmaker's apprentice."

R1130 Grendel, F

Beaumarchais, the man who was Figaro

New York: Thomas Crowell, 1977, 9.5 x 6.5 inch, 305 pp, 15 ill.

Biography, history, miscellany (English, French, German).

First published in French in 1972.

Beaumarchais was Pierre Caron, a watchmaker of some note.

R1131 Gribi, T

Practical course in adjusting

Cours pratique de réglage

New York: Jewelers Circular, Switzerland: Journal Suisse d'Horlogerie, 1910 (1901), 21.0 x 14.5 cm, 196 pp, 58 ill, 12 tables and 15 plates (150 pp).

Repair (English, French).

Separate English and French editions.

The English edition is based on lectures given to the American Horological Society in 1896-97 and presumably the French edition is derived from this (omitting the additional material?). Jewelers Circular gives copyright dates of 1899, 1900 and 1901 suggesting it first appeared in parts; only the 1901 and 1910 editions have been seen.

The 1901 English edition is available as a Google Book PDF file (USA only?).

Seven chapters which form 3 distinct parts, although they are not described as such.

Part 1, chapters 1-3: General principles underlying the adjustment of watches and chronometers (44 pages on isochronism); Adjustment in positions (37 pages); and Compensation for variation of temperature (10 pages). These chapters are based on experiments conducted by Gribi and interpretation of the results.

Part 2, chapter 4: Application of correct principles in the construction of watches and practical work of adjusting (61 pages). This chapter explains important defects, replacing balance springs, forming terminal curves, timing washers, adjusting watches, standards of performance and rating.

Part 3, chapters 5-7: How to make a balance arbor with modern appliances (18 pages); How to clean a watch properly (5 pages); and The lever escapement, its current defects and how to remedy them when possible (21 pages).

[1901, excellent] Until I read this book, my opinion of various writings on adjustment was somewhat negative. Different authors prefer different methods and reject the methods proposed by other authors; and vice versa. And most writers simply state "facts" with little or no justification, offering cookery-book style practical methods to be followed blindly. The result is confusion and a feeling of dissatisfaction. Some of these prominent writers must surely be wrong? Or is adjusting an art based on guesswork and practical fiddling?

Gribi's approach is completely different. Over a number of years he conducted experiments, carefully examining the rate of timepieces under different conditions; different positions, different arcs of vibration, different balance-spring pinning points and different balance-spring lengths. The first part of the book presents some of the results of these experiments with the focus on clear graphical representations of the variations in rate that occur. Then, from these results, Gribi draws conclusions about what might be

achieved by adjusting a watch and, in principle, what needs to be done. In particular, he convincingly demonstrates the impossibility of achieving perfect isochronal and positional adjustment and that these goals are in part mutually exclusive.

The outcome is that, for the first time I think I understand the problem! As this book is probably the last book on adjusting that I will read, I wish I had read it first, and that other authors had explained adjusting as well.

But this book is not without its problems. When I reviewed Moinet "Nouveau traite general, elementaire, pratique et theorique d'horlogerie" I commented that "most authors, like dogs and cats, mark their territory, their ownership". This is definitely true of Gribi's book. At the end of the second chapter, after his experimental demonstrations, he propounds a "discovery and a remedy" to resolve the problems of the inherent lack of uniformity of rate. It is to attach a little weight to the balance spring, in the form of a small piece of platinum wire placed on one of the coils. And he demonstrates, by a test of one watch, that this weight can significantly reduce errors; in that case when placed on the second coil of the spring. Then, in the 4th chapter, Gribi takes us through a practical example of adjusting. After making a new staff, poisoning the balance and adjusting the separation of the regulator pins, the culmination is the addition of such a balance-spring weight to reduce all positional errors to a very small amount.

This idea, which I have never heard of before or since, and presumably has been used by no-one other than Gribi, is not entirely without merit. Unlike Purdom and Hagans "Scientific timing", whose idea of needling undoubtedly comes from the world of childish fantasy, this idea is similar to the fairly common practice of deliberately putting the balance out of poise. However, the balance-spring weight moves over a much smaller arc and its effect is more constrained to the position required. I doubt if this suggestion has been used, and if it was the next repairer of the watch would not understand the weight and immediately remove it, if the owner of the watch had not already destroyed the balance-spring by trying to remove it himself!

Other than this novel idea, Gribi's approach to adjusting is very simple. For isochronism, use correct inner and outer terminal curves, and pinning point. For positions, adjust the spacing of the regulator pins and add a balance-spring weight if necessary. But surely this is too simple. As I noted when reviewing Fritts "The watch adjuster's manual", an error of 5 seconds a day, 2 1/2 minutes per month, is an error of one part in 17,280, and so correcting it presumably requires a very small adjustment. In particular, how big a variation of a terminal curve from the theoretically correct form will produce such a change, and how easy (or hard) is it to make such corrections in practice? Similarly, what effect does a small movement of the pinning point have? I have got the impression from other sources that adjusting requires meticulous, time consuming work, supporting my feeling that the changes required to produce desired effects are extremely small and achieved, in part, by trial and error.

I doubt that I should rate this book as excellent as I don't think it is that much better than others. But I feel that there is much benefit to be gained by reading and contemplating the first part, even if the book falls away somewhat towards the end.

R1132 Griffiths, R

Clock and watch making today

England: Prescott Museum, 1985, 35 pp, ill.

Exhibition (English).

Catalogue of an exhibition at the Prescott Museum showing the work of modern makers, including Gent, King, Martin and Randall.

R1133 Grimwade, AG

London goldsmiths 1697-1837

London: Faber and Faber, 1990 (1976), 10 x 6.5 inch, 773 pp, 5 b/w ill (724 pp).

Makers (English).

"Their marks and lives from original registers at Goldsmiths' Hall and other sources."

3473 marks are reproduced from the registers, and a further 441 from other sources. The bibliographic dictionary of makers totals nearly 2600 names.

R1134 Gros, Charles

Echappements d'horloges et de montres

England: Malcolm Gardner (Paris: Bureau de l'Almanach de l'Horlogerie-Bijouterie), 1980 (1913), 22.5 x 15.5 cm, 261 pp, contents, 277 ill.

Technical (French).

The reprint is of the 1922 second edition.

"Expose technique, descriptif et historique des echappements d'horlogerie".

Ten sections: Recoil escapements for clocks (22 pages); Recoil escapements for watches (14 pages); Mixed escapements for clocks and watches (9 pages); Resting escapements for clocks (23 pages); Resting escapements for watches (44 pages); Free escapements for watches (76 pages); Free escapements for clocks (14 pages); Constant force escapements for clocks (37 pages); Constant force escapements for watches (10 pages); The remontoir d'egalite (4 pages).

[1st edition, very good] *A standard and famous work on escapements although reputed to contain some errors. It covers a vast array of escapements, each illustrated and described, with extensive sections on chronometer, cylinder and lever escapements.*

The most comprehensive text on escapements I have seen. Unfortunately there is no index.

- R1135 Gros, Charles**
L'échappement libre a ancre
 sa théorie étudiée par un horloger praticien, reproduction et comparaison des principaux traces
 Paris: Librairie Centrale des Sciences, ca 1924, 24.0 x 16.0 cm, 64 pp, atlas of 15 plates.
 Technical (French).
 The same title as Grossmann "L'échappement libre a ancre sa théorie étudiée par un horloger praticien" but completely different.
 A detailed comparison of published designs for lever escapements by Saunier, Moinet, Johann, Natermann, M Grossmann, Calame, Grosclaude, James, Chaudet, J & H Grossmann, Sievert and a French academy.
[1st edition, good] "This study obtained the 2nd prize and silver medal of the Society of Arts of Geneva at the centenary competition of the Geneva School of Horology in 1924".
[Remark] I purchased the text by itself and then, fortunately, the plates some years later. One without the other is useless.
- R1136 Gros, Charles**
Le memo de l'horloger-bijoutier
 recueil de tables de barèmes et de renseignements pratiques d'utilité journalière a l'usage des horlogers et des bijoutiers
 Paris: Charles Gros, 1924, 23.0 x 15.0 cm, 48 pp, tables.
 Repair, technical (French).
 At least 5 editions.
 Collection of tables, ready-reckoners and practical information of everyday use for horologists and jewellers.
- R1137 Gros, Charles**
Les dessins de l'horloger praticien
 dessiner sans connaitre la théorie, apprendre la théorie en dessinant
 Paris:, nd, 8vo, 47 pp, 63 ill.
 (French).
 At least 3 editions.
 Design for the practical horologer. Gears, escapements and other mechanisms.
- R1138 Gros, Charles**
Traité complet de soudage
 soudures fortes et soudures d'étain suivi d'exemples d'applications pratiques
 ca 1920, 115 pp, ill.
 Repair (French).
 Complete treatise on soldering, hard and soft solders with examples of applications.
- R1139 Gros, Charles; Mesnage, MP**
Antide Janvier
 éléments biographiques, l'oeuvre horlogère d'Antide Janvier
 Toulouse: Annales françaises de Chronométrie, 1952, 8vo, 44 pp and 28 pp, 26 ill, portrait.
 Biography, history (French).
 Two books bound as one?
- R1140 Grosch, Herman**
Praktisches handbuch fur uhrmacher
 Leipzig: B H Voigt (Weimar:), 1907 (1877), 4to, 328 pp, 263 ill (279 pp, 15 fld plates).
 Repair (German).
 This is a revision of Schreiber "Vollstandiges handbuch der uhrmacherkunst", which see. The 2nd edition (1907) was revised by Dietzschold and Huttig.
- R1141 Grosclaude, LA**
L'échappement a ancre
 étude a point de vue du trace, l'inertie, du frottement
 Genève: Journal Suisse d'Horlogerie, 1884, 8vo, 36 pp, 5 plates.
 Technical (French).
 The lever escapement, a study of its drawing, inertia and friction.
- R1142 GrosPierre, A**
La conscience de Félix Jacot
 les débuts du syndicalisme horloger
 1935, 360 pp.
 Novel (French).
- R1143 Grossmann, J**
Réflexions sur les montres américaines
 Locle:, 1877, 8vo, 26 pp.
 History (French).
 Reflections on American watches.

R1144 Grossmann, J; Besançon, P; Ducommun, P; Clerc, C; Etienne, H**Rapport présenté au conseil d'état**

par les experts horlogers délégués à l'exposition universelle de 1878

Neuchâtel: I.A. Borel, 1879, 8vo, 182 pp, fld plates.

Technical (French).

Report presented to the state council by the delegation of expert horologists to the Universal Exhibition of 1878. In 8 sections: General view (Clerc), Horological schools (Grossmann), Observatories, adjustment, etc. (Grossmann), Tools and measuring instruments (Ducommun), Machines (Ducommun), Decorative arts, cases, gilding (Besançon), Commercial aspects (Etienne), and Conclusions.

R1145 Grossmann, J; Grossmann, H**Horlogerie théorique****Lehrbuch der uhrmacherei nach den gesetzen der mechanik**

cours de mécanique appliquée à la chronométrie

Paris: Gauthier-Villars and Bienne: E. Magron; Berne: (Bautzen:), 1912 (1894), 23.5 x 16.0 cm, 2 volumes 408 pp, 134 ill, 2 portraits, 13 fld plates and 427 pp, 152 ill, 4 portraits, 8 fld plates.

Theory (French, German).

There is much confusion in the sources regarding this book and its translations. It was originally produced in parts. Then in 1911-1912, after some revision, it was published in two volumes. An earlier single volume edition containing the first 4 chapters may have been produced (see below) but I have not discovered anything about it.

Various paginations, illustrations and plates are given for the 2 volume edition. The above is correct. Volume 2 has 7 plates, but it also includes a revised plate 6 for volume 1. In addition, my copy has pages 339-340 and 349-350 reprinted with corrections within the table of contents. Page 427 is a bound-in errata sheet for both volumes.

The American edition of 1905, "Lessons in horology volume 1, the principles of cosmography and mechanics relating to the measurement of time", is listed separately. It contains the first 4 chapters from volume 1 of the French edition.

The German edition of 1903 "Lehrbuch der uhrmacherei nach den gesetzen der mechanik" (248 pp, 112 ill, 2 plates) is said to be a translation derived from the first, single volume French edition. Robertson "The evolution of clockwork" erroneously lists this as a "German translation of Arndt and Defosse", a book I have never heard of and which is not listed anywhere; presumably they were the translators. From the pagination and number of plates I expect this contains chapters 1 to 4 and to be fundamentally the same as the American edition.

Volume 1 has an introduction (35 pages) on time and basic mechanics followed by six chapters: General functions of clocks and watches (7 pages); Motive forces (49 pages); Wheel work (44 pages); Gears (157 pages including a 9 page examination of chronograph heart cams); Escapements (14 pages); and The lever escapement (78 pages).

Volume 2 contains chapters 7 to 10: The cylinder escapement (26 pages); The duplex escapement (10 pages); The detent escapement (30 pages); and The theory of adjustment (294 pages). Chapter 11 is C.E. Guillaume's "Notice sur les aciers au nickel et leurs applications à l'horlogerie" (60 pp, 12 ill). There are two short appendices on the solution of an integral equation and the revised plate 6 for volume 1.

[2nd edition?, very good?] For remarks on chapters 1 to 4 see the American edition "Lessons in horology volume 1".

Chapters 5 to 9, on escapements, are brief and focus on the mathematical analyses of their dimensions and friction.

Chapter 10, on the theory of adjustment, occupies three-quarters of volume 2 (pages 67 to 359). It is a detailed mathematical analysis including moments of inertia, angular motion, thickness and length of balance springs, theory of terminal curves, external influences on the balance and balance spring, pivot friction in different positions, influence of the escapement, effect of the balance being out of poise, effect of the displacement of the centre of gravity, practical results of the theory of terminal curves, centrifugal force, influence of inertia on isochronism, theory of compensation and bimetallic strips. It includes some examples of the application of the theory.

Chapter 11 by Guillaume is in two parts. The first examines the properties of steel and nickel-steel alloys. The second part discusses applications to pendulums (with a mathematical study of pendulum length, moment of inertia and air resistance), balances (including the theory of middle temperature error) and balance springs.

Unlike the first 4 chapters, which are almost accessible, the bulk of the rest is pure theory and mathematical analysis. It will be unintelligible without a strong mathematics and physics background; despite having a degree in pure and applied mathematics I will not be tackling it.

R1146 Grossmann, J; Grossmann, H**Lessons in horology**

volume 1, the principles of cosmography and mechanics relating to the measurement of time

USA: Keystone, 1905, 22.5 x 15.5 cm, 263 pp, 107 ill, 2 plates, frontis.

Theory (English).

The book is a translation of the first 4 chapters of "Horlogerie theorique, cours de mecanique appliquee a la chronometrie" (which see). The authors' preface indicates that these chapters are to be followed by sections on escapements, adjustment and compensation in chronometers. These are

in the French edition, but I have seen no reference to an English translation and it probably was never published.

It is available as a Google Book PDF file (USA only?).

An introduction (23 pages) on time and basic mechanics followed by four chapters: General functions of clocks and watches (8 pages including the theory of balances); Motive forces (42 pages); Wheel work (35 pages); and Gears (140 pages). Appended to the last chapter is a 9 page examination of chronograph heart cams.

Except for small (but perhaps important) changes, the contents is the same as the corresponding chapters of the 1911 French edition.

[American edition 1905, very good] *This book is a mathematical treatise on watch and clock work.*

The study of motive forces briefly examines weights and then details the mathematics of springs and fuseses, with a discussion of the function of stop-work. Chapter 3 on trains examines their calculation and then gives copious examples for going, calendar, keyless work and motion work trains. A few other cases are examined, but prime number trains (such as for moon phases) are not considered.

The final chapter, the bulk of the book, develops the theory of toothed gears in detail and then gives the mathematics and examples for practical problems of determining tooth size, addenda size and gear diameters. Most notable is that the possible forms of teeth are developed from the theory instead of by verifying certain curves are satisfactory, as is usually done. In addition the use of the sector for determining gear diameters is detailed. Then there is a theoretical treatment of friction and mathematical methods of calculating tooth and pivot frictions. The chapter concludes with a mathematical analysis of chronograph heart cam design.

Besides the very good mathematical treatment there are a few practical techniques mentioned; notably fusee adjusting rods, deeping tools and sectors. These presumably appear because at times the theory is not applicable to practical problems.

Although the book contains many concrete examples, the mathematical treatment is its core. Readers who are not comfortable with calculus (in particular integration) will find it difficult.

R1147 Grossmann, M

A practical and theoretical treatise on the detached lever escapement
L'échappement libre a ancre sa théorie étudiée par un horloger praticien
Der freie ankerengang für uhren, praktische und theoretische anhandlung
 for watches and timepieces

Munich: Callwey (Geneva: , Bautzen: , Leipzig: Wilhelm Diebener) Chicago: Geo. Hazlitt & Co (Leipzig: M Grossmann), 1981 (1866), 24 x 14 cm, 22 x 16 cm and 25 x 34 cm, 394 pp, 73 ill (two volumes, text of 165 pp with tables and atlas of 20 plates) (207 pp, 14 tables, 28 ill, fld title page to plates, 20 fld plates) (179 pp, 11 tables, 31 ill, advertisements and atlas of 20 plates) .

Technical, theory (English, French, German).

The book is based on the author's prize winning essay submitted to the British Horological Institute and published in its journal.

Printed in 1866, 1867, 1884, 1892/3, 1902 and perhaps 1924. The modern reprint is in German. The 1892 German edition was revised by L. Strasser.

There is some confusion regarding the format of this book and its translations. The primary problem is that some sources only list one volume and it is likely that in some instances this is the text without the atlas of plates, although single volume bindings exist.

Published first in English (viii, 1-179 , 1, viii pp, separate atlas of 20 plates) and then in German in 1866 (viii, 1-207, 3 pp, 20 folding plates), with a French translation in 1867.

The American edition produced by Hazlitt in 1884 (vi, 1-110, vi pp ads, 20 plates) and in 1892 a "corrected, greatly revised" version of 188 pp, 20 plates. Hazlitt and Walker advertisements indicate a separate volume of plates, but one 1884 copy in apparently original binding includes the plates in a single volume.

The German edition of 1902 "Der freie ankerengang für uhren, praktische und theoretische anhandlung" has been listed as text volume 352 pp, 50 ill and atlas of 20 plates.

Robertson "The evolution of clockwork" gives 7 editions and translations with title variants.

Sixteen chapters covering general features, escapement drawing, proportions, escapement making, materials, examination and measurement. The majority of the book (about 85 pages) is concerned with escapement proportions. Although the focus is on the English (ratchet tooth) and Swiss (club tooth) escapements, other variants are discussed.

[1st edition English, excellent] *The first 9 chapters begin with a brief (and inadequate) history, remarks on methods of measurement and a detailed, descriptive explanation of the lever escapement's action and its main variants, including the pin lever, Savage two-pin and Cole types.*

Chapters 10 to 14 form the core of the book. After a short and clear explanation of drawing, Grossmann examines general principles of design; including the number of teeth on the escape wheel, the number of teeth embraced by the pallet, lifting angles, lock, lever length, impulse pin size and the length of the horns. The central Chapter 12 then gives the details of calculation and derived tables of proportions for English, Swiss, Grossmann's improved Swiss, and pin lever escapements. On the basis of this, a concise simple method for constructing an escapement is described using templates turned on a lathe. Finally, Grossmann describes experiments he performed on different metals in order to assess their suitability for escapement parts and his preference for aluminium bronze.

The book concludes with a brief consideration of escapement examination and measurement tools. The chapter on measurement begins with a forceful and rational argument for the adoption of the metric system and a description of metric tools used in Glashütte. It is interesting to compare this sensible and justified approach with that of Frodsham in "A few facts connected with the elements of watch and clock making".

A very well written, masterly text by a practicing watchmaker.

See also Keystone "Watch and clock escapements" which criticises Grossmann's escapement design.

[1st edition German] *The German edition is identical to the English except that chapter 16 has been split into two chapters.*

[Remark] *There have been some copies of the text without plates offered for exaggerated prices; the text alone is of little use.*

R1148 Grossmann, M

**Einer abhandlung uber das regulieren der uhren
mit tabellen**

Osnabruck: R. Kuballe (Glashutte: M Grossmann), 1981 (1880), 19.0 x 12.5 cm, 40 pp, 14 ill, 18 pp table. Repair (German).

There were three printings in 1880, 1890 and 1903 and it appears it was usually printed with "Preis-schrift, abhandlung uber die konstruktion einer einfachen aber mechanisch vollkommenen uhr", which see. There is no indication that it was ever translated into English. The 1981 reprint of the German is of the 1880 printing and is bound with "Preis-schrift, abhandlung uber die konstruktion einer einfachen aber mechanisch vollkommenen uhr".

"A paper on the adjustment of watches with tables". Introduction followed by 6 chapters: The preconditions on which the regular rate of a watch depends; The selection and fastening of the balance spring; Observing and noting the rate (an explanation of the use of the tables); Adjusting in different positions; Remarks on adjusting lever watches and on the different regulator systems; and Temperature adjustment. The table gives 24 hour rate differences from measurements with periods of between 1 and 16 hours and rate differences of between 1 and 10 seconds (from which any rate difference can be calculated).

R1149 Grossmann, M

**Horological pocket dictionary
Dictionnaire de poche pour horloger
Taschen wörterbuch für uhrmacher**

in three languages English, French, German

Bautzen: Emil Hubner, Bienne: Magron (Glashutte:), 1926 (1880), 17 x 13 cm, 3 vols of 168, 162 and 178 pp (3 vols of 62, 56, 59 pp).

Dictionary (English, French, German).

Tardy lists 3 editions (the first two in 1880 and 1891), the 2nd and 3rd revised by Loeske.

Presumably 3 separate dictionaries providing translations from the primary language into the other two.

R1150 Grossmann, M

**Prize essay on the construction of a simple and mechanically perfect watch
Preis-schrift, abhandlung uber die konstruktion einer einfachen aber mechanisch
vollkommenen uhr**

Australia: Richard Watkins (Munich: Callwey, Osnabruck: R. Kuballe) (Bautzen: Emil Hubners) (Chicago: Hazlitt & Walker) (Glashutte: M Grossmann), 2002 (1880), 29.5 x 21.0 cm, (19.0 x 12.5 cm), 46 pp, 44 ill (128 pp, 44 ill) (98 pp, 44 ill) (95 pp, 38 ill).

Description, technical (English, German).

There were at least four printings in 1880, 1890, 1897 and 1903 and it appears it was always printed with "Einer abhandlung uber das regulieren der uhren", which see.

There is an American translation produced in 1891. It is available as a Google Book PDF file (USA only?).

The 1981 reprint of the German is from the first printing and includes "Einer abhandlung uber das regulieren der uhren".

The 2002 English translation by Richard Watkins is distributed as a PDF computer file and is from the 1880 edition.

12 chapters: introduction, the frame, barrel and mainspring, clickwork, stopwork, the train, motion work, escapements, case fitting, jewellery, the fusee, and keyless winding.

[2002 translation, excellent] *In this book Grossmann examines how a good watch should be designed. Starting with the frame (where he gives strong support for three-quarter plate movements) he progresses through each component, looking at alternative methods, discussing their merits and defects, and directing the reader towards the best design choices.*

In a couple of places Grossmann uses terms like "sanctified by practice". This is the point of the book. Unlike most other authors (and watch makers) he questions why watches are designed as they are and rationally discusses these assumptions; something I have never read before. He rightfully rejects the cylinder escapement chariot and pendant hand-setting, although we must remember the book is only concerned with pocket watches. And his analysis of mainspring endpieces is masterly.

I may be biased, but every time I read the book I am more impressed than before. In every chapter

Grossmann explains clearly and argues forcefully. Throughout he illustrates alternative designs and, in doing so, he provides a valuable summary of nineteenth century watchmaking. The study of keyless mechanisms was especially interesting to me, but the other parts are so good I am loathe to pick out any one.

- R1151 Grotzsch, H; Karpinski, J**
Dresden mathematisch-physikalischer salon
 Leipzig: Seemann Verlag, 1979 (1978), 32 x 24 cm, 195 pp, 178 ill.
 Collection (German).
 2 editions in 1978 and 1979.
 History of the salon. The collections: horology, globes, meteorology, astronomy and mathematics.
- R1152 Gruber, AC**
Taschenuhren 1550-1850
 Bern:, 1975, 28 pp, 66 ill.
 Catalogue (English, French, German).
 parallel English, German and French text.
 Also described as 12 pp, 66 ill (perhaps the illustrations are on 16 pages).
 Pocket watches in the Schweizerischen Landesmuseum.
- R1153 Gruber, Anton**
Das ABC des uhrmachers
 Ulm: Neue Uhrmacher-Zeitung, 1955, 21 x 15 cm, 264 pp, 70 ill.
 Dictionary (German).
 A dictionary for daily use in shop and workshop.
- R1154 Gruber, Anton**
Leitfaden für die gehilfen und meisterprüfung im uhrmachergewerbe
 Stuttgart: (Leipzig: Wilhelm Diebner), 1957 (1906), 22 x 15 cm, 304 pp, 7 ill, 7 plates (190 pp, 16 ill) (174 pp, few ill).
 Technical, theory (German).
 Produced in several editions (including 1906, 1928, 1935, 1938, 1949 and 1957) with the later ones omitting commercial aspects and re-titled "Leitfaden ... im Uhrmacherhandwerk".
 Manual for the assistant's and master's examinations in the horology professions; including some 400 examination questions.
- R1155 Gruen Watch Co**
A worthy company of watchmakers
 Cincinnati: Gruen Watch Company, 1918, 12mo, 56 pp, ill, plates.
 Catalogue (English).
 A history of Gruen and Time Hill (25 pages) followed by an illustrated catalogue with price list (30 pages).
- R1156 Gruen Watch Co**
Gruen horological manual
 1947, 14.5 x 22.5 cm, 47 pp, 25 ill, tables.
 Repair (English).
 Probably handed out free to watch repairers and retailers.
 The book begins by explaining Gruen's contribution to horology, their products, the Gruen Watchmaking Institute and general features of watches. This is followed by some basic repair information, a troubleshooting guide, and tables of Gruen mainsprings and beat rates of models.
[1947, mediocre] Largely puff and thinly disguised advertising. The bit of history is inaccurate and the repair information is over-simplified.
- R1157 Gruen Watch Co**
Gruen watch guild
 Cincinnati: Gruen Watch Company, 1929 to ca 1940, 13 x 10 inch, about 200 pp, ill.
 Catalogue (English).
 Loose leaf book dated 1929 with addition leaves added to about 1940. A description of the guild followed by illustrations of Gruen watches.
- R1158 Gruen Watch Co**
Gruen Watchmaking Institute
 USA: privately printed (USA: Gruen Watch Company), nd (1946), 87 pp, ill.
 Repair (English).
 Repair course including replacing balance staffs, cleaning, making tools, etc.
- R1159 Gruen Watch Co**
The Gruen horological text
 USA: Second Hand Press, 2009 (ca 1948), 28 x 22 cm, 105 pp, ill.
 Repair (English).
 14 pamphlets on basic watch repair techniques prepared by the Gruen Watch Company around 1948: A brief history of the watch (2 pages); Tools (8 pages); Turning (2 pages); Balance (3 pages); Hairspring (6 pages); Jewelling (4 pages); Mainspring (2 pages); Escapement (6 pages); Train (4 pages); Winding and setting (3 pages); Cleaning and oiling (11 pages); Adjusting (4 pages); Miscellaneous repair data (2 pages); and Trouble chart (4 pages).

Followed by a selection of other Gruen ephemera, including four undated typescript product change notices signed by George Gruen (5 pages), a booklet on fitting and adjusting watchbands (6 pages, a Gruen training unit targeted at retailers), as well as eight 'Technical Bulletins' issued by Gruen around the same time (28 pages).

[1st edition, review by Fortunat Mueller-Maerki] *The years immediately following World War II saw a resurgence in horological education in the USA. During the war years training had virtually stopped and many training courses for watchmakers emerged, some good, some of questionable quality. The American watch manufacturers were eager to plant their brand image on the new generation of horological professionals. The horological 'textbook' under review is a recent facsimile re-edition of a series of 14 pamphlets on basic watch repair techniques prepared by the Gruen Watch Company around 1948.*

This text was created by top notch professionals at a high grade watch company, but they took care to keep things very simple. This clearly is an introductory textbook, aimed at an audience with no or minimal prior knowledge of watches. Professional watchmakers will scoff at the notion that you can say anything useful about adjusting watches in three pages, when there are many specialized textbooks on watch adjusting that run for hundreds of pages. But this down to earth, even if at times simplistic approach makes the text particularly accessible to the novice, or to the watch collector who is not really trying to learn a profession, but merely to learn a bit of watch technology so he can enjoy his hobby more. It appears that few original copies have survived of this publication, and it is commendable that Mike Barnett, an avid collector of Gruen watches took the initiative to recreate the publication, which he augmented by reproducing a selection of other Gruen ephemera, as well as eight 'Technical Bulletins' issued by Gruen around the same time.

As a person more interested in horological literature and clocks than in watches, I personally found the collection of late 1940s printed Gruen ephemera mainly of interest as a socioeconomic milestone illuminating a relatively undocumented period of corporate horological USA history, and as a fascinating data point on 'horological training' in America around 1948, but other readers may well appreciate it for the basic watch servicing knowledge it contains. One way or the other it is good that another nearly forgotten horological text is available once again due to the efforts of horologist enthusiast turned self-publisher. These people will barely break even for their efforts, and they deserve the gratitude of horological collectors.

R1160 Gruen Watch Co

The priceless possession of a few

USA: Gruen Watch Company, 1924, 28.0 x 21.5 cm, 12 pp, 5 tipped-in plates.

Miscellany (English).

Undated but 1924.

The book produced by Gruen to describe and advertise the 50th Anniversary watch. A brief explanatory history and general description of the watch and its box.

[1st edition, very good] *A sumptuous two-colour production. The left hand pages have the plates and the right-hand pages the text with ornate initial letters. Each page has ornate borders. Four plates show the watch and its box, the fifth plate being a sketch of the Time Hill building.*

A very nice example of advertising, which is understandable as the watch cost \$500 and only about 650 were made.

The history of the watch and the text of this booklet are given in Fuller "The priceless possession of a few"; he also reproduces the cover and 1 plate.

R1161 Gruen, Robert

A brief history of the Gruen Watch Company

Indianapolis: KenRo Printing, 1991 (nd), 31 pp, ill.

History (English).

R1162 Guappone, R

Antique pocket watches, movements and cases

a pictorial reference guide

USA: Guappone Publishing, 1983 (1978), 28 x 21 cm, 40 pp, ill.

Catalogue (English).

Reprinted extracts from late 19th century sales catalogues showing American watches.

R1163 Guappone, R

Antique vest chains, guard chains, fob chains

a pictorial reference guide

USA: Guappone Publishing, 1978, 4to, 40 pp, b/w ill.

Price guide (English).

Facsimile reprint of a 19th century catalogue.

R1164 Gueroux, F

Vraies et fausses montres

Luxembourg: Argus Valentines, 2010 (2006), 21 x 17 cm (22 x 15 cm), 297 pp, 500 ill (320 pp, ill).

Identification (French, German, English?).

Real and fake watches. Counterfeit watch reference book including Lange, Audemars Piguet, Breitling, Bulgari, Cartier, Chopard, Corum, IWC, Officine Panerai, Rolex and Vacheron Constantin. Comparison photographs are given for 17 watch brands and 97 models comparing real and fake examples.

[1st edition] "How can you differentiate a fake watch from true one? Where are they manufactured? What are the various qualities of replicas? How can you buy a watch on Internet? How can you avoid swindles? This book - which is devoted to the most prestigious watches - offers to its readers vital information on the way to identify a counterfeit so that the purchase from a private individual, a not very scrupulous professional or on Internet is not transformed into a nightmare! Illustrated by 408 photographs, the differences between original models and counterfeits are described in detail (mechanisms, dials, bracelets, etc)."

The second edition is described as "totally new".

R1165 Guillaume, CE**Etudes sur le balancier compensateur**

1899, 30 pp, 4 ill.

Technical (French).

Studies of the compensation balance.

R1166 Guillaume, CE**L'invar et l'elinvar**

Switzerland: Société Neuchâteloise des Sciences Naturelles (Stockolm:), 1974 (1922), 25 x 16 cm, 48 pp, portrait, 11 ill (32 pp, 10 ill).

Technical (French).

Reprinted in the Bulletin of the Société Neuchâteloise des Sciences Naturelles.

R1167 Guillaume, CE**La compensation des horloges et des montres**

Neuchâtel: Editions Forum (Paris:), ca 1920, 19 x 14 cm, 49 pp, 9 ill.

Technical (French).

Another source gives 60 pp, 9 ill.

Procedes nouveaux fondees sur l'emploi des aciers au nickel.

The compensation of clocks and watches.

R1168 Guillaume, CE**Notice sur les aciers au nickel**

et leurs applications a l'horlogerie

Bienne: Magron; Paris: Gauthier-Villars, 1912, 8vo, 54 pp, 12 ill.

Technical (French).

Also printed in J & H Grossman "Horlogerie théorique".

In two parts. The first examines the properties of steel and nickel-steel alloys. The second part discusses applications to pendulums (with a mathematical study of pendulum length, moment of inertia and air resistance), balances (including the theory of middle temperature error) and balance springs.

See Tardy and Gardner "Catalogue of the Torrens collection" for lists of publications by this author.

Guillaume received the Nobel Prize for physics for his work in metallurgy.

R1169 Guillaume, CE**Recherches sur le nickel et ses alliages**

Paris:, 1898, 58 pp, 8 ill.

Technical (French).

Researches on alloys of nickel.

R1170 Guinand, C**Les aventures de Numa**

humour neuchâtelois et jurassien d'un horloger

1948, 140 pp.

Humour.

R1171 Guinand, C**Numa l'optimiste**

humour neuchâtelois et jurassien (horloger)

1950, 134 pp.

Humour (French).

222 caricatures choisies.

R1172 Guinand, C**Numa, humour neuchâtelois et jurassien**

ca 1953, 94 pp.

Humour (French).

Caricatures ayant paru dans l'Impartial du 29 septembre 1950 au 30 octobre 1953

R1173 Guitton, R**Quand sonne l'heures**

Brive: Chastrusse, Praudel et Cie., 1958, 8vo, 450 pp, 34 b/w plates.

Miscellany (French).

Miscellany of poetry and prose on ancient and modern timepieces.

[1st edition review by Joseph Sternfeld] An unusual book, dedicated by the author to all those who are either apprehensive - or reassured - by the Hour, in its broader sense of Time, to be alive or to dream, and on the whole to many of our contemporaries. And he says, "there are few occupations in which the duality of technique and mind can be better achieved than in that of the clockmaker-jeweler".

The whole is a collection or conglomeration of philosophical maxims, rules, advice, and general remarks mainly based on time and timekeeping. Mostly drawn from horological writers or about horological matters, dating from ancient Greeks and Romans to later writers and to modern newspaper items. Numerous illustrations of old sun dials, clock towers, watches, automata, portraits. Also a lengthy bibliography.

It won't tell you how to repair a clock or watch, or how to go about collecting them, but is a book to be browsed through and picked up every now and then for entertaining pastime. A few short sections on horological history.

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R1174 Gumbel, A**Aktenstücke zur geschichte der mittelfränkischen uhrmacherskunst**

Halle: Zentralverband der Deutschen Uhrmacher, 1928, 53 pp.

History (German).

See Baillie "Clocks and watches, an historical bibliography" which refers to this work.

Documents on the history of middle France horologists.

Contains the decree of 1565 specifying masterpieces for watch and clock makers and the regulations for locksmiths and clockmakers of 1591.

R1175 Gumbel, A**Peter Heinlein der erfinder des taschenuhren**

Nürnberg: Deutsche Gesellschaft für Chronometrie (Halle: Zentralverband der Deutschen Uhrmacher), 2008 (1924), 8vo, 32 pp, 2 ill.

History (German).

Peter Henlein, the inventor of the pocket watch.

R1176 Gustave, Richard**Traite des machines outils**

Paris: Libraire Polytechnique, Baudry, 1895, 4to.

Tools (French).

More than 1 volume.

Treatise on machine tools.

Volume 1 (551 pp, ill) includes the lathe and filing.

Another volume includes watchmaking machine tools, some made by C.J. Hewitt of the Lancashire Watch Co.

R1177 Guye, S**Histoire de l'école d'horlogerie la Chaux-de-Fonds**

La Chaux-de-Fonds: Robert-Tissot, ca 1965, 8vo, 200 pp and 21 plates.

History (French).

Published for the centenary of the school, 1865-1965

History of the school of horology La Chaux-de-Fonds.

R1178 Guye, S; Michel, H**Time and space****Mesures du temps et de l'espace****Uhren und messinstrumente des 15 bis 19 jahrhunderts**

measuring instruments from the 15th to the 19th century

New York: Praeger; London: ; Fribourg: Office du Livre; Zurich: Orell Fussli, 1971 (1970), 25.0 x 26.0 cm, 289 pp, 100 figs, 295 ill, 20 col plates.

History, illustration (English, French, German).

Separate French, German and English editions.

Two sections; clocks and watches (181 pages) and measuring instruments (96 pages), the latter covering globes, spheres, astrolabes, sundials, clepsydrae, hour glasses and topographical instruments.

[1st English edition, fair] With regard to watches, this book only goes as far as about 1800. It provides a vague, at times incorrect, general history with emphasis on appearances and almost no technical information. Statements are presented as fact without supporting references, and when the authors say that John Harrison's "first clocks were simple ones made of wood" I wonder how much confidence one can have in the rest.

The text is partly compensated for by some excellent black and white photographs of early movements (especially stackfreeds) and very good tipped-in colour plates of enamel cases.

At times an interesting introductory book, but only marginally better than a "coffee table" volume. The main problem is I cannot understand why it was published. The lack of a bibliography and the inadequate text means it is of little use to the beginner, and it is too simplistic for anyone else. A lavish production with no-where to go?

R1179 Guyot, E**Dictionnaire**

des termes utilises dans la mesure du temps

Switzerland: Chambre suisse de l'horlogerie, 1953, 8vo, 121 pp, ill.

Bibliography, dictionary (French).

A dictionary of terminology for horology. It includes a bibliography.

- R1180 Guyot, E**
Histoire de la détermination de l'heure
 Switzerland: Chambre suisse de l'horlogerie, 1968, 8vo, 246 pp.
 History (French).
- R1181 Guyot, E**
Histoire de la détermination des longitudes
 Switzerland: Chambre suisse de l'horlogerie, 1955, 254 pp, ill.
 History (French).
 Discusses various methods including Harrison, Berthoud chronometers, methods of compensation, work of Neuchatel Observatory, electric telegraph, etc.
- R1182 Gygax, R**
Contribution a l'amélioration du réglage des montres ancre
 Ecoles suisses d'horlogerie, manuel a l'usage du praticien
 La Chaux-de-Fonds: Le Groupement des Fabricants Suisses de Spiraux, 1968, 8vo, 92 pp, ill.
 (French).
- R1183 Haag, J**
La théorie du spiral
 et ses applications a la chronométrie
 Paris: Institut Henri Poincare, 1930, 54 pp, ill.
 Theory (French).
 Extract from the Bulletin of the Société Mathématique de France. The article is available as a pdf file.
Haag was the director of the Institute of Chronometry at the University of Besançon.
- R1184 Haag, J**
Les mouvements vibratoires
 Paris: Presses Universitaires de France, 1952 to 1955, 268 pp.
 Technical (French).
 In two parts published in 1952 (268 pp) and 1955 (about 260 pp).
- R1185 Haag, J; Chaleat, R**
Problèmes de théorie générale des oscillations et de chronométrie
 Paris: Gauthier-Villars, 1960, 412 pp.
 Theory (French).
- R1186 Habinger**
Tourbillon konstruktionen bei armbanduhren
 1984.
 (German).
 Article in AU.
 Tourbillon construction for wristwatches.
- R1187 Hachette**
Traite élémentaire des machines
 Paris:, 1819 (1811), 8vo, 304 pp, 32 fld plates.
 Technical (French).
 Listed in Tardy.
 The 1819 second edition is available as a Google Book PDF file, but the plates are scanned folded and so they are useless..
 Elementary treatise of machines.
 Chapter 2 "Des machines élémentaires, et principalement des engrenages" (63 pages) covers epicycloidal gearing. There is no mention of clocks or watches.
A part of this is quoted in Moinet "Nouveau traite général, élémentaire, pratique et théorique d'horlogerie".
- R1188 Hackett, FE**
E. Howard, the man and the company
 USA: National Association of Watch and Clock Collectors, 1962, 22.5 x 15.0 cm, 16 pp, 2 ill.
 History (English).
 NAWCC Supplement No. 1
 Compiled by F.E. Hackett from the notes of P.L. Small. In two parts: The man, 8 pages, and The company, 8 pages.
[1st edition, good] An interesting article, which presents information as facts and does not attempt to interpret events. It provides a good history of Howard and his company.
- R1189 Hadfield, GK**
A private collection of horological books and two clocks
 the property of G.D.D. Cummings of Walton-on-the-Hill
 England: GK Hadfield, 1978, 24 pp.
 Bibliography, collection (English).
 Sale catalogue of 124 horological books.

R1190 Hadfield, GK**Lot 104 rare, antiquarian and out of print books**

England: G.K. Hadfield, 1996, 21.0 x 15.0 cm, 25 pp, 3 plates.

Bibliography, collection, catalogue (English).

Sale catalogue of 368 items from the approximately 440 books in the Vitale collection.

[1st edition, good] A quite interesting catalogue, but I have included it more for the history of the books than for its usefulness.

Francis X. Vitale had his employer pay the bills when he bought \$12 million worth of top quality French clocks (and the books); he was a senior corporate officer and told his suppliers to bill the company for consulting services.

He then ran a very up-market clock shop in a museum-gallery he built in Spring Lake USA which displayed his world class, museum quality collection, but priced in a manner that hardly anything was sold. Many who had seen the place assumed it was a bogus business with no real intent to sell but allowing him to deduct losses from his tax return. The authorities investigated and uncovered that Vitale had no receipts; so the embezzlement was discovered.

The collection was impounded, but Vitale was allowed the appearance of an orderly, voluntary liquidation of a "world class collection" because more money could be realized that way than by a sale of confiscated property. The New York Times said Vitale "has overseen the auctioning off of the objects of his desire without the slightest hint to the world that it was a fire sale ordered by his accusers to make restitution and by his prosecutors as a condition for some leniency".

The collection was sold by Christies in 1996 and the book collection was included as a single lot, effectively limiting bidding to a few horological booksellers and wealthy collectors. The sale realized much more than the embezzled sum and the tax debts so that Vitale paid full restitution and his lawyer appealed for leniency, claiming a mental disease, an "addiction to clocks".

In a brief essay Vitale composed for the sale of his collection he wrote "My passion for horology embodies the desire to share with others three hundred years of incredible ingenuity and craftsmanship and to contribute greater attention on the brilliant master artists who contributed so much to art and science."

In January 1998 he was sentenced to 30 months in prison.

Unfortunately 70 or more items from the book lot were presumably sold before the catalogue was produced, as they would have been amongst the most interesting.

See Muensterberger "Collecting an unruly passion" for other examples of uncontrolled collecting.

R1191 Hadley & Co**Wrist watch attachments, that's all**

USA: The Hadley Company, 1928, 11 x 8.5 inch, 107 pp, ill.

Catalogue (English).

Catalogue of wrist watch straps, clasps etc.

R1192 Hagans, OR**Beauty and art from the past**

Colorado: OR Hagans, ca 1957, 23.0 x 15.5 cm, 11 pp, 41 ill.

Illustration (English).

Undated but one source gives 1957.

A pamphlet containing 40 photographs of pocket watches (including 2 views of a pistol form watch) in the Ford collection of the Edison Institute. There is also a cover illustration of a sundial.

[1st edition?, mediocre] Mediocre illustrations with uninformative text (sometimes transposed). Its main virtue is that it was given away.

R1193 Hagans, OR**Odd but true, facts not fiction about time**

Colorado: Hagans Clock Manor Museum, 1964 (1945), 23.0 x 15.5 cm, 46 pp, ill (32 pp, ill).

Miscellany (English).

A booklet of cartoon style illustrations and text on little-known facts about clocks and watches.

It is available as a PDF file.

[2nd edition? 1964, mediocre] Some of the bits are vaguely near the truth while others are obviously nonsense; such as references to 13th and 14th century watches. Most are unverifiable, uninteresting and (in places) contradictory. The only merit is a meaningless mention of Australia!

The style and a couple of remarks in the text indicate these comic-strip bits date from about 1941.

R1194 Hahn, PM**Werkstattbuch**

Stuttgart: Württembergisches Landesmuseum, 1994 (ca 1775), 4to, five volumes, ill.

History, technical (German).

Volumes 1-4 are said to have 1236 pp, 1070 ill.

Facsimiles of Hahn's work books written between 1756 and 1790; vol 1 1756-1774, vol 2 1771-1773, vol 3 1774-1784, vol 4 1786-1790.

The books were printed between 1987 and 1994.

Perhaps all clocks, although Hahn did make watches (one is illustrated in Meis "Pocket watches from the pendant watch to the tourbillon").

Leiter has produced two books (not listed here) about Hahn: "Kleine himmelsmaschine von Philipp Matthaus Hahn, kornwestheim und echterdingen" (reconstruction of a small clock) and "Die Pforzheimer

uhrenmanufaktur von 1767-1790".

R1195 Hainaut, RL**Nouveau cylindre perfectionne incassable**

Rouen., 1886, 8vo, 21 pp, 1 plate.

Technical (French).

Tardy gives the title as "Étude historique des progrès de l'échappement à cylindre, nouveau cylindre perfectionne incassable"

R1196 Hainaut, RL**Recherches sur l'origine de l'horlogerie**

Rouen., 1896, 8vo, 118 pp, 1 plate.

History (French).

Referenced in Morpurgo "The origin of the watch" and Robertson "The evolution of clockwork".

Researches on the origin of horology.

R1197 Haindl**Konstruktion der verzahnungen ...**

Stuttgart., 1830, 8vo.

Technical (German).

Listed in Robertson "The evolution of clockwork".

The construction of gears.

R1198 Haines, Reyne**Vintage Wristwatches**

USA: Krause Publications, 2010, 11.25 x 8.5 inch, 256 pp, ill.

Illustration, price guide (English).

For those with time on their hands (5 pages, Identifying and evaluating wristwatches, What's it worth?); Watches listed alphabetically by maker (235 pages); Watch terminology (2 pages); Resources (2 pages, Clubs and associations, Web sites and online groups). There is an index.

[1st edition] Publishers Description:

Fashion with function! Step into the fascinating world of watches with this stunning book which features everything from World War I-era "trench watches" to diamond-studded timepieces of today.

Written by Reyne Haines, noted appraiser and re-occurring antiques expert on "The Early Show," Vintage Wristwatches features intriguing (alphabetically arranged) histories about American and European watch manufacturers of the past and present, along with more than 1,200 photographs of collectible wristwatches. Each watch is accompanied by a short description, including values paid at auction. In addition to identifying facts and photographs, this book also contains an extensive glossary of common watch terminology, expert tips for identifying wristwatches, and accepted factors considered when determining the value of a watch.

Watch lovers, avid watch collectors or anyone with a sense of fashion will be entertained as they step into the world of watches in "Vintage Wristwatches". This fascinating read is a combination of history, art and the collectible aspects of these fabulous wonders.

Flip through 1,200 colorful photographs, values and descriptions for the world's finest watch brands: Rolex, Philippe, Patek, Cartier, Gruen, Omega, Bulova, and Hamilton. You will be educated about these small works of art and enjoy the rich histories of American and European manufacturers past and present.

This hardcover book also features tutorials for identifying watches, guides to determining a wristwatch's value, and a glossary of watch terminology used by collectors. Wristwatch aficionados are passionate about their hobby, and "Vintage Wristwatches" captures that enthusiasm with elegance.

R1199 Hajn, M**Zaklady jemne mechaniky a hodinarstvi**

Prague., 1953 (1953), 8vo, 409 pp, 389 ill.

Technical (Czech).

Clock and watch makers' guide.

R1200 Haldimann, JA**La montre**

1956, 50 pp, ill.

History? (French).

"Un produit vedette de l'industrie suisse. L'horloger a son établi. Vue cavalière de l'horlogerie suisse. L'importance de l'horlogerie dans l'économie nationale. Au royaume de la précision. La montre suisse sur les marches du monde. La production horlogère suisse."

"*Superb coloured leaflet of watches, illustrated in great detail.*"

R1201 Haliburton, R**The clockmaker**

or the sayings and doings of Samuel Slick, of Slickville

Toronto: Musson (: Routledge) (Paris:) (Philadelphia: Lea & Blanchard) (Boston: William White) (London: Richard Bentley), ca 1936 (ca 1838), 19.0 x 12.0 cm, 425 pp, few plates, (192 pp) (262 pp).

Miscellany (English).

Published in three volumes or "series". The date of the first series has been given as 1837 or 1838.

There are several printings in different places and different paginations.

A centenary edition of all 3 series in one volume was published about 1936.

The 1838, 1843 and 1848 editions are available as Google Book PDF files.

A series of monologues by Sam Slick in which he talks about people he has met in America, their circumstances and the conversations he had with them. By assessing individuals and their lifestyle he provides a commentary on America's social and political organisation.

[second series 1839, good if irrelevant] *Other than the title and a fleeting reference to clocks, this book has nothing at all to do with horology! Its appearance in the lists of horological booksellers is almost mystery.*

But it is an interesting book and well written, although I find it somewhat difficult to read because of the style. Being ignorant of American history I cannot comment on its accuracy.

Some further information may be found in Lathrop "Sam Slick the clockmaker", NAWCC Bulletin, No 297, August 1995, 508-9.

R1202 Hall, Eugene E

Staff making and pivoting

USA: Arlington Book Co (USA: Adams Brown Co) (Chicago: Hazlitt & Walker), 1993 (1896), 21.0 x 13.5 cm (19.5 x 13.0 cm), 46 pp, 25 ill.

Repair, tools (English).

Reprinted in 1910 with a limited edition reprint in 1979 and later reprints.

"Containing complete directions for making and fitting new staffs from the raw material".

[1st edition, 1910, excellent] *A clear, thorough description of staff making with some useful information on pivoting. A pleasure to read.*

R1203 Hamilton Watch Co

Hamilton watch genuine materials

USA: Hamilton Watch Co., ca 1951, 28.5 x 22.0 cm, 44 pp, ill, plates.

Identification, repair (English).

A regularly produced materials catalogue. It includes illustrations of movements, descriptions and serial numbers of grades, illustrations of setting levers and clicks, detailed parts lists, dials and hands.

[1951, fair] *Of some interest but, other than for genuine parts numbering, most of the contents is available in other books in more convenient form.*

R1204 Hamilton Watch Co

Pursuit of accuracy

reprint (USA: Hamilton Watch Co.), 1940 (1937), 7 x 5 inch, 30 pp, ill.

Description, history (English).

Contains company information and a description of manufacturing processes.

R1205 Hamilton Watch Co

The Hamilton watch

the rail road timekeeper of America

reprint (USA: Hamilton Watch Co.), nd (ca 1900), 18 x 12 cm, 32 pp, ill.

Catalogue (English).

Several printings, including 1912. The reprint is of the 1900 edition.

Sales catalogue and almanac with information about watch models and testimonials from previous owners.

R1206 Hamilton Watch Co

What makes a fine watch fine?

USA: Hamilton Watch Co., 1947 (1944), 18 x 13 cm, 40 pp, ill.

Description (English).

This booklet was produced to accompany a film made by Hamilton.

"The inside story of a land of lilliput where little things make a big difference". A description of the Hamilton factory based around a tour of the factory by Fulton Lewis.

This is mentioned (with a quote) in Sauers "Time for America - the Hamilton Watch Company 1892-1992".

R1207 Hamilton Watch Co

What makes a fine watch fine?

How a watch works, the inside story of a fine watch

(USA: Hamilton Watch Co), 2009 (1947), 40 minutes, DVD.

Description, advertising (English).

Two advertising movies.

["What makes a fine watch fine?", very good] *This is a 21 minute black and white film made in 1947. After showing 3 people being presented with Hamilton watches, the film takes us into the factory and shows us some of the processes involved in making a watch; including screw making, wig-wag polishing, the steel mill and drawing machines for making balance-springs, an automatic balance-spring vibrator, making bread dough for cleaning parts, gauging sizes of parts, and the miniature oil refinery for watch oil. Most operations shown involve human operators rather than automatic machines.*

[How a watch works, the inside story of a fine watch, very good] *This is a 19 minute colour film made in 1949. It explains how a watch works using a very large model. In particular, the explanation of the escapement is very good and it is well worth watching.*

R1208 Hamilton, DT**Watch movement manufacture**

methods employed by the South Bend Watch Co.

USA: Greg Frauenhoff (USA: Machinery), 2005 (1912), 28.0 x 22.0 cm, 20 pp, ill.

Technical, watch making (English).

Printed on demand?

A series of 4 articles published in the journal "Machinery" in 1912 which give details of manufacturing methods used by the South Bend Watch Co.

The first article discusses calibre design and watch components (the train, mainspring, compensation balance and jewels). Part 2 describes machinery to make master plates (the transfer chuck), measuring gauges, master thickness gauges, sub-press punches, three spindle drill for dial feet holes, facing plates, numbering plates and dial screw tapping. Part 3 describes machines for making and inserting steady pins, screw making, staff turning, pinions, wheels, escape wheels, grinding and polishing conical pivots, polishing pinions, staffs and pinion leaves, and grinding steel escape wheel teeth. Part 4 describes machines for damaskeening, setting jewels (the jewelling caliper tail stock), polishing and gauging jewels, making enamel dials, and printing dials. It concludes with some remarks on finishing, including, temperature adjusting cabinets and balance screw scales.

[reprint, good] *It is clear that the author is an engineer with only some knowledge of watches; his explanations of watch movements are just adequate whereas his explanations of machines are competent. Unfortunately the photographs and drawings are not helpful. The photographs are too small and of poor quality. The drawings are engineering plans overburdened with details and datum lines so that the operation of the machines is obscured.*

The machinery and methods described here do not differ much from those of 36 years earlier (David "Rapport a la Societe Intercantonale des Industries du Jura") and it seems there had been very little progress over that time.

Despite the problems, the articles provide a useful insight into the methods used by South Bend in 1912. Perhaps most interesting is the extent to which non-automatic or semi-automatic tools were used requiring much human intervention. Hamilton notes that "all parts ... are assembled by expert watchmakers", which may be true of finishing, but definitely not of manufacture. The fundamental point of machinery is to reduce costs by employing labour with little training (and as few of them as is possible).

A far better reproduction of these articles has been printed in Hamilton "Watch movement manufacture, South Bend Watch Company 1912".

R1209 Hamilton, DT**Watch movement manufacture**

South Bend Watch Company 1912

USA: Lindsay Publications (USA: Machinery), 2005 (1912), 21.5 x 14.0 cm, 64 pp, ill.

Technical, watch making (English).

A series of 4 articles published in the journal "Machinery" in 1912 which describe manufacturing methods used by the South Bend Watch Co. For details see Hamilton "Watch movement manufacture, methods employed by the South Bend Watch Co."

In addition the book contains "Watch Case Manufacture", also published in "Machinery" in 1912 in 2 parts. This covers: Preparing the gold-plated bars, Types of watch cases manufactured, Making the watch case center, Threading the case center, Making the cap and back, Threading the back, Making the bezel, Construction and operation of the pendant set, Electrically-operated engine turning machine, Swiss brocade machine, and Special designs and colored gold.

[reprint, good] *The first part is identical to Hamilton "Watch movement manufacture, methods employed by the South Bend Watch Co." (which see). However, this book is much preferred over the other because the printing is far better and the photographs are very good.*

The second part provides a detailed description of case making by machinery; filled gold manufacture followed by case body, back, threading, bezel, bow, case polishing and engine turning.

R1210 Hamilton, JL**Timing manipulations**

USA: AWI Press (USA: Roberts Publishing Co), nd (1950), 22.0 x 15.0 cm (23.5 x 15.5 cm), 63 pp, 40 ill, 3 loose fld plates.

Repair (English).

Although the facsimile edition is dated 1974 it has been reprinted since then.

Seven sections detailing practical techniques for adjusting watches. These cover: Speeding up (8 pages); Slowing down (8 pages); Gravitational errors (13 pages); Isochronal errors (6 pages); Equalizing dial and pendant positions (2 pages); Out of beat conditions (3 pages); and Temperature adjustments (6 pages). The 3 folding plates are: A labelled drawing of the escapement listing all the manipulations described in the book; A drawing of a balance labelled to show the effects of gravity on an out-of-poise balance; and A drawing of an overcoil balance spring with a list of the 5 methods given in the book to correct gravitational errors.

[1st edition, fair] *Speeding up the rate consists of 9 methods: Close regulator pins, bend the pins away from the stud, bend the pins away from the balance staff, close one of the banking pins, turn in the mean time screws, and move the regulator. To speed up the pendant positions raise the hairspring stud or lift up the overcoil. And to speed up dial positions bend the overcoil in. Each method is explained factually.*

Except for than adjusting mean time screws and the regulator, the methods must be considered suspect. In addition, the positional adjustments should be dealt with in that section and not here.

Slowing down is basically the same instructions in reverse, which is not surprising.

Correcting gravitational errors begins with an explanation of inner pinning points and their effect, and the effect of overcoils. This section contains the strange statement "The hairspring is a lever. Its sole purpose ... is to bring the roller jewel to dead center, unlocking the escapement"; this seems to contradict the last 250 years or so of the theory of springs. The section then describes a theoretically correct inner terminal curve, poisoning the collet, manipulating the inner curve, bending one or both regulator pins in opposite directions, and manipulating the body of the hairspring. Again, the methods are a mix of the sensible and the peculiar, especially as different manipulations of regulator pins are likely to produce unwanted effects in other aspects of adjusting.

Isochronal errors are fixed by adjusting the overcoil or the regulator pins.

To equalize dial and pendant rates adjust the regulator pins. Also check the roller jewel, the pallet arbor, escapement lock and magnetism. At this point it is apparent that the regulator pins are liable to break as a result of all the bending being done to them!

Out of beat causes begins with the obvious (alignment of the escapement at rest) and then suggests a number of other causes which are not out-of-beat problems but problems with the general condition of the watch.

Temperature adjustments are explained normally. After which there is an 8th section, not mentioned in the table of contents, on the condition of the regulator pins. These must be "straight up and down" despite the previous sections telling us to bend them.

A book of simple explanations of simple methods for adjusting watches, some of which are as best dubious and at worst fanciful.

R1211 Hampel, H

Automatic wristwatches from Switzerland

Automatic armbanduhren aus Schweiz

Munich: Callwey; USA: Schiffer, 2007 (1992), 28 x 25 cm, 348 pp, 525 ill, 115 col ill.

Dating, history, identification, makers, price guide (English, German).

Separate German and English editions. Also printed in 1994? and 1997.

A history of the development of automatic wristwatches and detailed design and dating data. Over 200 watches are shown, each illustrated by dial, movement and partly disassembled movement views.

[Review by Henry B. Fried] *This treatise first appeared with German text in 1992. Here it is translated by Dr. Edward Force, Central Connecticut State University. Heinz Hampel is a practicing engineer who has been an ardent collector of self-winding wristwatches for over twenty years.*

Two hundred watches are covered, each shown in three different views. Almost all have one view in color. According to the author, this represents about 85% of various Swiss self-winding watches.

The book is divided into eight main sections: a Foreword; History of The Automatic Wristwatch; Early Automatic Watches; Automatic Catalog (by manufacturers); Technology of the Automatic Wristwatch; a one-page Reference; four pages devoted to an index, and a final two pages of price guides by the American, Gordon S. Converse, for watches selected and pictured in this book.

The early part of this book treats the history of the self-winding wristwatch with excellent views of the Harwood product and its 1924 patent. Other early self-winding wristwatches are shown in photographic and technical detail with good textual coverage. The "Rolls," with six models, Glycine with two models, La Champagne "WigWag" model, Wyler's lever winding (c1931). Fortis' "Autorist." Bulova-Bucherer's roller automatic, Frey & Co.'s "Perpetual" of 1935, another Bulova, "Aster" patent of 1933 make very interesting reading and viewing of these pioneer systems of storing mainspring power through the wearer's wrist action.

Heinz Hampel includes only those Swiss makers that marketed their own products. Exceptions in this book are Mido, Zodiac and Vacheron-Constantin who, although using other's ebauches, nevertheless aided in the development of such watches and their (reserved) calibers. Most often pictured are the watch itself in full color, the movement with all parts assembled, and a third which reveals the self-winding system. The pioneer products of A. Schild, and Eta, the most prolific producer, are comprehensively covered.

Rolex is given its due credit with details of early models and later improvements. However, only ten pages and seven different calibers are covered. Like other listings, Rolex is catalogued by a full page with an eleven-column format containing the caliber number, diameter, width and thickness in lignes and mm, and jewel count. Also the vibrations per hour, running reserve in hours, and additional notes such as interchangeability and year of debut are represented in the book. This section also includes Rolex's various contributions and its place in history which made the self-winding wristwatch popular and acceptable.

All watch companies, their history and details, are offered in alphabetical order. The photos of the watches, their automatic systems and pertinent details are shown in sharp focus. The author has done a great job. If names such as Cartier, Benrus, latter day Gruen, etc., are not included, it is because the names on the dial are not the actual manufacturer of the movement. Thus the names on the dials and on the movement pictured, for the most part, are those of the original manufacturer. The original systems to achieve automatic storing of mainspring power make for informative and interesting viewing. In all, this is a high-class book with exceptional broad coverage which should be a "must" for anyone doing repairs

or collecting such watches. The quality of paper, binding and text in this book and its reasonable price should make it quite appealing.

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R1212 Hampel, H**Automatic wristwatches****Automatik armbanduhren**

from Germany, England, France, Japan, Russia and the USA

aus Deutschland, England, Frankreich, Japan, Russland, USA

Munich: Callwey; USA: Schiffer, 2007 (1996), 28 x 25 cm, 216 pp, ill (192 pp, 221 ill, 183 plates).

Dating, identification, makers, price guide (German, English).

Separate language editions.

Also printed in 1997

The book contains detailed design and dating data for 123 watches from 35 companies, each illustrated by dial, movement and partly disassembled movement views. With a price guide.

[Review by Eileen Doudna] German-language publications by Verlag Georg D. Callwey seem to contain a wealth of information which is out of reach of the non German-speaking reader. Schiffer Publishing presents here a very welcome translation of a recent Callwey publication.

This book is a companion volume to Hampel's earlier publication Automatic Wristwatches from Switzerland (Schiffer, 1994). This volume documents self-winding wristwatches developed outside of Switzerland after World War II. One hundred twenty-three calibers are presented. Three pictures, many in color, are given of each watch, which include the dial, the movement and the movement partially dismantled. Brief information on the date of manufacture and technical aspects of the watch accompany the photos.

The greatest portion of the book is devoted to wristwatches of German origin (15 companies represented), with England represented by one company; France by five; Japan by five; Russia by seven, and the U.S. by two (Elgin and Timex). For each company a brief history is given along with a discussion of the calibers developed by the company and a description of each of the calibers. A chart is given indicating, in easy-to-read format, the caliber, its measurements, additional functions, vibrations / hour, jewels, rate, brief notes and the year production began or that it was introduced to the market.

The wonderfully clear photos, the concisely presented technical information and the brief company histories make this an extremely valuable addition to the literature on the history of wristwatches.

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R1213 Hanke, J**Die uhrmacherlehre**

leitfaden der praktischen und theoretischen uhrmacherei

Leipzig: Wilhelm Diebner, 2007 (1912), 22 x 15 cm, 344 pp, 169 ill (352 pp, 169 ill) (283 pp, 153 ill).

Repair, technical, theory, tools (German).

Three editions in 1912, 1920 and 1923 with a modern reprint of the 3rd? edition.

Manual of practical and theoretical horology for the instruction of masters, assistants and apprentices.

R1214 Hantz, G**La décoration de la montre**

du bijou, de la tabatière a Genève a la fin de XVIII siècle et au commencement du XX

Genève:, 1914, 14 pp, ill, 1 plate.

History (French).

Listed in Tardy.

The decoration of the watch, jewellery and the snuff-box in Geneva at the end of the 18th century to the start of the 20th.

R1215 Hapsburg, G von; Lopato, M**Fabergé, imperial jeweller**

Fabergé, imperial jeweller

St. Petersburg: State Hermitage Museum, Washington, D.C.: Fabergé Arts Foundation, 1993, 8.5 x 8.5 inch, 476 pp, ill.

History, illustration (English).

Faberge in our time; History of the house of Faberge; Chronology of the house of Faberge in its time; New insights into Faberge from Russian documents; A few remarks concerning imperial easter eggs; Imperial easter eggs, a technical study; New light on the workshop of Henrik Wigstrom; The Moscow workshops; Faberge and the Paris 1900 exposition universelle; The London branch; Faberge drawings in the Hermitage collection; Faberge's houses in St. Petersburg; Kshesinskaia's Memories; A treasure found in Solianka Street; Tracing Faberge's treasures after 1918; Faberge and America; 'Faux berge'; Catalogue of works; Hallmarks; Birbaum memoirs.

May not contain watches.

R1216 Harcourt-Smith, S**A catalogue of various clocks, watches, automata**

and other miscellaneous objects of European workmanship dating from the XVIIIth and the early XIXth centuries, in the Palace Museum and the Wu Ying Tien, Peiping

Peiping: Palace Museum, 1933, 26.5 x 13 cm, 31 pp, 41 plates with tissue guards, slip case. Collection (English).

41 tissue guarded photographic plates each showing 1 clock, and 32 pages of text describing the items. "A catalogue of items found in 2 museums in Beijing (Peiping was the name of Beijing from 1928-1949). The collection, although but a fragment of former glories, is nevertheless one of the most important of its kind in existence; it is at once a monument of English mechanical skill and fine workmanship, and a valuable document bearing on the history of Sino-European commerce in the eighteenth century" (author's introduction). Most of the clocks are English and all but 6 date from after 1760."

See also China "Jewelry and accessories of the royal consorts of Ch'ing dynasty".

R1217 Harris, HG

Advanced watch and clock repair

New York: Emerson Books, 1978 (1973), 21.0 x 14.5 cm, 272 pp, 158 ill.

Repair (English).

Several printings.

20 chapters in 3 parts:

Part 1 General: The workshop (21 pages); Bench craft (21 pages); The turns (24 pages); The lathe (11 pages); Gearing (23 pages); Cleaning machines (6 pages); Timing machines (4 pages); and Calendar work (10 pages).

Part 2 Watches: Servicing (12 pages); Stop watches and chronographs (12 pages); Self-winding mechanisms (9 pages); Water resistant cases (8 pages); and Electronic watches (24 pages).

Part 3 Clocks (68 pages).

[1st edition, mediocre] In the preface Harris says this is a follow-up to his first book "Handbook of watch and clock repairs" and he has "assumed that the reader ... is capable of dismantling and hand cleaning a simple movement". Further it is indicated that it is for the amateur and includes "subjects and techniques that are a little more advanced".

Firstly, see my review of his "Handbook of watch and clock repairs" to save me repeating it here; my general remarks are applicable to this book.

Apparently the reader didn't understand the previous descriptions of basic tools, using the turns, wheel depthing and disassembly as these are repeated (although, on the whole, they are covered much better than in the former book). And we at last get a mention of the watchmakers lathe; tools have advanced since 1961!

But Part 1 is strange. The reader, who can only clean, is asked to file out a wrist watch setting lever, make runners for his turns and turn a balance staff. Rather a big jump for someone who probably can't fix a loose cannon pinion. And the section includes vague descriptions of cleaning machines and timing machines, recommending that watches can be cleaned without disassembling them (both wrong and obnoxious). Part 1 ends with a general outline of calendar work with no information on repair; why it is here and not at the end of Part 2 is one of the mysteries of life.

Part 2 begins with a few remarks on fault finding, keeping business records (I thought this was for amateurs?) and disassembly. It goes on to describe chronograph, self winding and electronic watch mechanisms without any repair information at all. There is a quite good explanation of the Bulova Accutron, but nothing else of interest.

Part 3 (which I didn't read) seems to be equally devoid of repair information.

So it isn't a repair book at all.

I get a very strong feeling that I have read most of it before. I have discovered that a few bits are very similar to Gazeley "Watch and clock making and repairing", and the content and illustrations are remarkably like de Carle in style. Although I haven't found anything I can pin down as plagiarism, I have the impression that Harris may have largely borrowed from other English authors, and fairly mindlessly.

R1218 Harris, HG

Collecting and identifying old watches

New York: Emerson Books, 1979 (1978), 20.5 x 14.5 cm, 256 pp, 36 figs, 47 ills, 5 plates.

Collecting, description, history (English).

Reprinted in 1979.

Nine chapters: The pioneer watches 1500-1600 (13 pages); Novelty and adornment 1600-1675 (11 pages); Birth of the balance spring 1675 (6 pages); The first balance spring watches 1675-1750 (53 pages); The marine chronometer 1725-1785 (27 pages); The development of precision watches 1750-1830 (40 pages); Supremacy returns to France 1770-1830 (22 pages); Styles of decoration (7 pages); and Some famous makers (18 pages).

Followed by a glossary, chronology, rulers of England and France, English hallmarks and a bibliography. The colour plates show enamel watches from 1710 to 1840.

[1st edition reprint, fair?] A general survey of watches to 1830.

After reading many introductory books I think I have become more critical, perhaps jaded, and I found this one rather dull. I can excuse quite a lot if an author excites me, but I am not very forgiving when I have to suppress the urge to stop reading.

After the preface, which talks in terms of buying and selling for financial gain, the rest is a reasonably good survey with enough precision to be useful; the discussion of pillar and balance cock designs stand out. Also, some parts, notably the history of the involvement of Hooke and Tompion, are enjoyable. I feel

these rescue the book and, although more interesting introductions exist, it has some merit. Unfortunately the illustrations of watches are not very good (in the 1979 printing) and are not mentioned in the text. However there are some glaring errors and other parts are poor, being too superficial. To condense a history of 300 years into a few pages requires the author to gloss over much and I expect such a book to lack depth. But I expect it to be correct and thoughtful. For example, Maskelyne would have squirmed in his grave when Harris wrote that the purpose of the Queen Anne act was to create a timepiece.

Being thoughtful is more subtle. Harris writes that the "Italian clockmakers appear to have underestimated the importance of their idea (the main spring) because it was left to the clockmakers of Germany to exploit this new source of motive power". There are at least four problems with such "historical analysis"; the presumption that clockmakers were not very bright, the assumption that a place called Italy existed, the too superficial consideration of cost and the overlooking of social conditions.

A cursory and completely inadequate glance at history reveals that about 1500 "Italy" could be considered a loose confederation of states, there were relatively few people wealthy enough to afford clocks, the cities Rome, Milan and Florence were invaded by the French, and Florence suffered a syphilis epidemic and famine. Indeed, one book says "the century thus begun is the most disastrous in Italian history". In case it needs to be spelled out, making house clocks (let alone watches) requires a stable society with an extremely wealthy ruling class, and the demise of Italian watchmaking has far more to do with war and pestilence than with the stupidity of artisans. I don't think I have read a sensible analysis of why watchmaking moved to France and Germany, but the link to France seems clear enough and I am sure a half-decent historian could provide a clear picture in terms of the movement of wealth, power, syphilis and the artisans themselves.

Similarly, Chapter 2 begins by stating that "throughout the sixteenth century watchmakers continually strived to improve the timekeeping of their movements". Now, such a statement may be valid for clockmaking (where the pressures of science and the churches were felt) but watchmaking? To what extent were watches the "toys" and status symbols of the rich and to what extent were they instruments (just as today Rolex watches are used more for display than time telling)? And from where did the pressures to improve them come? Watchmakers may have striven, but I am sure they strove in the direction their customers wanted more than towards abstract goals.

I have no objection to brief, generalised histories in introductory books. But I think the author should make some attempt to present a realistic summary which doesn't mislead the novice. Unfortunately, I think Harris misleads and he does this in the context of rather ordinary writing. So that, although the book is useful and has a lot of good points, the overall effect is unsatisfactory.

R1219 Harris, HG

Handbook of watch and clock repairs

New York: Emerson Books (London:) (USA: Arco), 1984 (1961), 19.5 x 13.5 cm, 175 pp, 92 ill.

Repair (English).

Several printings (including 1961, 1967, 1969, 1973, 1975 and 1984) both in boards and soft cover.

24 chapters in 3 parts:

Part 1 General: Workbench and tools (12 pages); Materials (2 pages); and The turns and their uses (6 pages).

Part 2 Watches: The movement (6 pages); Overhauling and cleaning (22 pages); Wheel trains (3 pages); Hands, dial and motion work (6 pages); Keyless work (5 pages); Barrels, mainsprings and fusee chains (8 pages); Escapements (14 pages); Balances (10 pages); Shock proofing (6 pages); cases (4 pages); and Magnetism (3 pages).

Part 3 Clocks (55 pages) includes the cylinder escapement.

There is a 2 page appendix on mail ordering.

[1st edition, mediocre] Harris was an English watchmaker and the book contains nothing directly relevant to American watches or tools, despite being published in America.

The preface states that this book was written for the novice, "with no knowledge of the subject and I have endeavoured, therefore, to concentrate on the basic principles rather than advanced work".

Well, if it is a book for the novice, why does it begin by explaining how to use the turns? And why, in chapter 5 (watch overhaul and cleaning), is the reader referred to chapter 13 so he can get his watch out of the case? And why discuss centre arbor peening in chapter 5 when the unfortunate learner hasn't even worked out how to pull the damned thing apart?

Too often I have read books for the beginner which are so badly thought out that I suspect they were written simply to gratify the authors' egos. Any vaguely competent teacher would start with clocks and graduate slowly to finer work. And introduce topics only when the necessary experience and skill had been developed, even if this means returning to the same aspects several times. But no. Harris, de Carle and others fail to ask "what does the reader know?" before setting pen to paper and they produce books that make me cringe. Maybe they deliberately try to discourage amateurs?

Having vented my spleen I had better justify it. What Harris describes is sensible, but patently ridiculous for a beginner. To explain the use of turns in 6 pages and then never refer to turning again (except in passing) is unacceptable. Beginners often start with a watch, a few screwdrivers and a lot of desire. Such a person can successfully pull a watch apart and put it back together and achieve a sense of accomplishment. And then go on to try cleaning and oiling. And then go on to other tasks; slowly from the simple to the more complicated. And later, much later, learn to turn. Of course beginners should start with clocks and the sections of the book should be reversed.

This text fails as de Carle fails. An experienced repairer who has already developed the necessary skills can detect and repair faults as he comes across them; he willpeen arbors, round up wheels and straighten balance springs as he goes. But the beginner cannot. Harris, de Carle and others describe in the order an experienced person would do tasks and so write poor books for the beginner. These books make some sort of sense if we assume they are written for an English apprentice working under his master, which is how the authors got their education. Only de Carle's "With the watchmaker at the bench" recognises this; but it was written when the system still existed, and for the teacher, not the student.

The book is also inadequate because much of the text tersely explains what without any adequate explanation of why. For example, "we must test the depthing" is followed by 5 lines on how to do it without the slightest indication of what to look for! And a little later half a page is spent on fusee chain repair (no diagrams) in a book devoted to modern wrist watches. Also I found the two methods for winding in a mainspring by hand wrong and incomprehensible respectively. Indeed, the book is largely a fault finding text because the explanations of what to do when a fault is found are often quite inadequate.

No book is a complete waste of space. The plates and illustrations are very good, and the content is acceptable even if the presentation is poor. If you know a beginner get him Jendritzki and Fried. Later he can have a look at this one.

R1220 Harris, JC

The clock and watch makers american advertiser

London: Antiquarian Horological Society, 2003, 12 x 8.5 inch, 554 pp, no ill.

History (English).

"Being a compilation of advertisements of the trade, including those of the mathematical and philosophical instrument makers, published in the newspapers of the American colonies and states 1707-1800".

Transcripts of 2175 advertisements by over 800 tradesmen, with name, subject and date indexes.

[1st edition, review by Fortunat Mueller-Maerki] *Anybody looking for another pretty book about historic American horologists need read no further, there are no pictures in this book, and the layout is strictly utilitarian. But if you are a serious horological researcher, if you are somebody who craves access to hard-to-find primary source material, you will feel deep gratitude that Carter Harris in the late 1970s and early 1980s must have spent countless hours sifting through dusty old volumes of major American Newspapers of the 18th century, painstakingly transcribing every advertisement he could find relating to clock and watch makers and related trades.*

This labor of love produced 480 pages, containing the transcripts of 2175 advertisements by over 800 tradesmen. The compilation covers the time before and after the American revolution, when there was no horological "industry" in America, just a few scattered immigrant clock and watchmakers trying to squeeze out a living under difficult circumstances. Most components and materials, even basic ones like brass or steel, were imported, and scarce, and demand for timepieces was limited. The advertisements provide a rare glimpse into an aspect of horological history, which up to now has been barely documented, in a time when communication and transportation systems were virtually nonexistent, and the only market was local.

These ads run the full scale of detailed product descriptions (often of a specific piece currently for sale), announcements of new business ventures, openings for apprentices, offering of repair services, and the announcements of the captains of trading ships that had reached American ports with varied lists of goods, including horological pieces and related materials. A limited, but fascinating number of entries amount to political lobbying for (or against) certain trade policies and import duties. The advertisements also offer interesting insights into what other, non-horological products and services these craftsmen offered in this period.

Thanks to the comprehensive indexes the book also is a major reference work providing details on the lives, products and business practices of early American horologists unlikely to be found in any of the traditional reference books. Unless you enjoy spending hundreds of hours perusing the historic newspapers yourself - in spite of price of about US\$65 - this book is a good buy. It is a "must-buy" title for any horological library that aims to be a research tool.

Given the propensity of the average reader to prefer ready-made, pre-digested information over access to original source material I am afraid that this book never will be a horological bestseller. Indeed 15 years have passed between the completion of the text and its publication, probably an indication of reluctant publishers. All-the-more the author and the British based Antiquarian Horological Society deserve our gratitude for taking the risk of publishing this important contribution to early American horology.

[Review by Tom Spittler] *Carter Harris wrote The Clock and Watch Makers American Advertiser in 1984 while serving as the Conservator of the NAWCC Museum in Columbia, PA. Mr. Harris failed to find a publisher for what was, and is, an unequaled work, but one deemed to be of limited commercial value. Mr Harris, generous with his knowledge, provided copies of the book to the NAWCC Library and Research Center, Smithsonian Institute, and American Clock and Watch Museum in Bristol, CT. The work became known, informally, as the "Harris Directory."*

While working with Chris Bailey at the Museum in Bristol, I became aware of Mr. Harris's work and used it extensively with Mr. Harris's permission. I ended up with two massive xerox copies of the work. It is very fortunate that the horological community now has a published version of Mr. Harris's book.

At this point readers may be wondering just what this massive book is all about. It is the reproduction of 2,175 advertisements from newspapers of the American colonies and states from 1707 to 1800 plus one

two-page patent specification of 1793 (Appendix 1).

In this work the complete advertisements are presented. This gives the reader/researcher a much better feel for the maker placing the ad, for example:

“SIMEON JOCELIN. Good Home-made Salt, to be sold, for Cash or Country Produce, by Simeon Jocelin, in New Haven, who will give Two Thirds of a Dollar per pound for broken Flint Glass, such as beakers, &c. in order for making Watch Chrystals Pieces less than a Crown Piece or Dollar will not do, nor those that are thicker than thin Window Glass, as thick Glass is very hardly blown into shape; they must be very clear and free from streaks, &c. and delivered soon. Simeon Jocelin - Connecticut Journal, July 8, 1778.”

Doesn't that ad paint a great picture of a man struggling to make do during the early years of the Revolutionary War? A man who will pay about two days wages for a pound of broken glass to make watch crystals - which he will heat and blow into shape. He is also not above selling salt, which no doubt brings in food from the country. Remember this ad was placed in July, in a time when there was no refrigeration. As an aside, he uses both the British crown, a coin, as well as the American dollar to describe how big these pieces of glass must be. I think, at the time, the dollar had only been in existence for a couple of years - since 1776. Also of interest, in an ad placed six months later, Simeon had raised his offer to a dollar a pound for the sides of beakers and he was selling his watch glasses wholesale and retail. By seeing these complete ads, the reader can form a vision of eighteenth-century American clock and watchmaking.

There are three indices in the book. The first is a 40-page listing of makers with a cross reference to the pages their advertisements can be found on. The second is a 10-page subject index. This index must have taken months to compile. As an example, under “stolen watches” there are 51 watches and under “lost watches” there are 50 more. Here a researcher would have a description of 101 watches found in eighteenth-century America, most with good descriptions, many with makers' names and serial numbers. The last index is an 11-page date index. It lists the ads by date and was added by the AHS, and is a worthwhile contribution to the work.

The book also includes mathematical instrument makers as well as clock and watch makers.

I would like to relate how the book came to be published in England. A few years ago I showed Mr. Harris's draft book to John Robey and he asked if he could use it for his research. I gave him my clean copy and he, in turn, showed the book to Alan Treherne. Alan has been doing extensive research that includes the shipment of tools and supplies from England to America and he found the book both useful and interesting. Alan presented the idea of publishing the book to the AHS and they published it with an introduction by Alan. In order to keep the cost down they simply reproduced the pages of the book I provided, with their handscripted numbering. The results are completely satisfactory and have kept the cost of a 200-copy production run within reason.

J. Carter Harris's, The Clock and Watch Makers Advertiser is probably not a book for the average collector, but it is a must for the researcher. Also, with a limited publication of only 200 copies, it should be quickly sold out and will likely prove to be a worthwhile investment. No serious horological library should be without a copy.

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R1221 Harris, JR

Liverpool and Merseyside

essays in the economic and social history of the port and its hinterland

London: Frank Cass, New York: Kelley, 1969, 22.0 x 14.0 cm, 287 pp, tables, maps.

History (English).

Nine essays, the first of which is “The seventeenth century origins of watchmaking in south-west Lancashire” by Bailey and Barker (15 pp, no ill).

[1st edition, good] *The article by Bailey and Barker is fascinating for the questions it raises and does not answer!*

It begins with evidence for watchmaking developing in the 17th century, beginning in Toxteth Park with the Aspinwall family (quoting the Carte manuscript in the Bodleian Library), and the later spread to Liverpool, Wigan and Preston by the end of that century. The authors then argue for a much more significant contribution by Lancashire than Londoners would want to give credit; particularly the origins of wheel cutting engines, repeaters and the supply of movements (not to mention tools and pinion wire).

A well reasoned, interesting examination.

The remainder of the book has no information relevant to watchmaking.

R1222 [Harrison, John]

John Harrison

nd (1788), Portrait.

(English).

A number of portraits have been printed, including:

Engraved by J. Sewell, 1788, European Magazine, 5.5 x 4 inch.

Engraved by W. Holl, 1835, In the “Gallery of Portraits”, 5 x 4 inch. From an original picture by Tassaert in 1768 after a painting by King.

Engraved by W. Holl, ca 1840, London: Knight, Charles, 33 x 28 cm.

Engraved by W. Holl, ca 1840, Glasgow: William MacKenzie, 27 x 18 cm.

R1223 Harrison, John**Remarks on a pamphlet lately published by the Rev. Mr. Maskelyne**

under the authority of the Board of Longitude

1767.

History (English).

Reprinted, but apparently abridged, as Appendix 1 in Horrins "Memoirs of a trait in the character of George III of these united kingdoms", which see.

See Baillie "Clocks and watches, an historical bibliography".

R1224 Harrison, John**The principles of Mr Harrison's timekeeper****Principes de la montre de Mr. Harrison**

with plates of the same

avec les planches relatives a la meme montre

London: Commissioners of Longitude, 1767, 4to, 31 pp, 10 fld plates (39 pp, 7 fld plates with pages 3-19 repeated in French and English).

Description, technical (English).

Reprinted by the BHI in Harrison, Arnold and Earnshaw "Principles and explanations of timekeepers" (which see).

It is available as a Google Book PDF file, but the plates are scanned folded and so useless.

See Baillie "Clocks and watches, an historical bibliography" where the article is discussed in detail. Johnathan Betts discusses the French translation in his introduction to the facsimile.

R1225 Harrison, John; Arnold, John; Earnshaw, Thomas**Principles and explanations of timekeepers**

by Harrison, Arnold and Earnshaw

England: British Horological Institute (London: Commissioners of Longitude), 1984, 27.5 x 22.0 cm, (27) pp, 7 ill, 31 pp, 1 ill, 10 plates (1 fld), (4), 63 pp, 6 plates (2 fld).

Description, technical (English).

Published by the BHI for its 125th anniversary in two bindings: 1/4 cloth and 1/4 leather.

A list of subscribers and a 21 pp technical appraisal by Jonathan Betts is followed by facsimiles of Harrison "The principles of Mr Harrison's timekeeper" (1767, 31 pp, 10 plates), and Arnold and Earnshaw "Explanations of timekeepers constructed by Mr Thomas Earnshaw and the late Mr John Arnold" (1806, 63 pp, 6 plates).

[facsimile, very good] Betts gives a very good summary of the key features of H4, demonstrating Harrison's insight into technical problems. He is more equivocal regarding the invention of the spring detent escapement than he is in his later article (in Andrewes "The quest for longitude"), but he is fair in his examination of the claims of Arnold and Earnshaw, something many other authors fail to be.

The description of H4 is mainly a set of plates (originally accurate scale drawings) and names of the parts. There are brief remarks about the design of the escapement and a note on tempering steel parts. In a preface, Nevil Maskelyne mentions an error in the plates, describes how the watch is adjusted and makes some general remarks about its design. Both his and Harrison's writing is vague and obscure.

The descriptions of their timepieces by Earnshaw and John Roger Arnold are much better, and the explanations of the escapements are quite good. However, although the book has great historical significance, there are far superior descriptions of the chronometers and their escapements in other books.

R1226 Harrold, Michael C**American watchmaking**

a technical history of the american watch industry 1850-1930

USA: National Association of Watch and Clock Collectors, 1984, 26.5 x 21.0 cm, 144 pp, 210 ill, 1 fld chart.

History, bibliography (English).

Published as the NAWCC Bulletin Supplement No. 14. Copyright 1981 but printed in 1984. Most copies are soft cover but some were produced in cloth boards.

Three sections (formation of the industry, operation, and unusual watches) with appendices listing manufacturers and a general table serial numbers.

The first section (36 pages) covers developments to 1864.

Section 2 (59 pages) examines production by watch type (average, inexpensive, precision) and watchmaking machinery.

Section 3 (28 pages) looks at unusual watches, escapements and individual makers.

[1st edition, excellent] I feel this is essential reading for American history. It is a clear, general examination of the watches produced by the American industry with excellent illustrations. It incorporates much of the material presented in earlier books (with very good bibliographic references), as well as new material. The summary of companies and the associated folding time chart are especially useful.

It would be more correctly titled a manufacturing history as there is very little technical information. Harrold does not provide details of escapements, calibres or other features, which is at times disappointing. Indeed, when considering such matters the text tends to have a few errors and to be rather vague. However, it is an outstanding summary of American manufacture.

R1227 Hartmann, Carl**Zeitschrift für gross und klein uhrmacher**

Weimar., 1853 (1848), 4to, 2 volumes, fld lithographic plates.
(German).

Some plates showing wheel cutting machines are reproduced in T. Crom "Horological shop tools 1700 to 1900".

Journal for clock and watch makers.

A collation of material from other works.

R1228 Haslinger, AM**Heuer chronographs**

the fascination of timekeepers and motor sports in the 1960s and 1970s

Munich: Callwey Verlag, 2008, 28 x 22 cm, 287 pp, 400 ill.

Identification, illustration (English, German).

Parallel English and German text.

An 8 page interview with Jack Heuer, descriptions of 81 different models of Heuer chronographs, and an essay on Formula 1 drivers.

The majority of the book has detailed descriptions of 81 different models of Heuer chronographs which are of 13 types (Autavia, Carrera, Monaco, Skipper, Jacky Ickx, Calculator, Montreal, Silverstone, Monza, Daytona, Cortina, Solunar and Verona). Each of the watches has its own double page spread with 4 photographs devoted to dial, movement and details. Interspersed are additional images of motor sport scenes.

R1229 Hasluck, PN**The watch jobber's handybook**

London: Crosby Lockwood & Son, 1936 (1887), 18.5 x 12.5 cm, 144 pp, 106 ill, 64 pp advertisements (141 pp, 100 ill).

Repair, tools (English).

Tardy lists 9 editions to 1905 and there were later editions in 1918, 1920 and 1936 (the 15th impression).

The 1893 edition is available as a Google Book PDF file (USA only?).

There are four chapters: Early time measures and modern watches (13 pages); A watch movement and how to take it apart (11 pages); Examining, cleaning and putting together (10 pages); and Repairs and adjustment (15 pages). There are no illustrations in this part of the book.

These are followed by an extensive 91 page, illustrated glossary of terms, tools, materials, parts and processes used in watch work.

There is an index.

[4th edition 1894, fair] Chapter 1 has a mediocre summary of the history of time measurement, followed by general remarks on common watches. The most interesting point is that page 2 gives the motion-work train for a sidereal day, but the book is described by the author as for "young beginners" who, at this point know absolutely nothing!

Chapter 2 explains how to disassemble a common verge watch. This is good although some labelled illustrations would certainly help.

Chapter 3 has a clear explanation of dry cleaning (with a brush and peg wood) and assembly. However, some examination is included and the beginner is asked to do some tasks but not told how to do them. For example "if a tooth is broken off, a new tooth can be put in" and pivots should be "carefully burnished ... and the ends properly rounded up". Sound advice, but useless at this stage of learning.

Chapter 4 covers a few repairs: checking depths (but no explanation of how), examining the verge escapement, using a fusee adjusting rod, rebushing pivot holes, replacing mainsprings, repairing fusee chains, making a barrel arbor, replacing broken pivots, and replacing a verge balance staff. Most of these are glossed over and in some cases there are no instructions at all. Anyway, many of the tasks are simply too hard for a beginner. For example, the reader is expected to be able to use the turns without any instruction; but this doesn't matter as he has been told only to buy screwdrivers (or make them), brushes and tweezers, and so he can't do it anyway.

Despite this, the instructions are sensible and the explanation of the verge escapement is good.

The core of the book is in the glossary. Nearly all of this simply defines terminology, giving the names and descriptions of watches, watch parts, tools, lathes, etc. It includes some information on escapements and four repair tasks: making a lever balance-staff, putting verge watches in beat, fitting dials and making drills.

Only a few of the terms have been mentioned in the four preceding chapters.

As will be apparent, the book is largely useless. The beginner is taught how to disassemble, clean and assemble a verge watch, but the rest is far beyond him. And the watch jobber will already know most of it and, more importantly, will know how to use the tools which are only defined. So it is not much use for him either.

The book has aged reasonably well. For people living now the small amount of good information and most of the glossary is interesting, but this information can be found as well or better in other dictionaries and encyclopaedias.

See Britten "The watch repairers' instructor" for a very creative, revised edition.

R1230 Haswell, JE**Horology**

the science of time measurement and the construction of clocks, watches and chronometers

London: EP Publishing (New York: Norman Henley) (London: Chapman and Hall), 1975 (1928), 22.5 x 14.5 cm, 288 pp, 111 ill, 19 plates (267 pp, 107 ill, 19 plates).

Description, theory (English).

One edition (1928) with a supplement appended to later printings. Printed in 1928, 1929 (American), 1937, 1947, 1951 and 1975.

In three sections; Time (2 chapters, 24 pages); Clocks (8 chapters, 108 pages with some material relevant to watches); Watches (9 chapters, 110 pages); and Marine chronometers (1 chapter, 15 pages).

The section on watches covers types of movement, trains, balances and balance springs, escapements (cylinder, duplex and lever), mainsprings (including fusees and barrels), keyless mechanisms, chronographs, repeaters, and epicyclic trains (tourbillons and karussels). The section on marine chronometers includes the spring detent escapement.

The supplement (20 pp, 4 ill) contains errata and additional information.

[1975, fair] As with other "theory" books, Haswell mixes some theory with a lot of mechanical description. The theory centres on the mathematics of pendulums, balance springs and karussel trains, and Haswell handles these topics quite well. But in other places he is too descriptive and a bit obscure. For example, his discussion of epicycloidal gearing omits the theory and merely states general principles without explanation; the reader is unlikely to gain any real understanding from it.

The rest is mainly an adequate description of watch components with a little history thrown in. But again, he often fails to explain when explanation is necessary. For example, when he outlines common watch calibres he simply gives illustrations of them without providing the reader with any way to appreciate the design parameters or problems (Grossmann "Prize essay on the construction of a simple but mechanically perfect watch" is one of the very few books that says anything useful on this topic). And in describing escapements he gives details that are almost incomprehensible because he does not explain their design. Overall, the book varies from mediocre to very good, with interesting material interspersed with uninspiring descriptions. I get the feeling Haswell wanted to write on a few topics and had to pad the book out with other parts to make it suitable for publication. Bits are worth reading.

R1231 Haton de la Goupilliere, JN**Traite des mécanismes**

renfermant la théorie géométrique des organes et celle des résistances passive

Paris: Gauthier Villars, 1864, 8vo, xxxi, 483 pp, 16 fld plates.

Technical, theory (French).

Gears. Escapements. Mechanics.

R1232 Haton de la Goupilliere, JN**Traite théorique et pratique des engrenages**

Paris: Mallet Bachelier, 1861, 8vo, vi, 88 pp.

Technical (French).

Listed in Tardy.

It is available as a Google Book PDF file.

Theoretical and practical treatise on gears.

Three chapters: Plain gearing (30 pages, primitive circles, envelopes, small wheels including epicycloids, large gears and racks); Gear surfaces (14 pages, parallel axes, concurrent axes and other axes); and Questions related to gearing (44 pages, curvature of gears, transmission, efficiency, butting and construction).

Perhaps an extract from his "Traite des mécanismes".

R1233 Hatton, Thomas**An introduction to the mechanical part of clock and watch work**

In two parts; containing all the arithmetic and geometry necessary, with their particular application in the said branches. A work very useful for the working mechanic or gentlemen mechanically inclined.

London: Turner & Devereux (London: T. Longman and G. Robinson, B. Law, J. Wilkie), 1978 (1773), 21 x 14 cm (19.0 x 12.0 cm), 400 pp, 18 fld plates.

History, technical, theory, watch making (English).

Some of the section on callipering and most of the appendix are reproduced in Weiss "Watch-making in England 1760-1820".

Written for the student watchmaker, the book commences with a delightful dedication pleading for assistance to the industry, and a brief history taken from Derham. It then explains how to design a watch movement, as opposed to making or repairing one. In this context it is divided into four parts: the design of trains (basic arithmetic), the design of verge and cylinder escapements, fusee engines and fusees (geometry), friction and forces relating to trains and fusees (levers) and the design of calibres (proportions). Additionally there is a section on pendulums and an appendix on practical techniques.

[1st edition, excellent] Baillie in "Clocks and watches: an historical bibliography" simply says "Most of the book consists in instruction in arithmetic and geometry. There is a chapter on pendulums and a long chapter on calliper drawing".

In the context of historical significance that may be fair because Hatton does not contribute novel ideas,

but the comments do him a gross injustice. Educational opportunities were very limited in the 1770's, especially for apprentices who spent their time filing pins, sweeping floors and running messages from the age of 14. Seen in this light, a basic numeracy text stuffed with practical examples relating to watch and clock work would be a godsend. Just as Harrison had to teach himself from a few books, many other aspiring watchmakers would have suffered from the lack of practical guides to their craft. Most importantly, Hatton recognised that many watchmakers are not competent mathematicians and "some plainer piece more suitable to the generality of the trade was wanted", the other books available (Derham, Cumming and Benjamin Martin) not answering to such needs. Hatton's practicality may be summarised by quoting him: "As to the secret of polishing bolt-ears, the only way is to cut them off, ... and spend the lost time in some part of the work that is useful".

The argument is, at times, difficult to follow; for example, the description of the calculation of the size of the escape wheel to suit a cylinder is obscure and not assisted by the diagrams or the crude approximation to pi. Likewise, the term "balance wheel" creates great confusion until one realises it refers to the escape wheel and not the balance.

Taken out of context it would appear to be an uninteresting book. But it is one of the very few that treats watch design in depth, containing a great deal that is worthwhile, useful and which rarely appears elsewhere. Most importantly, it is one of the very few English books that is not simply a regurgitation of Berthoud and is genuinely original writing.

The modern facsimile reprint is of very good quality.

R1234 Hausmann**Alte uhren**

Berlin: The Museum, 1979, 23 x 21 cm, 210 pp, 232 ill, 6 plates.

History, technical, collection, catalogue (German).

Kataloge des Kunstgewerbemuseums Berlin, volume 8.

Technical and historical description of sundials, clocks, watches, etc. in the Berlin Museum.

Includes illustrations from a design book for pierced watch cases.

R1235 Haussermann, M**1001 wristwatches from 1925 to the present****1001 montres, des modèles de 1925 a nos jours**

England: Paragon Books, 2007, 10.5 x 8.8 inch, 295 pp, ill.

Illustration (English, French, Spanish).

"All makes of watches together with the following styles: chronographs, aviator, diver's, gmt, world time, alarms, tourbillon, calender and repeater."

Described as "a beautiful full-color work with many famous watches and fine watches pictured".

Apparently there is only a small amount of text, but with 3 or 4 watches per page that is not surprising.

R1236 Haussermann, M**Tag-Heuer since 1860, armbanduhren**

2003, 30 x 21 cm, 128 pp, 250 ill.

History, description (German).

Enthält die Firmengeschichte, Entwicklung, Technik, Design, Modellübersicht.

R1237 Havard, H**L'horlogerie, les arts de l'ameublement**

Paris: Delagrave, 1928 (ca 1892), 22 x 14 cm, 184 pp, 82 ill.

History (French).

The first edition is undated.

A resume of French horology. Part 1 includes gnomons, sun dials, clepsydres and sand glasses. Part 2 is on mechanical horology.

R1238 Hawkes, AJ**The clockmakers and watchmakers of Wigan 1650-1850**

England: AJ Hawkes, 1950, 8vo, 84 pp, 13 plates.

Makers (English).

Limited edition of 500 copies.

A history of Wigan makers. It includes information on the makers and their watches and clocks.

R1239 Hawkins, V**Annual reports to the stockholders, 1859-1899**

the American Watch Company, 1859-85 and the American Waltham Watch Company, 1885-1906

USA: V. Hawkins, 1984, 80 pp.

History (English).

R1240 Hawkins, V**Movement production American Waltham Watch Co**

50 models, 1462 grades

USA: Heart of America Press, 1982, 11.0 x 8.5 inch, 33 pp, ill.

Identification (English).

The title is also given as "Vernon Hawkins count of the pocket watch movement production of the American Waltham Watch Company" and "Pocket watch movement production American Waltham Watch Co".

R1241 Hawkins, V**Waltham factory sales records**

November 1857 to December 1858, serial number 1001 to 14065

USA: Roy Ehrhardt, 1983, 4to, 121 pp, 14 pp, no ill.

History (English).

Two parts: Part 1 is a 120 page typewritten transcript of "Sales Ledger #1" of Tracy, Baker & Co. and Appleton, Tracy & Co. It has an introduction, list of customers and lists of movements and watches sold. Part 2 is the first 12 pages of the hand-written Waltham watch Record covering serial numbers 1001 to 18620. (The Record is discussed in David "American and swiss watchmaking in 1876" and Watkins "Watchmaking and the American System of Manufacture". See also Ehrhardt "American Watch Company serial numbers 1,001 to 1,500,000 1857 to 1882".)

[1st edition, very good] The sales records include serial number, jewels, type of balance, grade (where known), date sold, price, discount, net, case type (if any) and buyer. The number of watches included is, naturally, less than the number of watches manufactured and given by the Record. It is not clear if the price is before or after the discount given.

As far as I know, no-one has analysed this information.

R1242 Haworth-Maden, Claire**Watches, centuries of style**

England: Grange Books, Quantum books, 1998, 21.0 x 21.0 cm, 64 pp, col ill.

History, makers (English).

In the "Centuries of style" series. Also the "Collector's Corner" series?

The books by Doeser and Haworth-Maden may be different, but they have the same publisher, date and size so they may be the same book. My copy is edited by Haworth-Maden and she has also produced a book on Dracula. No author is given and Doeser's name is not mentioned. Doeser is apparently also an editor as she is responsible for books on ballet, cooking, lampshades and art as well as watches.

Four chapters: Introduction (11 pages, a history of horology), The wristwatch (16 pages, a history of the wristwatch), 18th and 19th century makers (16 pages), and 20th century makers (16 pages). The last 2 chapters list makers with brief historical notes and remarks about their watch styles.

[1st edition, good] Haworth-Maden's book is a quite reasonable introduction for the novice.

The first 2 chapters give a concise history, which is a little misleading in places and has a few errors, but overall it is adequate. Although the mechanisms of mechanical and quartz watches are described (unfortunately without illustrations), no clear distinction is made between them. This is not very important because the second half of the book concentrates on dials and cases.

Chapters 3 and 4 list makers and give short but quite good summaries of them. They are organised roughly by when they came into existence, which is why a book only concerned with wrist watches can mention the 18th century.

[Remark] Each chapter is exactly 16 pages, the introduction seeming to be shorter because the first block of 16 pages includes the title pages. I assume the text and illustrations were forced into this format and the content dictated by the printing rather than the other way round.

R1243 Hayard, M**Antide Janvier 1751-1835**

celestial clockmaker, horloger des etoiles

Villeneuve-Tolosane: L'Image du Temps, 2010 (1995), 32 x 25 cm, 480 pp, ill (281 pp, 132 ill).

Bibliography, biography, description, history (English, French).

The first edition has English and French text and is a limited edition of 1200 copies with 400 numbered.

Catalogue of Janvier's life and work illustrating clocks and watches hallmarked by Antide Janvier, clocks attributed to Janvier, clocks by Antide Janvier's younger brother, "Janvier Cadet". With a section on the dating and numbering of Janvier's clocks, a list of museum collections, a family tree of clockmakers named Janvier, and a bibliography.

R1244 Hayard, M**Chefs-d'oeuvre de l'horlogerie ancienne****L'horlogerie ancienne a Toulouse**

France: Somogy, 2004, 28 x 22 cm, 415 pp, ill.

Collection (French).

Details all the clocks, watches, automata and scientific instruments in the Musee Paul Dupuy in Toulouse.

R1245 Hayek, G**Longines: fairness in time, elegance in sport**

Switzerland: Swatch Group, 2003, 132 pp, ill.

Illustration (English).

125 years of Longines timekeeping.

R1246 Hayek, N; Emch, AE; Bascou, M; Breguet, E; Pierri, R de**Abraham Louis Breguet, the climax of european horology****Breguet, un apogée de l'horlogerie européenne**

France: Somogy, 2009, 28.5 x 27.5 cm, 264 pp, 500 ill.

Exhibition (English, French).

Separate language editions.

Published to coincide with the 2009 showing at the Louvre Museum in Paris of fine watches made by Breguet of Geneva.

With contributions by Nicolas Hayek, Arlette-Elsa Emch, Marc Bascou, Emmanuel Breguet and Rodolphe De Pieri.

A history of Breguet's founder, industrial showings, international network, favoured watches, political relations, mentions in literature, patents, 2000-2008 innovations.

Chronology, glossary, list of pieces on display, bibliography and index.

R1247 Hayward, JF

English watches - Victoria & Albert museum

London: H M Stationery Office, 1979 (1956), 20.5 x 16.5 cm, 14 pp text, 47 pp b/w plates, 3 pp text, 13 pp b/w plates.

Collection, description, history (English).

Several printings, including 1956, 1969 and 1979.

In 2 sections:

English watches (14 pages with a bibliography, and 47 plates with extensive captions).

Designs for watchmaking (3 pages, 13 plates).

[2nd edition, fair] A survey of 17th and 18th century watches in the museum.

The first section begins by discussing the origins of early watches and then gives the inventories of watches of Henry VIII, Elizabeth I and another. The remainder is a short history of watch and case design based in the watches illustrated in the plates. The emphasis is on decoration. The black and white plates are adequate.

Perhaps the most interesting part of the book are the last 13 plates and their captions, which show designs for dials, cases and cocks from model books.

R1248 Hayward, JF

Two english watches in livrust-kammeraren

Stockholm: The Royal Armoury, 1952, 21.0 x 15.0 cm, 17 pp, 14 ill.

Description (English, Swedish).

Reprinted from the "Livrust-kammeraren", journal of the Royal Armoury.

Description of two Swedish Royal watches attributed to Bellette and Tompion.

R1249 Hazlitt & Walker

Adjustments to positions, isochronism and compensation

USA: Adams Brown (Chicago: Geo. K. Hazlitt), 1979 (1892), 14.0 x 10.0 cm, 55 pp, 6 ill.

Theory (English).

Also printed in 1910 with a modern reprint of that printing. The authors of this booklet are not named.

Three chapters. The first chapter is introductory and the other two are based on a translation of a work by E. Phillips.

[2nd edition, fair] A strange book which probably accounts for it being so rare; I have not come across any reference to it in many years of research.

The first chapter introduces the work and discusses positional adjustment. This begins by examining the need to poise the lever in lever escapements, the argument being based on an explanation of mechanical levers and power transmission in a watch train. The authors then look at positional adjustment. After dismissing the method of altering the balance's poise, they examine equalising friction, quoting Martens and looking at the shape of balance pivots.

The rest of the book is based on an unidentified work by Phillips, presumably a greatly abbreviated and paraphrased version of "Memoire sur le spiral reglant". Chapter 2 contains a mathematical analysis of the conditions required for isochronism. As the authors' wisely note "it will be difficult for those who are not acquainted with mathematical logic to follow it throughout". Chapter 3 then examines what forms of balance spring will satisfy these conditions, leading to the Phillips curves. A more descriptive approach is taken, omitting most but not all of the mathematics. The chapter concludes with tables of experimental results on different balance springs and balances which demonstrate the validity of the theory.

There is nothing about compensation, but I am sure my copy is complete.

So the book is a summary of the theory of isochronism devoid of practical information. Without some knowledge of differential and integral calculus much would be unintelligible. Although it is interesting, other books (such as J & H Grossmann "Horlogerie theorique") are more accessible and better for the mathematically competent.

There is reference to E. Sandoz "Practical methods of accurately adjusting watches" which I have not heard of before. It is likely to be a journal article, but I have included it in this bibliography. The Martens book is probably "Beschreibung der hemmung der hoeren uhrmacherkunst".

R1250 [Hazlitt & Walker]

Hazlitt & Walker monographs

ca 1880 to ca 1910.

George Hazlitt & Co, which became Hazlitt & Walker, produced a number of small booklets, most of a uniform size with green paper wrappers and printed on mediocre paper; some may also have been produced with cloth boards. Many were essays written for the "American Jeweler" prize essay and other

contests, and their first publication dates may be as journal articles.

The booklets included in this bibliography are listed individually and cross referenced here. They are:

Abbott: "The art of hard soldering".

Abbott: "The watchmakers' and jewelers' practical hand book".

American Jeweler: "Watch makers tables".

A.Z.: "Hairspringing: the manipulation of old and new springs by the watch repairer".

Britton: "The escapements, their action, construction and proportion".

Detent: "Repairing American watches".

Eigner: "The balance staff and cylinder".

Etchells: "Repairing repeating watches".

Finn: "Poising the balance".

Grossmann: "A prize essay on the construction of a simple and mechanically perfect watch".

Hall: "Staff making and pivoting".

Hazlitt & Walker: "Adjustments to positions, isochronism and compensation".

Hazlitt & Walker: "The watchmakers' library".

Hazlitt & Walker: "The watchmakers' and jewelers' practical receipt book".

Higginbotham: "Jeweled bearings for watches".

Immisch: "Prize essay on the balance spring".

Learned: "The watchmakers' and machinists' hand book".

Lewis: "Friction and lubrication and lubricants in horology".

Playtner: "Analysis of the lever escapement".

Rees: "Modern letter engraving in theory and practice".

Ries: "Prize essay on watch cleaning and repairing".

Schwanatus and Fenimore: "A practical treatise on repairing watch cases".

Sherwood: "A practical treatise on watch repairing".

Sherwood: "Watch and chronometer jewelery".

Shouffelberger: "Wheels and pinions and how to determine their exact size".

Whelpley: "General letter engraving for watchmakers, jewelers and kindred trades".

R1251 Hazlitt & Walker

The watchmakers' library

Chicago: Hazlitt & Walker, ca 1903, 290 pp, ill.

Repair (English).

A collection of articles from American and European journals by Grossmann, Sandoz, Grosch, etc.

R1252 Hazlitt & Walker

Watchmaker's and jeweler's practical receipt book

a workshop companion

Chicago: Hazlitt & Walker, nd (1892), 22.0 x 15.0 cm, 128 pp, 4 ill, 2 pp ads.

Repair (English).

May have only been published in 1892.

Attributed to CE Walker.

Some sources confuse this book with Abbott "The watchmakers' and jewelers' practical hand book".
Formulae and instructions for: Cements; Enamels; Bronzing, staining and colouring metals; Lacquers and varnishes; Cleaning, pickling and polishing; Solders, soldering and etching; Hardening, annealing and tempering; Recovery and refining of waste; Jewelers' alloys; Springs; Wheels and pinions; Jewels; Pivots and staffs; Drills and drilling; and Miscellaneous.

There is a 4 page index.

[1st edition, good] The first 100 pages are a collection of receipts and formulae with some specific information about methods of use. The remaining 22 pages provide some methods and repair tips relevant to watches, including wheels, balance springs, screws, and a few other topics.

The watch information is inadequate and the book is most interesting for the formulae.

R1253 Headrick, Mark

Clock and watch escapement mechanics

USA: Mark Headrick, 1998, 4to, 87 pp, 130 ill.

Technical, theory (English).

Available as a printed booklet or a PDF computer file.

Two sections, clock escapements (35 pages) and watch escapements (49 pages). The watch section has 11 chapters covering the club-tooth lever, the English lever, pin pallet, cylinder, duplex, chronometer, and Daniels. Both sections describe how to draw escapements using computer CAD programs.

[1st edition, good?] The introduction says "The purpose of this project is to introduce the reader, whether professional or hobbyist, to a hands-on method for drawing a mechanical clock or watch escapement". Although the work was done using a Microsoft Windows program, the text does not refer to specific computer applications or methods and the descriptions are probably applicable to all systems. But a working knowledge of computer CAD techniques is necessary.

Both sections are based on "cookery-book" recipes for drawing, giving precise instructions to generate the correct CAD images. But these instructions are not mindless; they do provide the basis for the reader to experiment on his own.

A reasonable knowledge of mathematics is also required. Headrick doesn't just explain how to draw

some escapements using a computer, but he also provides some explanations of design criteria in terms of power transmission from the escape wheel to the pallets. Most of this analysis occurs in the context of clock escapements.

R1254 Hearn, Mrs George A; WSH**Collection of watches loaned by Mrs. George A. Hearn**

to the Metropolitan Museum of Art

USA: privately printed, 1907, 24.5 x 18.0 cm, 35 pp, 10 plates.

Collection, catalogue, illustration (English).

Apparently both hard cover and soft cover printings.

Catalogue of a collection of 87 early continental watches with 54 illustrated. Most are enamel, repousse or form watches.

[1st edition, fair] The book consists of a 12 page history and introduction to the collection (written by "W.S.H.") followed by the catalogue, ordered by the country of the maker. The descriptions of watches only considers their external appearance, but the black and white photographs are excellent.

Of limited interest.

R1255 Heart of America Press**Watch books**

1971 to 1999.

(English).

Until Roy Ehrhardt died, Heart of America Press produced a large number of books, almost all in the form of ring-bound photocopier pages and almost all written by Ehrhardt.

These vary from excellent identification guides (where one can see the influence of co-authors Meggers and Townsend) to seemingly random (and fairly useless) photocopies of old advertisements masquerading as price guides.

In addition to the variability of quality there is often considerable overlap in content.

These remarks should not put off potential readers, but make them aware that some ferreting may be needed to find the real gems.

The photocopier reprints are usually not dated and often only have the original publication date.

For convenience, all relevant books are listed under Ehrhardt in the author index.

R1256 Heaton, Edward**60 questions and answers on watchmaking, réponses sur l'horlogerie**

La Chaux-de-Fonds: Edward Heaton, 1938 (1936), 21 x 15 cm, 76 pp (38 in each language).

Repair (English, French).

Bilingual English/French

R1257 Heaton, Edward**A new course on modern watchmaking****Terminologie horlogère française et anglaise****Terminologie horlogère française et allemande**

Bienne: E. Magron, 1921 (1917), 20.0 x 13.0 cm, 75 pp, no ill.

Description, terminology (English, French, German).

References have been seen to "Terminologie horlogère" of 39 pp and 27 ill, which is probably a single language edition of this work. The French-German edition was produced in 1921.

A bi-lingual text which is primarily an English-French, French-English dictionary of watch terminology, with a considerable amount of parallel text. As the author says, "This book is intended for watchmakers, watchdealers, clerks and commercial travellers" and so it is introductory and general.

[4th edition 1918, fair] The book begins with a general account of watch components, styles and manufacture interspersed with lists of terms. This is followed by separate French-English and English-French vocabularies and a brief discussion of grammar.

The book was written when "Very decent watches have been thrown on the market in the various belligerent countries". The English is at times strange (it takes a while to work out what is a "whirl-watch") and there are some inspiring spelling errors. But it is an interesting if unimportant work.

R1258 Hector-levy**Montres en tous genres, horlogerie de précision**

Paris: Levy, ca 1890, 47 x 37 cm, illustrated poster.

Illustration (French).

Undated but said to be the end of the 19th century.

Illustrated poster showing various watches; 24-hour, alarm, mystery, explorers', railway, astronomical, etc.

R1259 Heger, W**156 profils de boites de montres**

nd.

Description (French).

Listed in Tardy.

156 profiles of watch cases.

R1260 Heger, W

R1260 Heger, W

Théorie de la boîte et manutention des métaux précieux

petit manuel destine aux apprentis boitiers

Saint Imier: Konrad, 1908, 21 x 14 cm, 54 pp, no ill.

Technical (French).

Theory of the case and the handling of precious metals; handbook for apprentice casers.

R1261 Heide, R; Gilman, J

Disneyana

classic collectables 1928-1958

New York: Disney Editions, 2002, 11 x 11 inch, 200 pp, ill.

Collecting (English).

An anecdotal history of the development, production, marketing and collecting of Disneyana, including Ingersoll Mickey Mouse Watches.

R1262 Heide, R; Gilman, J

The Mickey Mouse watch

from the beginning of time

New York: Hyperion, 1997, 26.1 x 15.0 cm, 128 pp, 100 ill.

Description, price guide (English).

"An authentic cultural icon, the Mickey Mouse watch comes alive in this remarkable story of its reign as the king of time: fun facts, lively anecdotes, and detailed descriptions accompany this fascinating and entertaining history."

R1263 Heidner, G

Die schule des uhrmachers

Weisbaden: C.W. Kreidel, 1871 (1865), 24 x 17 cm, 182 pp, 33 plates with 280 ill.

Technical, theory (German).

May be in 2 volumes with a separate atlas of plates.

"A manual for self instruction in the theoretical basis of artificial time measurement as well as the right construction and calculation of all types of timepiece."

It includes an introduction to physics and mechanics, parts of time measuring instruments and the different types of clocks and watches. The plates include escapements and pocket watch works.

R1264 Heine, X

Allgemeine grundsätze uber die uhrmacherei

oder handbuch für die Schwarzwälder uhrenmacher und uhrenhändler

Villingen: Förderer, 1849, 8vo, 126 pp.

Technical? (German).

Handbook for the Black Forest timepiece maker and handler. General principles for horologists.

Listed in Robertson "The evolution of clockwork" and may not include watches.

R1265 Heinrich, Werner

Mechanische armbanduhren aus Glashütte 1950 bis 1980

Munich: Callwey, 2007, 31 x 24 cm, 255 pp, 1100 ill.

Identification, illustration (German).

Mechanical wrist watches from Glashütte.

R1266 Helfand, Norman

The watch crystal encyclopedia

Florida: Florida Watch and Jewelry, ca 2008, 70 pp, 200 ill.

Repair (English).

How to install watch crystals - including rectangular, round dome, tension ring, pocket watch (glass and plastic), Rolex, and mineral glass.

Types of materials available for crystals.

How to order crystals and what brands are available.

How to trim and cut watch crystals.

R1267 Helwig, Alfred

Das drehen von trieben und wellen in der uhrmacherei

Berlin: Michael Stern (Halle: W. Knapp), 2003 (1953), 8vo, CDROM (88 pp, ill).

Repair (German).

3rd edition in 1953 reproduced on CDROM.

The turning of arbors and pinions.

R1268 Helwig, Alfred

Drehganguhren, tourbillons und karusselluhren

Ihr bau, ihre eigenarten; vorzuge und nachteile der verschiedenen konstruktionen

reprint (Berlin: Deutschen Uhrmacher-Zeitung), nd (1927), 21 x 15 cm, 100 pp, 56 ill.

Repair, technical (German).

Rotary escapement watches, tourbillons and karussells, their structure, their peculiarities; advantages and disadvantages of the different constructions.

Technical and practical study of tourbillon and karussel watches.

The author invented the "flying tourbillon" in which the carriage has no top pivot.

R1269 Helwig, Alfred**Spiral und wendelfeder kurven nach Phillips**

Berlin: , ca 1953, 18 x 12 cm, 4 pp, 25 plates.

Technical (German).

Spiral and helical balance spring curves according to Phillips.

R1270 Helwig, Alfred; Schreck, L; Hesse, O**Die lehre an der deutschen uhrmacherschule Glashütte**

Halle: (Berlin: Deutschen Uhrmacher-Zeitung), 1985 (1928), 8vo, 64 and 474 pp, 517 ill, 111 plates (4 volumes of 170 pp, 160 ill and 79 pp, 52 ill and 99 pp, 100 ill and 117 pp, 195 ill).

History, repair (German).

First year (Schreck, "Eine darstellung des praktischen lehrgangs", a description of the practical curriculum): 1928 (170 pp, 160 ill).

Supplementary volume (Helwig, "Erganzungsband, das drehen von trieben und wellen", the turning of arbors and pinions in clockmaking): 1928 (79 pp, 52 ill) and reprinted in 1929, 1931, 1938 and 1953 (the last 85 pp, 110 ill); see separate entry.

Second year (Helwig & Hesse, "Die lehre an der deutschen uhrmacherschule, zweites lehrjahr"): 1929 (99 pp, 100 ill).

Third year (Helwig): 1931 (117 pp, 195 ill).

Described as the instruction manuals for the Glashütte school including a history of the school, lists of works and special projects.

There is much confusion in catalogues, not helped by Tardy listing one volume under Hesse & Helwig.

Meis "Pocket watches from the pendant watch to the tourbillon" indicates this work was in 4 volumes.

Gardner "Catalogue of the Torrens collection" says 3 volumes, but he lists Schreck separately. None comment on the content or clarify who wrote what!

The printing information above is my attempt to reconcile these inconsistent references.

See also Herkner "Deutsche uhrmacherschule Glashütte".

R1271 Henderson, E**An historical treatise on horology**

showing its rise and progress from the earliest period down to the present time

London: S. Rothwell, 1836, 8vo, 24 pp.

History (English).

R1272 Henri Picard & Frere**Tools and materials for watch and clock makers****The album - a guide with priced key to purchase**

1972 (1885), 207 pp, ill.

Tools (English).

The 1885 edition is reprinted in Crom "Horological shop tools 1700 to 1900".

Trade catalogues frequently provide a valuable source of historical and practical information. Catalogues by Bergeon and other companies are also worth examining.

R1273 Henry Bedat, J**Une région, une passion**

L'horlogerie, une entreprise: Longines

Saint-Imier: Longines Watch Company, 1992, 30.5 x 26.5 cm, 225 pp, ill, slip case.

History (French).

This book is a history of Swiss horology, centred on the Jura region, which is interleaved with a history of Longines. There are ten general chapters, numbered I to X, and six chapters on Longines, numbered 5 to 10 which follow the corresponding general chapters. The chapters are:

I From the sundial to the chronometer (6 pages, introduction).

II Tower clocks to pocket watches in Geneva and the Mountains (12 pages, from the 14th the the end of the 17 century).

III The horologers of the high Jura (14 pages, 18th century to the Revolution).

IV The storm, horologers and France (12 pages, the Revolution to 1815).

V The workshop (18 pages, 1815-1876).

5 Longines, Auguste Agassiz and Ernest Francillon (10 pages).

VI Conscience and changes (16 pages, 1876-1890).

6 Longines, after the Philadelphia exhibition (4 pages).

VII Supremacy of the horology of Bern (14 pages).

7 Longines, 6 million watches (14 pages).

VIII Painful mutation after euphoria (18 pages, 1939-1991).

8 Longines, family enterprise to holding company (16 pages).

IX Today (6 pages).

9 Longines today, prestige watches for the anniversary (6 pages).

X Towards the watch of the 21st century (16 pages).

10 Longines, towards the bicentenary (6 pages).

These chapters are followed by graphs of production, table of exports of watches and movements (1885-1991), populations of cities (1750-1990), persons employed (1870-1991), production rate per person, Longines prizes, events and production (1867-1992).

R1274 Hering, DW

R1274 Hering, DW

Art in clockmaking and watchmaking

USA: Scientific Monthly, nd (1935), 16 pp, 18 ill.
(English).

Reprinted from the "Scientific Monthly".

History of clocks and watches.

R1275 Hering, DW

Key to the watches in the James Arthur collection

of clocks and watches at New York University

New York: New York University Press, 1934, 9 x 6 inch, 35 pp, 14 plates.

Description (English).

Printed as part of the most recent edition of "The lure of the clock".

Supplement to "The lure of the clock".

R1276 Hering, DW

The lure of the clock

an account of the James Arthur collection of clocks and watches at New York University

USA: Bonanza Books (New York: Crown Publishers) (New York: New York University Press), ca 1970 (1932), 23.5 x 16.0 cm, 144 pp, 89 ill (121 pp and 64 plates, 11 ill) (112 pp, ill).

Biography, collection (English).

The revised edition, with a few notes on later additions to the collection, was printed in 1963 and there is a later second edition including the supplement "Key to the watches in the James Arthur collection".

A brief introduction, including a biography of Arthur, is followed by descriptions of some clocks, Japanese timepieces and watches in the collection. Primarily about clocks but with 36 pages and 25 plates on watches.

[revised 1st edition, 1963, mediocre] The vague, brief and unconvincing history (with comments on what is antique) is followed by equally vague descriptions and mediocre illustrations. A forgettable book of little merit.

See also Arthur "Time and its measurement".

R1277 Herkner, K

Deutsche uhrmacherschule Glashütte

Dormagen: Herkner Verlags, 1985 (1928), 22 x 15.5 cm, 538 pp, 565 ill, 80 plates.

History, repair (German).

Also printed in 1953.

The book contains a reproduction of volumes 1-3 of Helwig, Schreck and Hesse "Die lehre an der deutschen uhrmacherschule Glashütte".

R1278 Herkner, K

Glashütte und seine uhren

Dormagen: Herkner Verlags, 1988 (1978), 30 x 22 cm, 416 pp, 900 ill, 16 plates.

Description, history (German).

The first edition was produced in a deluxe limited edition of 200 copies as well as a normal edition.

Considered by some to be the best work on the Glashütte region makers and their work.

R1279 Herkner, K

Glashütte und seine uhren band 2

Glashütte armbanduhren

Dormagen: Herkner Verlags, 1995, 23 x 15 cm, 304 pp, 395 ill, 32 plates.

Description, identification, illustration (German).

Also given as 538 pp (304 pp text + 234 pp plates?).

From first manufacture to the present, historical and technical study of Lange, GUB, Tutima, etc.

R1280 [Hermitage Museum]

Swiss watches and snuff boxes

artistic enamels from the Hermitage collection

St. Petersburg: Slavia, 1997, 26 x 20 cm, 89 pp, ill.

Collection (English).

Also given as 94 pages.

"With an introduction on the history of this particular collection from the State Hermitage Museum. All objects of high quality and craftsmanship, many with enamelled work."

R1281 Hernick, JL

Railroad timekeeping

USA: National Association of Watch and Clock Collectors, 1966, 10.7 x 8.3 inch, 68 pp, 247 ill.
(English).

Catalogue of the exhibition at the 1966 NAWCC seminar on railroad timepieces and showing 196 watches.

R1282 Hernick, JL; Arnold, RF

Hampden Watch Co

USA: National Association of Watch and Clock Collectors, 1997, 28.0 x 21.5 cm, 214 pp, ill.

History, identification, makers (English).

NAWCC Special order supplement No.1

A detailed listing of all known Hampden watches organised by serial number, model and grade.

[1st edition, good] *The book begins with a very brief history (derived from Gibbs "From Springfield to Moscow: the complete Dueber-Hampden story"). This is followed by photographs, diagrams and information about models arranged by size, details of private label and Russian watches, Swiss chronometers and finally production data including a very detailed serial number listing. These are interspersed with reproductions of sales catalogue pages. The book concludes with the reproduction of the 1923 materials catalogue.*

This is an odd book. Within it there is a comprehensive survey of watch production, and so it is a valuable reference for Hampden collectors. But the history is far too short and the reproduced catalogue pages, although interesting, add little. Also, some of the catalogue pages and watch photographs are poor, so that they give the impression of padding rather than an integral part of the work; they should either have been omitted or produced much more carefully.

R1283 Herrmann, F; Ruffert, FW

Katechismus der uhrmacherkunst

Leipzig: J. J. Weber, 1901 (1863), 17 x 15 cm, 238 pp, 252 ill, 5 tables (225 pp, 229 ill) (100 pp, 57 ill).
Technical (German).

Originally written by Herrmann and produced in 4 editions in 1863, 1874, 1884 and 1901.

Then edited by Ruffert; a 3rd revised edition in 1885 and 4th edition in 1901.

A book of instructions for horologists.

6 or 7 chapters including gearing (51 pages), escapement regulators (35 pages) and escapements.

R1284 Hertz, G

Geschichte der uhren

Berlin., 1851, 8vo, 66 pp, 1 fld plate.

History (German).

History of timepieces.

R1285 [Herve Chayette]

La bibliothèque horlogère de Monsieur R.P.

Paris: Herve Chayette, 1994, 8vo, 96 pp, ill.

Bibliography, catalogue (French).

Auction catalogue of a library of 530 titles.

R1286 Hewitt, CJ

The manufacture of standard screws

for machine-made watches

London: Institution of Mechanical Engineers, 1894, 21.5 x 14.0 cm, 33 pp, 9 plates.

Technical (English).

In the Institution of Mechanical Engineers Proceedings, October 1894, pages 473-505 and plates 108-116. Possibly also produced as a separate offprint.

The paper presented by Hewitt (13 pages) gives a detailed description of an automatic, four turret screw making machine which he had designed. The machine (modified to suit overhead driving) was exhibited. Then there are 19 pages of discussion.

[1st edition, very good] *Charles J. Hewitt was the works manager of the Lancashire Watch Company and brother of T.P. Hewitt. He begins by outlining the problems with hand made screws, the need for standards and the adoption of the system described by Thury "Systematique des vis horlogeres, exposition d'un systeme general". Then the method of creating master taps and dies is outlined before the screw cutting machine, which produced about 600 screws per hour, is discussed in detail.*

Some of the paper and much of the discussion examines the problem of interchangeability and there are interesting comments on gauging and permissible size variations.

That Hewitt was concerned with real, practical solutions can be seen from one of his closing remarks: "Considering that the British weights and measures are little better than a relic of barbarism, and must sooner or later give way to some decimal system ...". These sentiments, like those of Grossmann a few years earlier, are the incisive, clear views of someone faced with practical problems many of which arose from staid conventions.

See also Smith, Abbott & Roberts "The Lancashire Watch Company".

R1287 Hewitt, TP

English watchmaking under free trade

Liverpool: , 1903.

History (English).

Journal article?

Referenced in Barker & Harris "A merseyside town in the industrial revolution, St. Helens 1750-1900".

R1288 Hiatt, NW; Lucy, F

The silversmiths of Kentucky

together with some watch makers and jewelers, 1785-1850

Louisville USA: Standard Printing, 1954, 9.5 x 6 inch, 135 pp, frontis, 8 ill.

Makers (English).

Limited edition of 1000 copies.

R1289 Higginbotham, CT**Precision time measures**

their construction and repair

(Chicago: Hazlitt and Walker), 1952 (1913), 20.0 x 14.0 cm, 345 pp, 211 ill.

Repair, technical (English).

There is no table of contents.

Actually published a little later than 1913 as it begins with a biography mentioning Higginbotham's death in 1915.

Subtitled "A manual of the theory and mechanical laws governing the construction of timekeeping machines and accepted methods for their maintenance and repair".

There are 15 chapters: Mainsprings (11 pages); The calculation of watch trains (25 pages); Watch jewels (8 pages); Escapements, the detached lever (85 pages); Making a drawing of an escapement (22 pages); The cylinder, verge, duplex and chronometer escapements (16 pages); The balance staff (22 pages); Making the balance and making the hairspring (12 pages); Cleaning a watch, assembling, repairing (44 pages); Balance truing (12 pages); Poising the balance (5 pages); Springing (16 pages); Magnetism (10 pages); Adjusting (38 pages); and Workmanship (10 pages).

There is a 5 page index.

[1st edition, very good] Higginbotham worked as watchmaker for Giles, Wales (Marion Watch Co), master watchmaker for Hampden and superintendent at Seth Thomas, Illinois and South Bend. As noted in the preface, the book is based on the series of pamphlets issued by the South Bend Watch Company under the title "Short talks to watchmakers" (which see).

This is a much under-rated book, probably because the sub-title makes people hesitate before reading it. But there is no theory as such. It is a mixture of technical information and practical advice for the watch repairer.

Higginbotham clearly believed that a good workman needed to understand why watches are constructed the way they are, and the first 7 chapters contain straightforward explanations of the underlying reasons for the form of mainsprings, the design of gearing and the action of escapements. His approach is not abstract and he is very aware of the need to present topics so that jobbers will appreciate their usefulness. Consequently he includes general practical advice. In this part there is a discussion of the lever escapement (occupying about a third of the book) which is one of the best I have read. Starting with showing how the reader can make a working cardboard model, he examines the behaviour of the escapement, its faults and remedies.

The remainder of the book is more practical in nature, It contains some excellent material including a very good explanation of how to make a staff from watch plate measurements, instructions for adjusting and a discussion of workmanship and common mistakes.

Higginbotham also extends his development of the reader's knowledge by including information on how compensation balances and balance springs are made.

R1290 Higginbotham, CT**Short talks to watchmakers**

(USA: South Bend Watch Co), nd (ca 1910), 15.5 x 8.5 cm, 150 pp?, ill (10 vols, see below).

Repair, technical (English).

Undated but before 1915. These booklets were later used as the basis for his book "Precision Time Measures".

There is a single volume edition subtitled "Books 1 to 10" which may be a reprint.

Higginbotham gave addresses to watchmaker and jeweller associations which were issued as pamphlets by the South Bend Watch Company, where he was superintendent, and distributed free of charge. There were ten such pamphlets:

Book 1: "Temperature adjusting", 16 pp, 4 ill.

Book 2: "Temperature adjusting", 20 pp, 11 ill.

Book 3: "Watch gearing", 23 pp, 10 ill.

Book 4: "Watch jewels" 16 pp, 9 ill.

Book 5: "Cleaning a watch", 16 pp, 7 ill.

Book 6: "The balance staff", 32 pp, 21 ill.

Book 7: "Springing and adjusting", 20 pp, 13 ill.

Book 8: "The detached lever escapement", 19 pp, 6 ill (one fld).

Book 9: "The detached lever escapement", 24 pp, 10 ill.

Book 10: "The lever escapement", 55 pp, 28 ill (including Fig 11A).

Each booklet has a portrait of Higginbotham.

[1st edition, fair] [Books 1 & 2, "Temperature adjusting"] *This begins with the principles of the expansion of metals and an experiment to show changes in elasticity. Then there is a detailed description of a home-made oven. The first booklet ends with a summary of Berthoud's experiments on balance springs and the statement that Book 2 will contain the results of experiments at South Bend together with instructions for temperature adjustment.*

I have not read Book 2.

[Book 3: "Watch gearing"] *A short description of wheels, pinions, their action and epicycloid teeth is followed by an explanation of incorrect depthing. Then there are notes on locating depthing errors, the depthing tool, determining sizes, addenda factors and tooth thickness.*

[Book 4: "Watch jewels"] Higginbotham starts with a brief discussion of materials (diamond, sapphire, ruby and garnet) and cleaning. This is followed by instructions for removing and replacing set jewels, a discussion of endstones, and instructions for making settings.

[Book 5: "Cleaning a watch"] This begins with remarks on examination without any repair suggestions. Then cleaning by hand is described with special remarks about the barrel and mainspring. The booklet concludes with notes on assembling and oiling.

[Book 6: "The balance staff"] The first part discusses the removal and refitting of riveted staffs. This is followed by notes on hardening and tempering as a prelude to staff making. Higginbotham firstly describes making a gauge to measure the staff from the movement, and then his method of turning the staff. He concludes with a few notes on turning and polishing.

[Book 7: "Springing and adjusting"] A terse, practical description of selecting, vibrating, truing and fitting balance springs with some comments on bringing to time.

[Books 8, 9 & 10: "The detached lever escapement"] Book 8 is an introduction to the lever escapement. After outlining the terminology, Higginbotham explains the differences between single and double roller escapements and then examines the loss of power that occurs. Book 9 discusses the roller-fork action, describing faults with the roller pin and their detection. Book 10 covers the safety and pallet-escape wheel actions.

[Remark] The preface to Book 1 indicates that the original aim was to produce a work on adjusting. Further, there would be "no theories that are hard to understand; no algebraic equations ... Simple apparatus will be described which the student can easily make ... Watches will be prepared expressly for the purpose of making tests ...". In this context, it appears that Higginbotham's aim was to discuss each aspect of getting a watch into perfect order in a separate booklet. If so, the topics are not covered in a particularly sensible order and the set is incomplete.

This collection of notes, although interesting, is not significant. For the most part Higginbotham describes and states facts. He assumes the reader is a competent watch repairer and so gives few practical tips; those he offers are apparently from his own experience. Most importantly, his book "Precision time measures their construction and repair" (which is much easier to obtain) covers all these topics and more, and so these booklets have greater value for collecting than for their content.

R1291 Higginbotham, CT

The watch balance and its jewelring

USA: Iowa Retail Jewelers, 1907, 15.5 x 8.5 cm, 16 pp, 1 plate, 1 loose fld plate with 8 ill. Description, technical (English).

Tardy and Robertson give the date as 1912, which may be a later printing.

The plate is four pages in size when extended and has 8 drawings.

"A Lecture by C. T. Higginbotham, Supt. South Bend Watch Company, before the State Convention of Iowa Retail Jewelers, at Des Moines, Iowa, June 26th, 1907".

[1st edition, good] A small booklet in which Higginbotham discusses the importance of the balance and gives a very good description of the construction of bi-metallic balances, staff making and jewels. It concludes with "When you have read this little booklet from cover to cover, by passing it to your watchmaker, it might be to your mutual advantage"; a rather damning criticism of jobbers!

A well written and interesting piece of ephemera of not much use other than for the pleasure of reading it.

R1292 Higginbotham, CT; Higginbotham, P

Jeweled bearings for watches

USA: Adams Brown Co (Chicago: Hazlitt & Walker), 1979 (1911), 20.0 x 13.0 cm, 53 pp, 40 ill. History, repair (English).

The reprint is a limited edition but no number of copies is given.

This book describes how to make a hole jewel from raw materials by the English method and then set it in a bezel.

[1st edition, excellent] The first part describes how to take a rough stone and, with a lathe and simple tools, slice, shape and drill it to produce a flat plate jewel or domed balance jewel.

The second part describes making a bezel and setting the jewel, followed by fitting it to a watch and polishing.

As, for many, such a task will not arise in practice I consider this to be of historical interest as well as (or instead of) repair value. The instructions are clear, practical and well illustrated. Although I doubt if I could make a bezel set jewel I now have a clear understanding of the processes. The book is well worth reading.

"Watch and Chronometer Jeweling" by N.B. Sherwood covers the same material, but I think this book is better. See also Daniels "Watchmaking" for a modern approach.

R1293 Higonet, P; Rosovsky, H; Landes, David S

Favorites of fortune

technology, growth and economic development since the industrial revolution

Cambridge USA: Harverd University Press, 1995 (1991), 24.0 x 16.5 cm, 558 pp, tables. Economics, history (English).

An introduction on technology and growth by Landes, followed by 18 chapters in 3 sections; technology, entrepreneurialism, and paths of economic growth.

Section 2 includes "The Swiss watchmaking industry" by Francois Jequier (17 pages, 1 table).

[1st edition, fair] Jequier's essay is titled "Employment strategies and production structures in the

Swiss watchmaking industry". It surveys the different organisations used in the Swiss industry at different times.

The first 5 pages cover developments before 1900 and, although interesting, are rather vague and superficial. Jequier then examines later employment strategies, in particular those of D-J Lecoultre, and the resolution of worker grievances. These parts are fascinating and probably deserved a fuller treatment. He concludes with remarks about the effects of the introduction of electronic watches and a fervent hope that the Swiss industry would rise from the ashes.

In total, the article is interesting and worth reading, if you have easy access to it.

[Remark] As noted elsewhere, I am utterly ignorant of economics, and so the following can be ignored if you so desire.

Other parts of this book are worth reading. The introduction by Landes is a very interesting, general survey. Chapter 12, "Entrepreneurs and managers" by Tremin is a fascinating examination of different types of business control. It discusses the pin manufactory of Stubs (but unfortunately doesn't mention the watch tool exploits) and the organisation of pottery production by Wedgewood (which has some relevance to the organisation of watchmaking in England).

Chapter 14 "Technology and the economic theorist: past present and future" by Rostow is perhaps my favourite of the sections I have read.

In Rostow's essay he says "neoclassical growth models ... emerged to explain this cheerful but unexpected circumstance (the mid 1950s boom, but) ... were not particularly useful; although they provided considerable high-grade economic talent relatively innocent fun for some time". Indeed some rather tongue-in-cheek criticism of the failure of economics to predict or explain occurs elsewhere as well. This doesn't surprise me as economic theorists have only about 200 years of useful data and they attempt to model very long-term events.

However, I think I have gained some feeling for my problems with Glasmeier through this book's distinction between economic historians and economic theorists. To a large extent history is one of the meditative disciplines (such as art, literature and philosophy) which elucidate and perhaps provide an understanding of past objects and events. In contrast science has its core in the development of models through which the future can be predicted, albeit stochastically; clearly including medicine, psychology and other "social sciences". The ability to predict is measurable, although we may have to wait 200 years before a long-term model can be tested.

Rostow surveys past attempts to model economic events and shows that, so far, such theories have failed; this, in part, seems due to the necessity of reducing the infinitely and continuously variable to a very small number of aggregated groups. But Glasmeier is not a theorist, she is an historian, and her passing mentions of predictive questions are better viewed as asides not relevant to her main purpose.

R1294 Hilfiker, J

L'influence de la pression de l'air sur la marche des chronomètres

Neuchâtel: H. Wolfrath, 1889, 21.0 x 13.5 cm, 22 pp.

Technical (French).

Extract from the Bulletin de la Société des sciences naturelles de Neuchâtel.

The influence of air pressure on the rate of chronometers.

R1295 Hillmann, B

La montre cylindre, construction et réparation

Der zylindergang, konstruktion und reparatur der zylinderuhren

Bienne: Chs. Rohr; Leipzig: Leipziger Uhrmacher-Zeitung, 1931 (1904), 21 x 15 cm, 94 pp, 64 ill (68 pp, 67 ill).

Repair, watch making (French, German).

The German edition of 1931 is 79 pp, 64 ill.

Construction and repair of cylinder escapement watches.

R1296 Hillmann, B

La montre-bracelet ses caractéristiques et sa réparation

Die armbanduhr ihr wesen und ihre behandlung bei der reparatur

Armbaandsuret det bekaffened og fremgangsmaaden ved dets reparation

Bienne: Magron (Copenhagen: Forbundet af Urmagersvende) (Berlin: Deutschen Uhrmacher-Zeitung), 1926 (1925), 19 x 12 cm (22 x 15 cm), 66 pp, 56 ill, 12 pp ads (49 pp, 55 ill).

Repair (French, German, Danish).

Translated by G. Berner.

The wristwatch, its characteristics and its repair.

R1297 Hillmann, B

The keyless mechanism

Le mécanisme de remontoir

Der kronenaufzug

a practical treatise on its design and repair

Australia: Richard Watkins (Paris: Bureau de l'Almanach de l'Horlogerie-Bijouterie) (Halle: Wilhelm Knapp), 2004 (1910), 4to (20.5 x 14.0 cm), 27 pp, 30 ill (49 pp, 30 ill, ads).

Repair (French, German, English).

The French translation of 1912 is by Gros. The third French edition is undated, but circa 1920. The 2004 English translation by Richard Watkins is from the 3rd edition and is distributed as a PDF

computer file.

In 5 sections: Gearing (15 pages), Click-and-ratchet work (8 pages), Fixing the stem (11 pages), Hand setting (push piece, lever and negative), and Rocking-bar mechanisms (3 pages).

[3rd edition, very good] *This is an excellent examination of keyless mechanisms, their faults and repair. Accompanied by very good illustrations, the descriptions are clear and sensible.*

Besides being an excellent description of, and repair guide for keyless mechanisms, Hillmann's writing is laced with invective against poor watches and stupid designs, and it is a delight to read; even if, like me, you rarely overhaul watches.

R1298 Hillmann, B

The repair of complicated watches

La réparation des montres compliquées

Die reparatur des komplizierter taschenuhren

Munich: Callwey (Vichy: G. Collon) (Paris: Libraire Centrale des Sciences, Bienne: Ernest Kuhn) (Halle:) (Berlin: Carl Marfels), nd (1911), 22 x 15 cm, 124 pp, 88 ill, 5 plates (112 pp, 88 ill, 5 fld plates). Repair (French, German, Spanish, English).

First published in German in 1911. Three French editions (1912, nd, 1926 translated by Charles Gros), one by Berner in 1930 and a Spanish edition.

It has been translated into English and printed in Seibel and Hagans "Complicated watches".

There seem to be two modern reprints; one of 60 pp and 47 ill (being part of the 1911 edition) and another of 133 pp (German).

The repair of complicated watches. It contains 18 short sections covering: hints for the repairer, alarms, calendars, chronographs (43 pages), repeaters (56 pages), complicated watches and conclusions.

[4th edition, very good] *I have not read the French edition and so I will repeat my comments on the English translation of it, which forms part of Seibel and Hagans "Complicated watches" (which see):*

Hillmann gives clear descriptions of a variety of mechanisms, which are very good but would be easier to follow with a watch in hand. Included is some discussion of faults and salutary warnings not to attempt repairs without being certain of the problem. It is very good; professional, instructive and valuable.

R1299 Hirschi, E

L'organisation professionnelle de l'industrie horlogère

en France et en Suisse

Paris: Pierre Johanet, 1948, 8vo, 145 pp.

Watch making (French).

The professional organisation of the horology industry in France and Switzerland.

R1300 Hirst Brothers

Wide awake catalogue

tools and materials for watchmakers, clockmakers, jewellers and opticians

USA: Hirst Brothers, nd (ca 1890), 4to, 456 pp (160 pp).

Catalogue, tools (English).

The 4th catalogue (456 pp) was published circa 1900.

"Many engravings and a few photographs of equipment including many prices. Tools for clock and watchmakers, jewellers, opticians set out in an alphabetical system of product and including benches, drawers, gauges, lathes, motors, oils, polishing materials, punches, scales and screwdrivers. All items described and manufacturer stated."

R1301 Hobbs, JL

Former clock and watch makers of North Lonsdale

England: Cumberland and Westmorland Antiquarian and Archaeological Society, 1958, 8vo, 25 pp, 2 ill. Makers (English).

Reprinted from the Society's Transactions, vol LVII.

R1302 Hoefler, FA

Geschiedenis der openbare tijdaanwijzing

Leiden: Brill, 1887, 4to, 136 pp, 8 lithograph plates.

History (Dutch).

A history of mathematics, horology and scientific instruments.

R1303 Hoepli

Biblioteca dell' orologio

Milan:, 1893, 15 x 11 cm, 64 pp.

Bibliography (Italian).

R1304 Hoffman, Professor

Conjuring tricks

with coins, watches, rings and handkerchiefs

London: George Routledge, Philadelphia: D. McKay, ca 1900, 19.5 x 13.5 cm, 123 pp, ill.

Miscellany (English).

Hoffman produced other books including "Later magic. with new miscellaneous tricks and recollections of Hartz the wizard" (1925, 737 pp, 260 ill, portrait) and "Tricks with watches, rings, flags & gloves" (nd, 247pp, 8vo).

I would like to learn a conjuring trick to make a few of the books listed here disappear!

R1305 Hofman

R1305 Hofman

Physik am werktisch des uhrmachers

Hanover: , 1956, 21 x 15 cm, 152 pp, 48 ill.

Repair (German).

Physics at the watchmaker's workbench.

R1306 Hofman Jewelry Co

A practical work on watch repairing

with receipts for doing all kinds of work in the jewelry trade

Columbus, USA: The Hofman Jewelry Co, ca 1900, 9 x 6.3 inch, 80 pp, 4 pp of ill.

Repair (English).

Probably circa 1900.

Likely to be a later edition of O.S. Hofman "The watchmakers' and apprentices' book of instructions".

R1307 Hofman Supply Co

Watch-makers' tools, materials, supplies

USA: Lindsay Publications (USA: Hofman Supply Company), 1994 (1897), 136, 28 pp, ill.

Repair, tools (English).

There may have been a reprinting in 1984 of a different edition (162 pp).

Includes a section on watch disassembly.

R1308 Hofman, OS

The watchmakers' and apprentices' book of instructions

Springfield: New Era Co., 1890 (1883), 159 pp, ill (46 pp, ill).

Miscellany, repair (English).

The modern reprint is of the 1893 3rd edition of 46 pages.

The pagination of 159 pp, ill is probably wrong.

Subtitled "Or how to do all kinds of work pertaining to the jewelry trade". Includes enamels, soldering, varnish, etc.

R1309 Hoke, DR

Ingenious yankees

the rise of the american system of manufactures in the private sector

New York: Columbia University Press, 1990 (1984), 23.5 x 16.0 cm, 345 pp, 154 ill, 10 tables.

History, watch making (English).

"Ingenious yankees" was first produced in 1984 as a PhD dissertation at the University of Wisconsin.

It was then printed in 1990. The copyright information and the dedication give the dates 1984, 1985, 1989 and 1990, and the strange dates in the price list reflect this; I expect all copies offered for sale are in fact the public edition of 1990.

An introduction (17 pages) followed by 6 chapters: The private sector (23 pages); Wooden clock movements (57 pages); Axe manufacture (30 pages); Typewriters (48 pages); The Waltham watch Company (78 pages); and The American system (10 pages). The book concludes with notes (52 pages), bibliography (18 pages) and index.

*[1st edition, very good] The introduction and the first chapter provide an overview of the American System of Manufactures, which Hoke defines to be "generally characterized by the mass production of interchangeable parts on specialized machinery arranged in sequential operation". Hoke's aim is to show that this system developed in the private sector independently of its use in arms manufacture by the government (which he does very successfully).**The following chapters trace the development of different aspects of the system. Chapter 2 describes the manufacture of wooden clock parts in the context of a putting out system, controlled by the clock maker by means of specialised gauges. Chapter 3 explains the development of sequentially arranged machinery within a factory to make axe heads (where interchangeability is of little or no consequence). Chapters 4 and 5 illustrate the coalescing of both aspects into a unified manufacturing system for complex items, typewriters and watches. These chapters are ordered by the sophistication of the manufacturing process rather than by date, and so the chapter on typewriters describes developments which occurred a long time after developments in the watch industry.**Although the chapters can be read independently of each other, a common thread runs through them and it is preferable to read all rather than just the chapter on Waltham in isolation.**Chapter 5 "The development of watch manufacturing at the Waltham Watch Company" is reproduced in Hoke "The Time museum historical catalogue of american pocket watches". There are some changes, but with one exception they are minor, being mainly the incorporation of some notes into the body of the text, corrections and some new illustrations. The exception is that two entire sections of about 30 pages have been omitted. The first is "Adjustability, the watch escapement and balance" which discusses the manufacture of balance springs and balances and illustrates some tools, including those for drilling and threading balances for timing screws. The second, "Duane Herbert Church and the end of innovation at Waltham", gives a brief biography of Church and describes his automatic plate drilling machine, and an outline of the role of research (primarily tool design); I discuss this in my remarks about Kenison "Frederic C Dumaine, office boy to tycoon".**Because the reproduction of illustrations is much better in "The Time museum historical catalogue of american pocket watches" that book is to be preferred to this, but it is a pity the sections mentioned above were omitted.*

Although this book is very good and definitely worth reading, I felt let down by inadequate technical explanations. Hoke does not precisely define the American System of Manufactures and interchangeability, instead of which he relies on a fairly intuitive, descriptive approach. Unfortunately the consequence is that he is unable to focus on critical aspects of the products and machinery and so he does not examine them adequately.

The book is far better as an historical survey than a formal study and from this point of view it is very good and very stimulating.

[Remark] When I first read the chapter on Waltham in "The Time museum historical catalogue of american pocket watches" I found it to be an excellent history of Waltham, although I felt vaguely uneasy about the discussion of gauging. Re-reading the chapter in its original context (and after reading David "Rapport a la Societe Intercantonale des Industries du Jura sur la fabrication de l'horlogerie aux Etats-Unis") brought this unease into focus and pinpointed its cause.

Landes "Revolution in time" (2nd edition only) provides a correct definition of interchangeability: "the ability to choose any part in a pile and insert it in its place, where it functions without further adjustment or treatment". The problem of interchangeability only arises when components which must fit together are mass produced, so that a complete item is constructed by putting together a random selection of such parts. It does not arise when an item consists of only one component or when the components for one item are manufactured entirely separately from the components for another similar item. Although in both of these cases the components might be made precisely enough to be interchangeable, interchangeability is unnecessary and has no effect on production or the quality of the items produced. The mass production of items by machinery necessarily produces very similar, potentially interchangeable items, irrespective of whether or not interchangeability is a goal. However, most manufactured items, even as trivial as a spade, involve fitting parts together (the blade and handle) and the question of interchangeability occurs. In the mass production of a piece some variations in size, shape and other attributes are inevitable, due to play in the machines, wear of cutting tools, and changes in the size, shape and consistency of the raw material. Consequently we must define a part to be interchangeable with another part if both lie within prescribed tolerances. For example, if the diameter of a pivot varies between $D+d$ and $D-d$, and the diameter of the corresponding plate hole varies between $H+h$ and $H-h$, then pivots and holes are interchangeable if and only if the largest pivot is smaller than the smallest hole, and the range of side shakes from the largest pivot in the smallest hole to the smallest pivot in the largest hole is acceptable. So in this instance interchangeability depends on being able to create a manufacturing process that ensures the values of d and h do not exceed predetermined limits; see Tarasov "Technology of watch production". Even when manufacturing variations are very much smaller than the required tolerances we should not talk glibly of identical parts, but always recognise that such parts are only nearly perfect.

In addition to variations in physical form we must recognise that less obvious criteria are often critical. For example, two balance springs which are identical in size and shape may behave quite differently in a watch, and this is due to variations in the steel and its hardening and tempering. Even less obvious is the specification of tolerances to suit the quality and intended use of the item being manufactured. Jacques David ("Rapport a la Societe Intercantonale des Industries du Jura") illustrates this when he comments on the manufacture of low quality watches such as the Home and Broadway models: "Another advantage, which is of some importance from the point of view of the economy of manufacture, lies in the fact that a quality of parts can be used in these very ordinary movements that had until now been discarded".

Hoke does not define interchangeability and, instead, he talks of "a realistic definition of interchangeability" which includes "adjustability during assembly". This vague and relaxed view leads him to make some rather strange statements about it. For example, he says "Wooden clock movements meet the criteria for perfect interchangeability. ... Wooden clock movement escapements were designed to be adjusted as an integral part of the manufacturing process ... so that parts could be manufactured within certain tolerances and still remain perfectly interchangeable". The fact that a part needs adjusting means it is not interchangeable and Hoke is actually saying that the "certain tolerances" were too large; that is, the parts varied in size by more than was acceptable. To make things roughly the same is not to make interchangeable parts and Hoke should have asked why the tolerances were so large that hand finishing was necessary; after all, it is only when production fails to produce interchangeable parts that hand fitting and adjustment are needed. This error is compounded when he says of bicycle manufacture that "even perfect interchangeability could still require adjusting and assembly. ... cycle assemblers had fully interchangeable spokes ... yet the wheel still required the careful adjustment of the spokes in order to run true". Clearly the hubs, rims and spokes were not interchangeable. If they were the automatic assembly with fixed, predefined tightening of the spoke nuts would always produce a true wheel. That is to say, interchangeability requires more than a part simply fitting into its allotted space; it must also behave identically to any other such part in that assembly (which is why seemingly identical balances and balance springs are not interchangeable). Perhaps the most obvious example is when Hoke writes "although the majority of watch parts ... were fully interchangeable within a model, several parts were somewhat less than fully interchangeable. These parts were the frame parts ... This lack of perfect interchangeability was not due to any method of manufacturing, but rather to the very nature of the watch itself". It is hard to understand this statement in the light of later Swiss manufacture which achieved almost fully automatic construction including assembly. It is also hard to understand why the list of less than fully interchangeable parts omitted jewels and pivots, which were mentioned in a quote 4 pages earlier and are

the focal point of Waltham's record keeping, unless Hoke did not realise the significance.

Because Hoke's comments on tolerances are simple generalisations lacking precision a serious problem is created; he classifies parts as interchangeable even though some of them require adjustment, and he does not examine the reasons why some need adjustment and others do not. This blurring of the boundary between interchangeable and non-interchangeable parts results in him overlooking some important aspects of the manufactures he describes. For example, he says that wooden clock manufacturers "redesigned the clock to ease assembly problems and relax manufacturing tolerances", but he fails to ask why this was done. He does mention that wooden parts vary in shape and size with humidity, but there is no discussion of why wood was used (I think I read somewhere that it was primarily because of a lack of brass), timekeeping accuracy (presumably quite low), life expectancy before components wore out, or the intended market. The lack of technical analysis (including no comment on wheel tooth and pinion leaf shape and depth) means that Hoke does not (and is unable to) examine tolerances in context; simply saying some tolerances are large and others small is too simplistic. Hoke states that his "research is largely based on 'reading' the objects" but his readings lack depth.

I believe a far more useful approach is to use the strict definition of interchangeability and recognise partial interchangeability, where some parts are interchangeable and others are not. By examining the partial interchangeability of early mass-produced products we necessarily raise four very important questions:

First, which parts are unique, non-interchangeable, and why? The obvious reason for uniqueness is the inability to construct a manufacturing process which will operate within the necessary tolerances. However, it may be that such a process could be built, but its cost is excessive compared with manual fitting. It is hard to imagine parts being made deliberately unique so as to require manual adjusting, as Hoke seems to suggest.

Second, why is interchangeability necessary? The driving force in armories was post manufacture exchange of parts on a battlefield. Likewise, much of the adjustability built into typewriters was for post manufacture adjustment to suit individual users and to take up wear. In contrast, clocks have relatively few repair problems and are rarely found as piles of damaged bits on battle fields; it is the manufacturing phase that is critical. Watches are especially interesting because both phases are very important; optimisation of manufacture and optimisation of relatively frequent repair.

Third, which parts need to be interchangeable? In the case of watches the obvious answer is pivots, jewel holes and balance springs; these are the most exacting parts and the most likely causes of failure in use. Making plates and bridges interchangeable may be convenient for manufacture, but otherwise it is not relevant; such parts are, I suggest, never broken or swapped and do not need to be replaced. It is interesting to note that the parts which need to be interchangeable are the most difficult to manufacture. Finally, to what extent were techniques developed to make parts interchangeable and to what extent were techniques developed to overcome the lack of interchangeability? Thus the eccentric verge pivot in wooden clocks (and the similar feature in later American brass clocks) is best viewed as a feature to overcome lack of interchangeability rather than brushing it off as means for adjustment.

So, rather than having a loose and fairly meaningless definition of interchangeability, it is better to deliberately accept and examine the production of unique parts. There is no doubt that many tools, gauges and design features were explicitly constructed with unique parts in mind. After reading David's reports (which Hoke could not) it is clear that the gauges used by Waltham and illustrated by Hoke were tools to overcome lack of interchangeability and were not to check for interchangeability, and thus having an utterly different role to the armoury go/no-go gauges.

In his final and very good chapter, Hoke does explicitly comment on some of these points, albeit far too late and far too briefly. I suspect he may, like me, have felt uneasy about some of his less precise arguments.

Other discussions of interchangeability will be found in Richard Watkins "Jacques David and a summary of 'American and Swiss Watchmaking in 1876' with emphasis on interchangeability in manufacture", NAWCC Bulletin, No 350, June 2004, 294-302 and Watkins "Watchmaking and the American system of manufacturing" (both available from my web site).

R1310 Hoke, DR

The Time museum historical catalogue of american pocket watches

Illinois: The Time Museum, 1991, 28.5 x 21.0 cm, 330 pp, 333 ill.

Collection, description, history, bibliography (English).

The book begins with two major essays, a general historical survey of the American industry (45 pages) and a study of Waltham (44 pages). These are followed by the catalogue of the Time Museum collection of 374 items arranged by type and manufacturer: pre factory production, jewelled watches, dollar watches, cheap watches, experimental and independent makers, and miscellaneous. Many items are illustrated by colour plates. The book concludes with an extensive bibliography.

[1st edition, excellent] *The first essay gives an excellent history of the American industry. Included are many examples of advertising from the Milwaukee Public Museum collection (providing a very good survey of the neglected area of marketing) and an examination of watch casing.*

The second essay is a revision of part of Hoke's thesis "Ingenious yankees", which see. The focus is on manufacturing by machine and tooling, the most interesting aspect being the discussion of gauging (although Hoke does not examine its purpose in relation to automatic machines).

Both essays are too brief, much of the space being taken up by excellent photographs rather than text. But in the context they provide a very good overview.

The catalogue itself is a superb photographic essay which makes most other books look inadequate. Not all items are illustrated and so, the museum having closed, those descriptions are not much use. However, the important pieces are beautifully photographed and well described.

My opinion is that this is one of the best descriptions of American watchmaking and its products.

[Remark] *Some people think this book is bad. In particular, Jon Hanson has stated: "Basically, 'Hoke the joke' (not my term) did not have a clue about what he was doing. Watches have been reworked, recased, or are missing components. While the pictures are pretty, they are blown up, oblong and a funny color. The bottom line is that Hoke knows little or nothing about watches! His Time Museum book is a disgrace and an insult to American horology!" Actually, none of these criticisms are valid. The watches illustrated are those in the collection, and they may not be all original. The photographs are excellent and the "oblong" ones were deliberately taken at an angle and are not the result of artificial distortion (which I presume is what Hanson was implying).*

Hanson also wrote "My listing of errors would be another book!" To some extent this is supported by Tom McIntyre who has written: "It does have a number of glaring errors, however. When I asked Don about some of them he said he was given very little time and no budget to consult other experts to verify the Time Museum anecdotal information". So far no-one has been more precise and an errata sheet has never been produced. As a result, I do not know how many errors there are, or their significance.

Although these criticisms may be valid, I think they miss the point. First, the book catalogues a specific collection and so the condition of the watches reflect what the owner purchased. It might be preferable to show better watches, but this could not be done. Second, a lot of research into American watches studies what I would call minutiae. That is, small variations in features (such as casing, damaskeening and minor jewellery changes) from one watch to another. It is this sort of information that interests Hanson and is the basis for his concern with precise details. In contrast, the focus of Hoke's research is the big picture, the development of watchmaking in America. Certainly caption errors are annoying, but they have little or no effect. For example, incorrectly describing a case metal is completely irrelevant; after all, swapping cases was and is common. Likewise, stating a wrong size does not impact on the reader's understanding of trends and styles.

I have no doubt that Hoke's knowledge of the finer intricacies of American watches is inadequate, as is mine. But he and I are searching for an understanding based on much more substantial considerations.

R1311 Holly, FM

For generations to come

the life story of Elias Ingraham

USA: Flemming H. Revell, 1975, 9.25 x 6.25 inch, 224 pp, 24 ill.

Biography (English).

See also Ingraham "The Ingraham story".

[Review by D. H. Shaffer] *The literature of horology is abundant and growing. Many books have been written on the mechanics of our timekeepers. Many books have written on the history of the art, and with that history some concomitant remarks about the men involved. But few books have been written to explore the character and personality of one of our horological heroes, to watch him labor on a common day, to meet his wife and learn of her impatience with him and his work. Seldom do we study not just what he produced, but why. Seldom do we follow his life and his accomplishments as they share a piece of time. For "Generations to come" is one of those rare books, for in its pages we meet Elias Ingraham, patriarch of one of the most prominent clockmaking families of New England. Through Forrest Holly's thoroughness in research and his skill in writing, this blue-eyed, red-haired man of the nineteenth century lives again. The pictures painted by this book have substance and detail. In addition to Elias, we become acquainted with his wife, Julia, his brother, Andrew, and his many business companions, and his issue for the generations that succeeded him. Much can be learned about southern New England life in the 1800's as that background is woven into story of the Ingraham family. But underlying the facts of this book are the feelings - feelings that give us a compassionate understanding of a real man who did real things at a real time.*

The style of this book is unusual. Bulletin readers will remember "Son of Elias" from December 1974; that article was essentially a small sample from this book. Perhaps I am an unreconstructed Victorian, but I enjoy Forrest Holly's somewhat romantic exposition and poetic excursions as a change from standard reading fare. His book will not help anyone repair a clock, identify movement, or establish a price; but it will enrich its reader and give him several pleasant hours of reading. At a price that compares with dinner out for one, isn't that a bargain?

As a final comment on the spirit and worth of this sensitive book, I offer some words of James Russell Lowell. "Poetry is not made out of the understanding. The question of common sense is always: 'What is it good for?' a question which would abolish the rose, and, be triumphantly answered by the cabbage." (Reprinted by permission. NAWCC Bulletin No. 181, ©1976 by the National Association of Watch and Clock Collectors, Inc.)

[Remark] *I have not read this book, but an obvious question is: how much is based on fact and how much is imaginative fiction? However, the Bulletin article mentioned in the review appears to be strictly based on fact and so I expect the book is too.*

R1312 Holmes, TH**A brief history of the national college of horology and instrument technology**

1946-1960

London: National College of Horology, 1960, 8vo, 32 pp.

History (English).

R1313 Holtzapffel, C; Holtzapffel, JJ**Turning and mechanical manipulation**

reprint; New York: Dover (London: Holtzapffel & Co), 1990 (1843), 23.0 x 15.5 cm, 5 volumes: 462 pp, 315 ill; 569 pp, 711 ill; 452 pp, 185 ill including index to vols 1-3; 592 pp, 771 ill (including 22 plates); 652 pp, 597 ill (including 56 plates, 2 fld).

Repair, tools (English).

Two editions of volume 1 (1843 and 1846) and volume 3 (1850 and ?). Some volumes were reprinted.

The pages, illustrations and chapters are numbered sequentially in the first 3 volumes; with a few discrepancies between editions.

There were modern reprints in 1976 and 1990.

The 1846 volume 1 and 1850 volume 3 are available as Google Book PDF files, the latter USA only?.

The first three of five volumes are by Charles and the remainder by his son John Jacob; Jagger gives some information in "The artistry of the english watch". The five volumes are:

Volume 1: "Materials; their differences, choice and preparation; and various modes of working them, generally without cutting tools", 1843 (2nd edition 1846). 21 chapters covering woods, descriptive catalogue of woods, animal materials (shells, bones and ivory), minerals, metals, steel (forging, hardening and tempering), alloys, casting, sheet metal, drawing, and soldering.

Volume 2: "The principles of construction, action and application of cutting tools used by hand; and also of machines derived from the hand tools", 1846. 9 chapters on general remarks, chisels and planes, turning tools, boring tools, screw cutting, saws, files, shears, and punches.

Volume 3: "Abrasive and miscellaneous processes which cannot be accomplished with cutting tools", 1850 (two editions). 6 chapters on abrasive processes (including a catalogue of tools, materials and processes), grinding and sharpening cutting tools, figuring materials by abrasion, lapidary work, gem and glass engraving, and varnishing and lacquering.

Volume 4: "The principles and practice of hand or simple turning", 1881. 14 chapters on history of lathes, centre lathes, revolving mandrels, modern foot lathes, attachments (division plates, guides, slide rest, screw and spiral cutting, and lifting blocks), chucks, elementary softwood turning, elementary hardwood and ivory turning, elementary metal turning, screw cutting, the sphere, practical examples of wood and ivory turning, miscellanea in plain turning in wood and ivory.

Volume 5: "Principles and practice of ornamental or complex turning", 1884. Many of the plates are photographic. 12 chapters covering introduction (adjustment, materials and chucks), the sliderest, revolving tools (cutting frames, drilling and eccentric cutting frames), elliptical, epicycloidal and rose cutting frames, eccentric and oval chucks, spherical and linear chucks, combinations of chucks, compound eccentric turning, spiral turning, and the spherical rest.

A sixth volume was planned but not written. It was to cover metal manipulation; turning, screw cutting, drilling, planing, slotting, wheel cutting and shaping machines.

*[1st edition, good] Although not a horological work, it is regarded as a classic text on lathe use. Volumes 4 and 5 are said to be the most useful.**In fact, except for the chapter on metal turning in volume 4, the books are devoted to turning large objects (such as vases) in non-metals such as wood and ivory, and it is a pity the projected sixth volume never materialised.**However, odd facts appear; for example, descriptions of watch jewellery and mainspring making in volume 1 and an excellent explanation of file making in volume 2. Much of the text is of general interest, but it is irrelevant to horology.***R1314 Hood, Grant****Modern methods in horology**

a book of practical information for young watch makers

Peoria USA: Bradley Polytechnic Institute, ca 1950 (1904), 19.5 x 14.0 cm, 253 pp, 168 ill, 1 map, 1 loose folded ill.

Repair, tools (English).

Printed in 1904, 1913, 1926 (the 4th edition) and 1944, perhaps with other editions. There is at least one undated printing; this may be an edition or reprint between 1904 and 1926.

Two brief chapters on early time measurement and American time zones are followed by 17 chapters covering steel, wheels and pinions, balance staffs, jewellery, pivoting, balance springs, escapements, mainsprings, balances, cleaning and faulty workmanship.

*[undated, 1st edition?, very good?] The excellent last chapter, why some workmen fail to succeed, explains the purpose of the book. In it, Hood presents examples of bad workmanship, some being outstanding illustrations of incompetence; indeed, the book is worth reading for this chapter alone. The rest of the book can be seen as the author's explanation of how to do such tasks correctly. That is, he covers areas where jobbers have problems in understanding (escapements, balance springs, etc.) and repair (pivoting, setting jewels, etc.).**These other chapters are patchy. There are good sections on staffs, jewellery and some useful ideas (like*

how to mount wheels in cement brasses and repairing cylinder escape wheels). Other parts are less satisfactory. His discussion of pivoting is good but a bit vague, and the description of how to draw a lever escapement confusing (Fried is better). Generally the practical advice is clearer than the theory. Nonetheless, it is very interesting and well worth reading.

R1315 Hood, P**How time is measured**

Oxford: Oxford U.P, 1969 (1955), 23.5 x 17.5 cm, 64 pp, frontis, ill, map.
Description (English).

2 editions in 1955 and 1969.

General introduction.

“A well illustrated history of timekeeping covering the origin of calendars and the invention of clocks through to chronometers, alarm clocks, stop watches, quartz crystal clocks, electric clocks, etc.”

R1316 Hooke, Robert; Robinson, HW (ed); Adams, W (ed)**The diary of Robert Hooke**

M.A.M.D., FRS, 1672-1680

(London: Taylor and Francis), 1968 (1935), 23 x 16.5 cm, 527 pp, 3 ill, 5 plates, 3 fld plates.

History (English).

See Baillie “Clocks and watches: an historical bibliography” and Ball “Bringing the work on 1675-1680”, which quote relevant extracts.

See also Evans “Thomas Tompion at the dial and three crowns” and Jardine “The curious life of Robert Hooke”.

R1317 Hoover, A**First watch fob guide book**

machinery and automobile

USA: A Hoover, 1983 (1975), 7 x 5 inch, 212 pp, ill.

Description (English).

Showing machinery and automobile fobs (watch chain medallions).

I have also seen a book titled “Second watch fob guide book, machinery and automobile” with the same date and pagination.

R1318 Hopkins, C**The watchmaker’s and jeweler’s handbook**

A concise yet comprehensive treatise on the secrets of the trade. A work of rare practical value to watchmakers, jewelers, silversmiths, etc. gold and silver platers, etc.

Louisville USA: J. P. Morton & Co, 1866, 8vo, 40, 3, 2 pp, no ill.

Repair (English).

It is available as a Google Book PDF file.

Part 1 Recipes for liquid processes: plating, frosting and gilding (10 pages).

Part 2 Tables of watch trains (7 pages) and watch repair tips (10 pages).

Part 3 Recipes for fusing and melting: solders, imitation gold and silver, alloy for pivot holes (4 pages).

Part 4 Price list for watch repairs with different rates for the North and South of the USA (3 pages).

Index, actually a table of contents (3 pages).

Notes on isochronal adjustment of the balance spring and putting a duplex escapement in beat.

[1st edition, mediocre] Hopkins begins with a grandiose preface in which he states that there is no book meeting the requirements of the watch repair trade and “the author ... has aimed at supplying to all the means of acquiring a correct knowledge of the various specialities” (in watch repairing). Which is nonsense.

Parts 1 and 3 provide recipes and methods for working with gold and silver: solutions for plating, frosting and gilding, solders, and imitation gold and silver. The only interesting mixture is that for an alloy of gold, silver and copper to bush pivot holes.

Part 2 begins with an extensive list of watch trains and the common (and rough) method of determining the diameter of a pinion to mesh with a given wheel (by measuring across a number of teeth). This is followed by instructions to make diamond broaches and files, and to make pivot burnishers. There is nothing new or unusual. Then there are notes on tempering, bluing screws, making drills and gravers, drilling hard steel, and polishing steel.

These are followed by 4 pages of “repair” notes in which there are 11 suggestions: How to lengthen lever escapement levers, How to reduce the strength of balance springs, replacing broken teeth in wheels, polishing wheels, preventing fusee chains from running off fusees, how to alter the depth of lever escapements, rules to determine the correct dimensions of the lever escapement, putting cylinder and lever escapements in beat, tightening loose canon pinions, how to loosen screws and remove rust, and how to remove magnetism from steel. This seemingly random selection is hopelessly inadequate and contains some very dubious ideas. The most interesting tip is that to remove magnetism “cover the article with the juice of common garlic and then warm it over a spirit lamp”. This is sufficiently bizarre that it might work!

Finally, the additional notes (on unnumbered pages after the index) are obscure and dubious.

See also Stelle “American watchmaker and jeweler”.

R1319 Horlbeck, MP**Lexikon der uhrenmarken**

uber 400 uhrenmarken von A. Lange & Söhne bis Zenith

Germany: Heel Verlag, 2009, 25 x 18 cm, 304 pp, 100 ill.

Identification, dictionary (German).

300 alphabetically arranged companies and their wristwatch products.

R1320 Horlbeck, MP**The alarm wristwatch****Der armbandwecker**

the history of an undervalued feature

die geschichte einer untergeschaetzten komplikation

USA: Schiffer, 2007 (2002), 31.0 x 23.5 cm (30 x 21 cm), 232 pp, 535 ill (232 pp, 180 ill).

Illustration, makers (German, English).

Published in German in 2002 and English in 2007.

Six chapters: The development of the alarm wristwatch (24 pages); The function of the alarm (6 pages); Milestones of alarm history (39 pages); The alarm movement in detail (alarm makers in alphabetical order, 74 pages); Gallery (49 pages); and Special watches (21 pages).

There is an appendix with beat rates, size conversion table (lignes, mm, American sizes), and a table of watch signatures with the basic calibre used.

[1st edition, mediocre] I cannot restrain myself. Many books disappoint me, but very few make me angry.

Once or twice I have been asked how I translate books. My response is that, for technical books, it is far more important to understand the subject than it is to understand the language. That may seem strange, but it is true. If you don't know a lot about the subject it is impossible to correctly interpret the text and use the right English terminology. No matter how good your grasp of the other language is, the result will be poor. Not only that, most technical books use fairly straight forward language, so that if you understand the technical context there is generally an obvious translation.

Over the years Schiffer has used Dr. Edward Force to produce English translations of German books. But it is clear that Force knows absolutely nothing about horology and even less English horological terminology. Since 1991, when he translated Bertele "Marine and pocket chronometers", it seems he hasn't bothered to learn anything about this subject. Even though I am sure he has an excellent grasp of both English and German, his translations are terrible. Why has Schiffer used him? Perhaps he is the only, or cheapest, person available? Or perhaps the publisher doesn't care? After all, Schiffer books are primarily coffee-table picture-books and perhaps the publisher thinks no-one will bother to read the words? Whatever is the reason, such books are an insult to those with some knowledge and largely incomprehensible to those with none.

This book is a good example. What does "three slightly wound pivots slide backwards into three slits provided for them" mean? And it is nice to know that Eterna used a "knee lever" so that "clock time could be set with just one hand", presumably because the wearer used his knee to assist him. It appears there are watches with some sort of magnifying property, as "Technically and optically (the Bulova) is a Junghans". And a prototype of the Vulcain Cricket used a free-swinging tone spring. It is also nice to know most of the watches have a big amplitude of 18,000 or more and at least one has a hand-wound anchor (presumably it is a marine watch). But I am still not sure about "the windings of the balance spring would collide with every swing and make a metallic sound"; perhaps he means it would overbank? With a bit of effort we can make sense of most of these oddities. A hook anchor is a pin lever escapement; a knee lever is a setting lever; optically means visually; a tone spring is a gong; free-swinging means freely vibrating; and a pivot can be a rocking bar (but the word seems to have other uses). But why should we have to do the work to make the text intelligible? Why didn't Schiffer have the text proof-read and checked?

The other main point about this book is its lack of useful technical information. In his introduction, Horlbeck states "This book, which was originally intended to be just a small guide to technical service ...". One might assume that in expanding it Horlbeck retained such technical information. But there is not one diagram or useful photograph of an alarm mechanism anywhere in the entire book. Indeed, only five pages are spent on the mechanisms and these are largely incomprehensible (except where they are superficial). Time and time again, there are vague statements in bad English about mechanisms which are not explained, and the reader is left totally in the dark. For example "the movement shows a refined way of transferring power to the alarm mechanism", but Horlbeck doesn't bother to explain what it is. The main problem is that the alarm mechanism is usually hidden under bridges and other dial work, like normal motion work and date rings. So, without diagrams and photographs of partially stripped down movements, the reader has no chance of understanding different mechanisms. All that Horlbeck provides are the basic movement specifications of height, diameter, jewellery and so on. These specifications might give the book an air of technicality, but it is clear that what he terms "technical service" has nothing whatever to do with servicing. This is a great pity, because there are no other books that describe alarm mechanisms.

So, like all good coffee-table books, real knowledge is suppressed for the sake of prettiness. And it is assumed that the "reader" is only interested in getting that warm, fuzzy feeling of happiness which comes from discovering that a watch he owns is displayed in a book!

The first chapter, the development of the alarm wristwatch, is an overview of the main alarm watches in chronological order. Sadly Horlbeck hasn't bothered to include earlier developments in pocket watches, the books by Berthoud and Lepaute at least giving some concrete, useful information, and pocket watch alarm mechanisms are easier to examine. This brief history is repeated and expanded in the third chapter, Milestones of alarm history. Here Horlbeck mentions patents (the first section is even titled "Eterna Patent 42203) but he provides no information about what these patents cover and certainly no details.

The second chapter, the function of the alarm, is short, superficial and largely unintelligible. A good example is an illustration with the caption "one can see clearly the three small points (spurs) that rest in the provided slit borings". At first glance this arrangement means the alarm would be triggered every four hours, whenever the symmetrically arranged "pivots" or "pegs" which "rise up from the hour wheel" fit in the holes; but Horlbeck refuses to give anything away and does not explain how this system works. I am tempted to suggest this chapter should be skipped, but it does serve an important purpose: by diligent reading and some contemplation, the reader can gain an understanding of the ridiculous terminology used in the translation and so, perhaps, be able to make a little more sense of the rest of the book.

Chapter 4, The alarm movement in detail, is a typical coffee-table book catalogue of makers. For each calibre there is a "technical" table, some photographs (none of which show the alarm mechanism usefully, if at all), and a verbal description which mostly concentrates on how to use the crowns and buttons. Occasionally there is a short history of the manufacturer. But nowhere is there an intelligible explanation of mechanisms.

The last two chapters, gallery and special watches, are largely repetitive, although the special watches are described in terms of their other features and their alarms are ignored.

R1321 **Horological Review**

Horological Review collector's edition

New York: Jewelers' Circular Weekly, nd (ca 1918), 11 x 8.5 inch, 72 pp, ill.

Technical (English).

Compilation of articles from the Horological Review on clocks and watches. It includes the composition, manufacture and repairing of enamel dials, the evolution of watch escapements, and the Mudge watch.

R1322 **Horrins, Johan (John Harrison)**

Memoirs of a trait in the character of George III

of these united kingdoms, authenticated by official papers and private letters in possession of the author, with an appendix of illustrative tracts, etc.. Abridged from the original work in manuscript. USA: Kessinger Publishing (England: W. Edwards), 2007 (1835), 22 x 13 cm, xlviii, 256 pp, no ill.

History (English).

Available as a PDF file from Google Books, however missing pages 80-81.

Preface (42 pages).

Table of contents (6 pages) and Errata.

Chapters 13-16 from the original manuscript (86 pages).

Appendix 1 (Remarks by John Harrison on a pamphlet lately published by the Rev. Nevil Maskelyne under the authority of the Board of Longitude, 102 pages).

Appendix 2 (A letter to Dr. Demainbury, 10 pages).

Appendix 3 (Voyage, in the Deptford man of war, to Madera ..., 6 pages).

Appendix 4 (A letter from Lieutenant A. Howe, on the comparative merits of the lunar process, for finding the longitude, and that by chronometry, 2 pages).

Appendix 5 (A quotation from a periodical - a digression in blank verse, on the fate of Sir Cloudesley Shovel, and some remarks on monumental honours, 6 pages).

Appendix 6 (On the character of George Graham, 5 pages).

Appendix 7 (Some remarks on the respective characters of George II and Dr. Samuel Johnson, 8 pages).

Appendix 8 (A note on Junius and Wolcot, 7 pages).

Appendix 9 (Anecdotes of George IV, when Prince of Wales, 14 pages).

Appendix 10 (Observations on the injurious and oppressive effects of a claim under the copy-right act from eleven colleges or libraries, 5 pages).

[1st edition, mediocre] *The author is John Harrison, son of William Harrison and so grandson of John "Longitude" Harrison. To avoid confusion with his grandfather I will refer to him as Horrins.*

The writing of Horrins is a nightmare. I get the impression that he felt the more he wrote the more credible he would be. But perhaps he was simply an obsessional writer, to the extent of burying ideas beneath a mountain of irrelevancies, best described as verbal diarrhoea. In addition to exceedingly long, convoluted sentences, he had a penchant for footnotes with equally long and more irrelevant asides. This he takes to the extreme of having footnotes within the footnotes, making them nearly impossible to read. For example, one footnote occupies five and a half pages and contains eight sub-footnotes within it! It is so long that at one point it is interspersed with a later footnote. Horrins notes that "although (John Harrison) could express himself with clearness by word of mouth ... yet when he took up a pen was altogether peculiar and uncouth", and he goes on to say "A Description Concerning such Mechanism ... (is) unintelligible to the general reader without a translation". In contrast, Horrins is intelligible, but only just, and it requires considerable stamina to struggle through this book to the end. Perhaps he dreamed of being a literary giant of the age; if so, he utterly failed.

Much of what Horrins writes, including the over long preface, consists of vicious (but justified) attacks on the members of the Board of Longitude, particularly Maskelyne and Lord Morton; indeed they make

Earnshaw's "Longitude - an appeal to the public" appear mild in comparison! As these attacks are clearly defamatory, I presume the book was not published until 1835, 63 years after the events described, because it was necessary to wait until many of the people involved were dead.

I began by reading Appendix 1, the text of which was written in 1767 by John Harrison. His original pamphlet has apparently been abridged, but Horrins is vague. To it Horrins has added copious footnotes which I think are longer than the original text.

John Harrison provides a concise, well written criticism of Nevil Maskelyne's trials of H4 at Greenwich (explaining why they were useless and the conclusions drawn wrong). This is followed by a brief explanation of why the Lunar method cannot work in practice, although I was surprised that there is no comment on the mathematical calculations (which took hours) necessary to convert the raw data into the longitude. The quality of the writing is very good, indicating that this was written by someone else from Harrison's ideas.

After ignoring most of the footnotes, the underlying argument is well expressed and provides quite substantive reasons for the view that Maskelyne and Morton deliberately, and perhaps maliciously, obstructed Harrison.

It is with everlasting gratitude that we find only chapters 13 to 16 of the original manuscript have been included. These cover events after the Board of Longitude imposed impossible and vague conditions on John Harrison and his son William to make more chronometers and suffer more and excessively long trials.

Chapter 13 describes the initial contact with George III and the trials conducted at Richmond. It is probably the clearest part of the whole book.

Chapter 14 considers the total rejection of the trials by the Board of Longitude (at the November 28, 1772 meeting). The first four and a half pages discuss the Board's decision, and the remainder consists of an attack on the Board and adulation of George III.

Chapter 15 provides William Harrison's notes on the meeting and the ensuing petition to Parliament for the rest of the reward. It is rather vague and obscure.

Finally, I have no idea of the purpose of Chapter 16, although it appears to be further adulation of George III. (I must admit that by the time I reached this chapter my eyes had glazed over and my brain was simply scanning words without much comprehension.)

The other appendixes are a mixed bag. Appendixes 3 and 4 are straightforward evidence in support of H4 and marine chronometers in general. In contrast, Appendix 5 is a verbose, largely irrelevant and obscure complaint that there was no public monument to Harrison. And Appendix 6, which is meant to be on the character of George Graham manages to almost completely avoid the subject, relegating a short and inadequate biography to a footnote! The following appendixes are utterly irrelevant: Appendix 7 provides a study of the bad manners of Dr. Johnson; Appendix 8 expresses the disgust of Horrins for Junius and Walcot; Appendix 9, about George IV, has nothing at all to do with the rest of the book; and Appendix 10 is a carping criticism of copyright law.

Because most (all?) of the relevant information, which forms a miniscule part of the book, has been reproduced in recent books about Harrison, there is no need to read this book. Indeed I strongly recommend that you don't bother unless masochism gives you pleasure.

[Remark] *Google Books provides an invaluable service by making some books available as PDF downloads, so they are available to people who do not have access to a printed copy. However, it seems that some of the people who scan books for Google do not care about what they are doing. So the scan of Horrins "Memoirs of a trait in the character of George III" is missing pages 80 and 81. Perhaps worse is that the scan of Camus & Hawkins "A treatise on the teeth of wheels" omits 2 plates entirely and badly crops 3 others (which led me to put a corrected version on my web site). Certainly scanning a book is a very long, tedious process, but it should not be undertaken unless the person is willing to use the necessary care and thought to ensure a satisfactory copy that is worth distributing globally.*

And, although utterly irrelevant, the fateful Board of Longitude meeting on November 28, 1772, occurred exactly 172 years before my birth.

R1323 Horrmann, H**Praktische abhandlung uber die repassage einer viersteinigen cylinderuhr**

Halle: Wilhelm Knapp, 1888 (1881), 8vo, 150 pp, 35 ill (94 pp, ill).

Repair (German).

Practical treatise on the finishing of a four jewel cylinder watch.

Probably the earlier two editions of "Repassage einer zylinder uhr und der ankeranges" as the only references to that book are to the "third edition".

R1324 Horrmann, H**Repassage einer zylinder uhr und der ankeranges**

Halle: Wilhelm Knapp, 1910, 197 pp, 83 ill.

Repair (German).

3rd edition in 1910.

Finishing a cylinder watch and the lever escapement.

R1325 Horstmann, GH**Taschenuhren**

früherer jahrhunderte aus der sammlung Marfels

Berlin: Deutsche Uhrmacher-Zeitung, 1897, 25 x 16 cm, 15 pp, 24 plates with 83 ill.

Collection (German).

The Marfels collection, which was sold to Pierpont Morgan.

R1326 Hotta, Ryohei

List of books and booklets on horological subjects

Tokyo: Hotta, 1967, 238 pp.

Bibliography (English).

Section 2 - English

R1327 Hotta, Yajiro

A horologist of refined taste

Tokyo: Hotta Tokeiten, 1979, 371 pp.

Bibliography (Japanese).

Autobiography of Yajiro Hotta

R1328 Hottenroth, J

Die taschen und armbanduhren

Berlin: Florian Stern (Pforzheim: J. Hottenroth), 2006 (1950), 30 x 21 cm, three volumes, 124 pp, 140 pp and 189 pp (two volumes, 120 pp, 170 ill and 150 pp, 220 ill, 20 tables).

Description (German).

The first edition volumes were printed in 1950 and 1953, The second edition (3 vols) was printed in 1955 and reprinted in 2005-06.

Pocket and wrist watches. A textbook for horologists, the industry and technical schools.

Volume 2 contains calculations for wheels, mainsprings and trains, dial work; materials, tools, machines, oils and jewels. It includes 500 questions and answers.

No-one is sure of the spelling of the author's name. Different sources give Hottenrodt, Holtenroth or Hottenroth.

R1329 Houdin, Robert

L'art de connaitre et régler les montres et les pendules

Die kunst taschen und pendeluhren

nach ihren werthe zu satzen, sie im gange zu erhalten, und regulieren

Zurich: (Paris: Robert-Houdin Fils), 1867 (1863), 8vo, 63 pp, frontis.

(French, German).

Leroy lists 3 printings in 1863, 1865 and 1867 and Drummond Robertson lists the German translation in 1865.

The art of understanding and regulating clocks and watches.

Leroy lists 3 works by Robert Houdin.

R1330 Hoult, J

Prescot watchmaking in the XVIII century

England: Lancashire & Cheshire Historic Society, 1926, 8vo, 15 pp, 2 plates.

History (English).

Journal offprint?

R1331 Houriet-Wuille, L

Expose pratique du repassage, démontage et remontage

d'une montre a ancre

Neuchâtel: Attinger, 1893, 8vo, 37 pp.

Repair (French).

Practical description of the examination, disassembly and assembly of a lever watch.

R1332 Houriet, C

Etude sur les calibres de montres

Genève: Administration au Journal Suisse d'Horlogerie, 1911, 32 pp, 28 ill, 1 fld plate.

Technical (French).

Study of watch calibres.

R1333 Houriet, C

The American watchmaking factories and their tools

Les fabriques américaines d'horlogerie et leur outillage

Australia: Richard Watkins (Genève: Journal Suisse d'Horlogerie), 2010 (1895), 8vo, 25 pp, 47 ill (46 pp, 47 ill).

Technical, description (French, English).

Reprinted from the Journal suisse d'horlogerie in 1895 with the English translation published in 2010.

A foreword followed by four sections: General relations between the factories (1 page); Description of the factories, their distribution, interior details (1 page); Various work, machines and methods (16 pages); and Production, sizes, prices, types, qualities and details of construction (1 page).

[Translation, very good] Chronologically this is the second of three important books on American machinery:

Jacques David "American and Swiss Watchmaking in 1876" (a translation of the 1877 reports on American machinery at the time of the Philadelphia Exhibition).

Charles Houriet "The American Watchmaking Factories And Their Tools" (this book, which is a translation of the 1893 report on American machinery at the time of the Chicago Exhibition).

Edward Marsh "The Evolution of Automatic Machinery as Applied to the Manufacture of Watches" (first published in 1896).

It is interesting to note that the only other substantial book on watchmaking machinery is:

S. V. Tarasov "Technology of watch production" (first published in Russian in 1956).

Houriet was sent by the Swiss Federal Council to visit the 1893 Chicago Exhibition and report on American watchmaking. In addition to attending the exhibition, at which only Waltham and Waterbury had displays, he visited the Elgin, Howard, Rockford, Standard, United States, Waltham and Waterbury watch factories, and the tool makers American Watch Tool Co. and Sloan, Chase & Co.

The first 2 sections briefly describe the products, and the layout and organisation of American factories. The bulk of the book on machines and methods is divided into 11 topics: Turning; Gear cutting; Stamping; Execution of various parts; Inscriptions on the movements; Polishing; Manufacture of the movement; Drilling; Recessing and milling; Planting; and Adjustment. Within each section the machinery and methods are described, with simplified drawings. (Having seen an automatic screw-cutting lathe I know it would not be possible to describe its full complexity in a few pages.) There are very good explanations of screw making, arbor making, pinion and wheel cutting, mainspring making, dial making, inscribing plates, polishing, drilling, planting, and matching balances to balance springs.

The final section, disappointingly, refers the reader to another book before giving a brief explanation of a mainspring barrel design.

This book is a bit frustrating because the brevity and simplified diagrams make it hard work to understand the principles being described. However, the effort is worth it.

R1334 House of Commons

Report from the committee on the petitions of watchmakers of Coventry, etc.

with the minutes of the evidence taken before the committee and an appendix

London: House of Commons, 1817, 33.0 x 20.5 cm, 116 pp, no ill.

History (English).

British Parliamentary Papers of this period are rare. Apparently it was not until 1836 that provision was made for their sale to the public.

The report (1 page), minutes of evidence (88 pages of evidence from 35 people) and 8 appendices (25 pages). The appendices are: Number and amount of licences for selling gold and silver plate; Act of the City of London respecting freemen and apprentices; The covenants of an indenture of apprenticeship; Determination relative to apprentices bound to foreigners; The oath of every freeman of the City of London; Reasons why masters should not omit enrolling their apprentices; The testimony given by every master when he makes his apprentice free; and The charter and bye laws of the Company of Clockmakers of London.

[1st edition, very good] *The context of this report was a catastrophic downturn in the sale of English made watches and the consequent high unemployment.*

Much of the evidence is repetitive, detailing the unemployment, living conditions and wages of large numbers of workers in an industry whose manufacture had halved. It factually presents a picture of widespread, abject poverty, with large numbers of watchmakers forced to pawn all their possessions to survive. So many workers could not support themselves and their families that the parish and industry relief funds for the poor simply ran out of money and many workers were forced to emigrate.

This critical situation was the result of many events; a general downturn in the economy, punitive taxes, inadequate laws to control watchmaking, and the smuggling of large numbers of cheap French and Swiss watches into England. (There was even a proposal to set up a manufactory in Holland, making English style watches and employing English watchmakers; presumably the product would then be smuggled into England!)

Two laws were of particular concern.

Unlike Pitt's 1797 tax on clocks and watches, which was stupid and short-lived, the plate licensing act was a nightmare. Everyone had to have a licence; the casemaker, the pendant maker, the manufacturer, the retailer, and the tax was so high that small retailers simply could not afford to pay it; so they stopped selling watches.

The exportation act of 1678-79 (act of 9 and 10 William II cap 28) dealt with names on watches. It prevented putting any other name on a watch than that of the maker. But makers, quite sensibly, wanted to be able to put the names of retailers on watches. And they did not want their own names on cheaper products. So a law aimed at preventing the piracy of names and the use of false names was also stifling exports. Indeed, it prevented the export of repair parts and so English makers had to smuggle repair parts out of the country! Anyway, the law was ineffectual and by 1817 pirating the names of famous makers and using false names was rife, especially on smuggled watches pretending to be of English manufacture. In addition, some manufacturers took advantage of the situation to make cheap, bad watches, so that the responsible makers were attacked on both sides; from smuggled imports and unscrupulous locals. Several people gave evidence that Jews were employing desperate watchmakers on wages below the subsistence level. (Although a few comments were made indicating that non Jews also behaved badly, there is a strong racial bias in the questioning and many answers.) However, a more serious concern was the behaviour of manufacturers in Coventry. These people had perverted the apprenticeship system into a form of slave labour. Cheap, poor watches were manufactured in factories staffed by apprentices and a few journeymen acting as supervisors. Training was minimal, and as soon as the apprentice reached the end of his term he was sacked, because he would have to be paid much more as a qualified journeyman.

But because there was a glut of these people, who were poorly trained and educated, they could not get jobs elsewhere, and they joined the queues of watchmakers seeking support from workhouses and relief funds.

Presumably because of the complexity of the situation, the committee did not make any recommendations, merely stating “the committee ... report specially the minutes of the evidence taken before them.” However I get the impression that the committee was overwhelmed and had no idea what to do. Despite some concrete proposals being made (by, in particular, Isaac Rogers and Paul Philip Barraud) the evidence paints such a complex and gloomy picture that the reader is left feeling as helpless as the watchmakers. See also Landes “Revolution in time” which discusses the context of this report.

R1335 House of Commons

Report from the Select Committee appointed to consider the laws relating to watchmakers

London: House of Commons, 1818, folio, 24, 135 pp.

History (English).

British Parliamentary Papers of this period are rare. Apparently it was not until 1836 that provision was made for their sale to the public.

Report and five appendices including a list of laws which bear upon the manufacture of clock and watch work, the total number of gold and silver watchcases marked at the Goldsmiths Hall for the previous 21 years, and an index to the “Report from the committee on the petitions of watchmakers of Coventry, etc.” (11 July 1817).

Some of the report is cited in Weiss “Watch-making in England 1760-1820”

R1336 House of Commons

Report from the select committee into the petition of Thomas Mudge

and the principles of his timekeepers

London: House of Commons, 1793, 23.5 x 14.5 cm, 160 pp (2 fld), no ill.

History (English).

British Parliamentary Papers of this period are rare. Apparently it was not until 1836 that provision was made for their sale to the public.

It is available as a Google Book PDF file.

Report (33 pages) followed by 18 appendices:

1: Minutes of evidence (86 pages).

2: A register of the going of Mr. Mudge’s timekeeper at St. Johns, Newfoundland, in 1784 and 1785 (2 pages).

3: Calculations of the going of Mr. Mudge’s timekeeper determined by observations made at St. Johns, Newfoundland, in 1784 and 1785 (1 page).

4: Comparisons of periods of 6 weeks, taken from Dr. Maskelyne’s register, corresponding with like comparisons made in the case of Mr. Harrison (1 page, Blue, Green and H4).

5: Letter from Mr. Aaron Graham to Dr. Maskelyne 1790 (4 pages, the going of Arnold box watch No. 82 and a pocket watch made by Haley).

6: Remarks by Mr. Graham on his letter to Dr. Maskelyne relative to the going of Mr. Arnold’s and Mr. Haley’s watches in 1790 (6 pages).

7: Letter from Edward Everard to Dr. Maskelyne (1 page, going of an Arnold watch).

8: Extreme differences of daily rates of Mr. Arnold’s timekeepers tried at the Royal Observatory (1 page, trials of 20 watches between 1780 and 1793).

9: Remarks relating the going of Mr. Arnold’s timekeeper in a voyage to and from the East Indies (3 pages).

10: Results from various registers of the going of Mr. Mudge’s first timekeeper made and calculated by Count Bruhl (2 pages).

11: Comparison of the going of Mr. Mudge’s two timekeepers, Green and Blue, with the going of 26 timekeepers of Mr. Arnold, tried at the Royal Observatory (1 folding page).

12: An account of the limits within which Mr. Arnold’s watch, tried by Dr. Maskelyne in 1780, and the petitioner’s (Blue and Green), tried by him in 1790, went throughout their respective trials (1 folding page).

13: Results of a variety of comparisons made from different registers of the going of Mr. Mudge’s three timekeepers (4 pages).

14: Calculations made by Mr. Graham for the purpose of showing the error of Mr. Mudge’s first timekeeper in 1784 (2 pages).

15: Calculations made by Mr. Graham for the purpose of showing the error of Mr. Mudge’s first timekeeper in 1785 (2 pages).

16: Account published by Dr. Maskelyne on the going of watches Green and Blue in 42 periods of six weeks each (1 page).

17: Remarks on Mr. Graham’s account of some errors in Dr. Maskelyne’s table (appendix 16) (1 page).

No number: Part of appendix 16 corrected (2 pages).

The report and some of the minutes of evidence were reprinted in Mudge and Pennington “A description with plates of the time-keeper invented by the late Thomas Mudge”.

[1st edition, very good] *The conclusion of the report was to recommend to the House of Commons that Mudge should receive some reward. But to understand this contentious outcome, it is necessary to first read the minutes of evidence and the accompanying details of trials of watches.*

Evidence was given by John Arnold, Joseph Banks, John Crosley, Josiah Emery, George Gilpin, Aaron Graham, Dr. Hutton, Joseph Lindley, Nevil Maskelyne, Thomas Mudge jnr, and William Wales. In addition to receiving reports on the going of Mudge's three marine chronometers and the going of other watches (mainly made by John Arnold), the committee asked questions to elicit information on five key topics:

First, how should the rate of a watch be determined? Maskelyne's method was to work out a rate from the going of a watch over one month. Then, for land trials, this rate was applied to the following 6 months. In contrast, Mudge determined the rate over a period of 6 months and applied it to the following 6 months. At a time when temperature could not be accurately controlled, both of these methods are dubious, it being pointed out that a watch could have a significantly different rate in summer to that in winter. (Of course, such discrepancies are very important because they show the quality of the temperature compensation.)

Second, what is the significance of errors in rate? The longitude acts stipulated that a chronometer must be accurate to one degree of longitude, four minutes of time, to be awarded the least prize. So the crucial point of the trials was to determine how much a chronometer deviated from true time after allowing for a previously assigned rate. Further, a trial period of six months was chosen to simulate long voyage; voyages could take between a month and twelve months. Nearly all the information in the appendices relates to this question and estimates of the accuracy of Mudge's chronometers. For comparison, results for many Arnold chronometers, and a few by other makers, were provided.

Third, were the trials conducted with due care? Crosley, Gilpin and Lindley gave evidence that the trials (with which they were involved) were carried out correctly and with due care. Gilpin and Lindley also stated that Maskelyne was not opposed to watches and had treated Mudge fairly. This character reference was hardly necessary, because Maskelyne's evidence makes it perfectly clear that he was fair and impartial.

Fourth, can the quality of a watch be determined from its construction? The committee was concerned that the evidence from trials showed large variations and appeared unreliable, and several witnesses called before the committee were asked to comment on this question. Hutton and Wales simply stated that the goodness of a watch cannot be determined from its construction, only by trials. Maskelyne made the same statement, but he considered that better watches are, in general, better constructed. He pointed out that two watches of the same construction might behave quite differently, depending on how much work had been put into adjusting them. John Arnold, when describing the basic principles of his watches, stated he did not use a remontoire because it is only useful in bad work!

(On the first day, the committee set up a sub-committee to examine one of Mudge's chronometers. Either Blue or Green (which is not stated) was stripped by Matthew Dutton and the mechanism explained by Dutton and Mudge jnr. The sub-committee reported part way through the period when evidence was being taken, and stated that the remontoire "is altogether new" and it may "conduce to considerable improvements in the art of making timekeepers". Further they stated "that we find great skill and ability displayed in every part of the workmanship".)

Fifth, why did the Board of Longitude oppose granting Mudge a reward? The only superficial evidence presented to the committee was given by Joseph Banks, who simply stated that the Board of Longitude's opposed the petition. He made it clear that he was horologically ignorant and had nothing useful to contribute. In contrast, Maskelyne made it very clear the if parliament granted Mudge a reward it would seriously undermine the authority and competence of the Board of Longitude, and would lead to scandalous attacks on the Board and further petitions from unworthy makers. Maskelyne was quite clear in stating the Mudge's chronometers were simply not accurate enough to deserve consideration.

The report begins by discussing the evidence presented. The committee had considerable trouble with the fact that the trial results varied considerably and there was a diversity of opinions on how trials should be conducted; it concluded that such trials were dubious. In particular, it took the view that determining the rate of a watch cannot "pretend to any extraordinary exactness". Part of the trouble is that not all witnesses understood the concepts of rate and rate error, and the committee seemed to be even less sure.

In presenting evidence against Mudge, the committee summarised the evidence given by Maskelyne in which the "mean errors" of Mudge's timepieces generally exceeded 4 minutes and thus were outside the act. Further, evidence was presented showing that Mudge's watches accelerated throughout the trials. In comparison, watches by Emery (with a lever escapement) and Arnold produced mean errors which were usually under 4 minutes and within the conditions of the act.

In presenting evidence in favour of Mudge, "mean rates" were given, which were generally of an order of a few seconds. But, of course, the rate is irrelevant to determining the goodness of a timepiece, it is the rate variation or error that matters. However, further "rate error" information was given which favoured Mudge's watches over at least some of the others.

Consequently, the committee was faced with the problem that neither trials nor the examination of construction gave a sure method of evaluating the quality of a watch! So it is not surprising that the committee decided that "though the merit of the construction of timekeepers can be finally decided only by experience, nothing could be more fallacious than the judgement to be formed in that respect from experience so limited and imperfect ...". After which the committee gave some weight to the statement presented on the construction of Mudge's watches (mentioned above) and, deciding that his watches could be improved (by better temperature compensation in particular), considered that they might perform well enough to deserve some reward.

[Remark] *In one sense they were right. But were Mudge's watches "practicable" solutions to the longitude*

problem? This word, which dogged Harrison throughout his life, also affects our opinion of Mudge. I have no doubt that Maskelyne was right in raising the point. England needed hundreds of chronometers for both its navy and merchant shipping. So what is the value of a timepiece that is very difficult to make, very expensive and very difficult to adjust so that it would perform adequately? Surely such a watch is not "practicable" and may not be deserving of a reward? After all, at the time of this report, Arnold had built and sold hundreds of reliable chronometers at sensible prices, whereas Mudge had only made three! (And later, his son discovered why, when he attempted, and failed, to mass-produce them.) The beauty of the Earnshaw style of chronometer lay in its simplicity, relative ease of manufacture and adequate accuracy. The word "adequate" is important. For the next 150 years or so, vast numbers of them were manufactured and used on countless ships (and land surveys). Only a miniscule number of special chronometers with middle temperature error adjustment and other sophisticated attachments were made. Not only were they primarily produced to demonstrate the prowess of particular makers, they were simply unnecessary. Likewise, Mudge's escapement and remontoire were shown to be inferior to the spring detent escapement with careful adjustment for isochronism.

Two other points are worth noting.

First, John Arnold gave a general explanation of his chronometers; temperature compensation in the balance, helical balance spring and detached escapement. In doing so he made it clear that he understood the problem of the deformation of spiral springs. However, Josiah Emery, in describing the Count Bruhl watch (which had a lever escapement) was asked if it had a spiral balance spring. He replied "No; it was made with a spring of the same sort as that which is called by Mr. Arnold an helical spring, and of which I read an account in an English paper, under the name of a cylindrical spring, about a year or two before Mr. Arnold took out his patent. The account was contained in an advertisement from Bow-street, relative to a number of watches that had been stolen in France and brought to England." Emery dated the advertisement to 1775 or 1776. In fact Arnold's patent is dated 1775, but even so this is worth investigating to determine just how original Arnold's idea was.

Second, Maskelyne stated that Mudge used temperature compensation in the spring (after the manner of Harrison) because "he could not put it in the balance; Mr. Arnold having done it before him." This seems to confirm the view that Arnold took out patents for personal gain and was willing to enforce them.

R1337 House of Commons

Report on clock and watch makers petitions

London: House of Commons, 1798, 32.5 x 19.5 cm, 27 pp, no ill.

History (English).

British Parliamentary Papers of this period are rare. Apparently it was not until 1836 that provision was made for their sale to the public.

A one paragraph report followed by 24 pages of minutes of evidence.

[1st edition, good] On 19th July 1797 an act for duties on clocks and watches was published (37 George III Cap 108). The application of this act was back-dated to 5th July.

On 10th May 1798 the tax was repealed in an act back-dated to 5th April (38 George III Cap 40). Thus the tax was imposed for only 9 months!

The acts themselves are interesting to read.

The 14 pages of the first act quickly specify the duties (5 shillings for each clock, 10 shillings for every gold watch, and 2 shillings and 6 pence for other watches). The rest of the act specifies the mechanics of collecting the tax, penalties, and who actually has to pay the tax. There were exemptions, the most important being the stock of clock and watch makers.

The second act is actually all about taxes on houses, windows and lights! But the repeal of the tax on clocks and watches is quietly slipped into the first paragraph, to be mentioned no more.

The tax was an utter disaster. The report on clock and watch makers petitions was one of many complaints about it. The report itself is very short: "The committee ... have agreed to report specially the minutes of the evidence taken before them." Well, not much else could be said, seeing that the evidence unequivocally damned the tax. Richard Bayly, Peter Upjohn, Benjamin Webb, John Carr, John Wall, William Bradshaw, William Tarleton, Thomas Johnson, Edward Bird, Charles Penny, Joseph Reyner, William Turner, John Chapman, James Howden, Thomas Reed, John Grant, Whitfield Greenwell, Abraham Rhodes, William Robertson, James Storer, John Gregson, Charles Smith, William Holmes, William Cooper and Thomas Handley, all condemned the effect of the tax on sales and employment. This to the extent that many sacked employees ended up relying on relief for the poor or leaving the trade for the army, navy or emigrating.

These events have been examined by Chris Ellmers ("The impact of the 1797 tax on clocks and watches on the London trade", in Bird, Chapman and Clark "Collectanea Londiniensia"). But reading the three original documents adds much colour and understanding.

R1338 Howard Watch Co

Howard watches

reprint (USA: Howard Watch Company), 1976 (1909), 7.5 x 6 inch, 52 pp, ill (48 pp, ill) (38 pp, ill) (10 pp, ill).

Catalogue (English).

There are several separate reprints of the 1893, 1909, 1912 and 1918 Howard watch catalogues and of the 1858 "Clocks and fine watches" catalogue, all done at different times.

R1339 Howard, Edward

R1339 Howard, Edward

American clocks and watches

1895, 29.5 x 21.5 cm, 4 pp, portrait.

History (English).

Chapter 82 of Depew "One hundred years of American commerce" (which see for my review).

R1340 Howse, D

Greenwich time and the longitude

England: Philip Wilson and the National Maritime Museum (England: Oxford University Press), 1997 (1980), 25.0 x 19.0 cm, 199 pp, ill, loose errata sheet (254 pp, 79 ill).

History (English).

The first edition title is "Greenwich time and the discovery of the longitude".

Seven chapters: Seeking the longitude 300BC-1675AD (16 pages); Greenwich time for astronomers 1675-1720 (20 pages); Greenwich time for navigators 1700-1840 (34 pages); Greenwich time for Great Britain 1825-1880 (30 pages); A prime meridian 1790-1884 (28 pages); Greenwich time for the world 1884-1939 (18 pages); and A clock more accurate than the earth (18 pages).

There are 3 appendices: Finding the longitude (4 pages); Time-finding by astronomy (4 pages); and The Greenwich meridian in the space age (1 page by Carl Calvert).

With a bibliography, notes and index.

*[Official millennium edition, very good] This book should not be in this bibliography, there being only 10 pages which are relevant to chronometers. Those pages provide a brief biography of Harrison and a little history of chronometers. They are adequate, but far better books on these topics exist.**The rest of the book is a very good history of the Greenwich observatory and its role in the discovery of longitude and the development of time standards, perhaps most importantly the system of time zones. Although House is a very good writer, the book is, at times, a bit ponderous. This is mainly because he has written a quite detailed and precise account, and, although for the lay person, it is occasionally too formal. Certainly there are places where the reader tends to get lost under a profusion of acronyms and specific information.**Unfortunately the three appendices are too short and add little to the book. The first explains the concept of longitude and then provides brief summaries of the different methods for finding it by lunar eclipse, lunar distance, Jupiter's satellites and chronometer. However, the lay person needs more help, especially with concepts like parallax, and a longer and more friendly explanation would be preferable. The second explains how time is determined by transit instruments; this is rather superficial but adequate. The third, by Calvert, is half a page on different time systems, little more than a list of acronyms, and half a page on the fact that the prime meridian has moved, based on an obscure table. It adds nothing to the book.**[Remark] According to the acknowledgements, the first edition had 7 appendices of which 5 were omitted and replaced by the new Appendix III by Calvert; one of these was on mechanical and precision clocks. I suspect this change and some others were imposed by the publisher to limit the book's size, which is unfortunate. And so the first edition may be preferable.**I do not know who decided to call this book the "official" millennium edition or why. I suppose it was an attempt at advertising.*

R1341 Howse, D; Hutchinson, B

The clocks and watches of captain James Cook

1769-1779

London: Antiquarian Horological Society, 1969, 25 x 18.5 cm, 66 pp, ill.

Description, history (English).

A reprint of four articles published in the journal "Antiquarian Horology".

Primarily concerned with marine chronometers and astronomical clocks, but with some remarks on pocket watches.

[Remark, good] I have also seen listed a 300 page "book" with the same title, date and publisher. Perhaps this is just the complete journal issues?

R1342 Huber, M

Die Lange liste

Munich: , 1999, 21 x 11.5 cm, 244 pp, ill.

Identification, dating (German).

Description of Lange & Söhne pocket and wristwatch models from 1845 to 1945 with serial numbers and dates.

R1343 Huber, M

Die uhren von A. Lange & Söhne

Glashütte/Sachsen

Munich: Callwey, 1997 (1976), 27 x 21 cm, 210 pp, 344 ill, 16 plates (116 pp + 32 pp facs catalogue, ill) (131 pp, ill) (85 pp, 89 ill) (72 pp, ill).

Dating, history, identification, illustration (English, German).

The first edition is a limited printing of 1000 copies. The first and second printings (1976, 1977) have German text and bilingual English/German illustration captions.

The later and much more substantial bilingual German/English text editions include a 32 pp facsimile catalogue and was also printed in 1988.

The first and second printings showed the "Hitler" watch which was removed from later editions.
[2nd edition, review by Gerrit Nijssen] This book is the revised publication of a limited edition which was published for an exhibition in October 1976, to commemorate the 100th anniversary of the death of Adolph Lange. This revised edition has 14 additional pages of photographs with text.

The introductory page and following eight pages give, in German, accounts of Lange's life and his influence on the development of the watch industry in Glashütte. The subsequent 63 pages are a pictorial history of the development of the Glashütte watch. These pages have both a German and English text.

The photographs are large and clear and the majority show both the dial and movement side of the watch. However, some are illustrated in more detail such as a one minute tourbillon with spring detent escapement which was manufactured by Alfred Helwig.

Following is a listing of some of the illustrated watches: Gutkaes' pocket chronometer, Lange's full plate watch made by Lange while he was still working for Gutkaes, various tourbillon and karussel watches, spring and pivoted detent chronometers, triple complicated Grande Sonnerie watch, single train jumping second chronograph, self-winding watch, digital watch, pocket alarm and a Moritz Grossman watch, etc. The final section of the book gives again, only in the German language, the quality grading of the various Lange watches, a chronological listing of the technical development of the Lange watches from 1845 until 1910 and a listing of manufacturing dates and serial numbers of Lange watches and marine chronometers.

The illustrations are not arranged in chronological order and it is a pity that no additional effort was given to translate the thirteen pages of German text. The book, however, is an excellent source of information, especially to those interested in Glashütte and Lange watches.

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[Remark] The reviewer, Gerrit Nijssen, wrote the book "FA Lange and Glashütte".

R1344 Huber, M; Banbery, A

Patek Philippe Genève

Zurich: Ineichen, 1993 (1982), 29 x 26 cm, 292 pp, 700 ill (288 pp, 690 ill, 274 plates, slip case).

Dating, history, identification, illustration (English, French, German).

The first edition was limited to 3000 copies in separate English, French and German translations.

An account of Patek Philippe pocket watches from 1839 to the present. With a few wrist watches. 96 pages of text, 274 watches illustrated. 192 pages of illustrations, over 600 photographs and drawings, over 150 colored illustrations.

Foreword; Introduction.

The origins of the firm Patek Philippe (10 pages, biographies of Antoine Norbert de Patek, Francois Czapek and Jean Adrien Philippe, and dates of the early history of the firm).

The successors (2 pages, persons, dates, and history of the firm from the retirement of the founding generation to the present day).

Workshops and retail shop (8 pages).

Patek Philippe today (3 pages).

Patek's travels (6 pages).

The predecessors of the modern stem-winding system (9 pages, keyless mechanisms by P.A. Caron, H.L. Jaquet-Droze, R. Leslie, E. Massey, F. & A. Meylan, J.A. Berollas, C.E. Viner, P.F. Ingold, T. Prest, L.A. and C.F. Breguet, L. Audemars, C. A. Lecoultre, and A. Nicole).

The stem-winding systems of Adrien Philippe (4 pages, descriptions of Adrien Philippe's patented stem-winding systems between the years of 1845 and 1861).

Additional patented inventions and designs by Adrien Philippe (4 pages, watch with independent dead seconds hand, the free mainspring, a precision regulator, and a mechanism for a perpetual calendar).

Inventions and patented designs by Patek Philippe between 1891 and 1979 (9 pages, double chronograph, ultra-thin watch movement, gyromax balance, attachment devices for balance spring studs, hand setting device, wrist watch movement with straight-line time display, automatic winding systems for wrist watches).

The watches of Patek & Czapek and Patek Philippe & Co. (12 pages, technical and artistic developments, successes at world exhibitions, and forgeries).

Tourbillons and karrusels (6 pages).

Chronometrical competitions at the Geneva Observatory (4 pages).

The most complicated watches (4 pages, the Marie Antoinette watch by A-L. Breguet, La Merveilleuse by Ami Lecoultre Piguet, Montre ultra compliquee by M. Leroy, The Graves watch by Patek Philippe).

List of Movement Numbers Between the Years 1839 and 1971 (2 pages).

Bibliography (1 page); Acknowledgements; Explanatory note concerning the illustrations;

Illustrations (185 pages).

Appendixes: Table comparing five complicated watches (1 page); The complications of calibre 89 (1 page); Characteristics of calibre 89 (1 page); Dates of Easter from 1989 to 2017 (1 page); The Sirius star chart as the basis for celestial chart of calibre 89 (1 page); and Name index and subject index (4 pages).

[1st edition, review by Henry B. Fried, very good] Patek Philippe watches, since their debut about 140 years ago, have been regarded as the very top quality horological product. When Jean Adrien Philippe's patented stem wind and stem set system in his watches made their appearance, Polish political refugee-businessman Antoine Norbert Patek became intensely interested. In 1845 their partnership was begun,

and in 1851 the unhyphenated Patek Philippe name appeared. Since then they have produced just under 1,000,000 watches of museum interest and quality. When this total production is divided into the period of their existence, it comes out to an average of only 7,000 watches yearly. Yet when one examines the great variety and various complicated and artistic watches, cases, enamel, and engraving work, one must agree that this is a most unusual enterprise with not only lofty ideals but also commercially successful. Watches with the Patek Philippe name bring biddings at auctions inordinately above high-quality watches with similar features but bearing other well-known labels. Thus a lively interest continues in the products of a company still producing masterful timepieces.

The interest of collectors has grown, even without any authentic, ready reference text until now. Of the authors, Martin Huber is well-known as an authority, and Alan Banbery as the Director and Curator of the private, non-public Patek Philippe Museum. With the blessing and complete cooperation of that company, the facts contained in the book are assured as being authentic. Hans Frederick Tolke, an equally renowned watch expert assisted with the scientific aspects of this volume. The results manifest themselves in a book of significant importance. The authors have been straightforward in their reporting, avoiding the appearance of a partisan company or museum catalog.

The book can be said to have three main sections. One group of chapters concerns the origins, successors, management of the company, the workshops, history of stem wind and stem set systems, and the stem winding systems of Adrien Philippe and his inventions. Also, the inventions of Patek and Czapek and the later, Patek Philippe & Co. are described in the text. Tourbillons and karrusels, chronometrical observatory competitions and a history of the most complicated watches are included. A second division is a detailed serial production number listing of models and the years spanning their issuance. Included is a suggested reference bibliography.

The third, and largest, grouping is a 200-page section of 598 photographs of 274 Patek Philippe watches, especially those with unusual features, showing various views, many in color, of the same watch. In this section are illustrated the many tourbillons, large, and some small, fitting into a rectangular dress-model man's wristwatch case. Others in this section are chronographs, pocket chronometers, those with perpetual calendars, various types of repeaters, clock watches, and those with unusual complications.

Watches from the private Patek Philippe Museum are listed on a separate page and numbered for reference to their photographic display. A fine name and subject index are also included.

The history is told here of Antoine Norbert Patek's political-refugee flight from Poland about 1832 and the recurring tragic fate of the Polish nation. The national intolerance at its annexation and intervention by Russia and the brutal suppression which caused many refugees, including twice-wounded 19-year-old cavalry officer Patek, to flee is told here. Young Patek's travel to Paris and finally to Geneva, together with many liberty-loving refugees, is included with his art student days as a protégé of the famed artist Calame.

Eventually, the artistically minded Patek became interested in the flourishing quality watch business. By 1839 he was a successful watch dealer founding the firm of Patek, Czapek & Co. Francois Czapek was a most skilled watchmaker. Patek became acquainted with the Parisian watchmaker Adrien Philippe whose patented stem-wind, stem-set watches intensely interested him. Eventually Philippe joined the company and became a name partner in 1851.

Jean Adrien Philippe's various inventions, and Patek's many influential, wealthy, Polish refugee clients soon enriched the company's reputation and fortunes. Incidentally, Patek's continued politically active interest in Poland's behalf resulted in his reward of the title of Count by Pope Pius IX. The story of the company's founders and progress, both commercially as well as in the technical quality, makes for interesting reading.

The book pictures, both in patent drawings and in photographic detail, some examples of various makers' models of keyless watches. Among these makers are: Prest, Jacques Droz, Wright, Meylan, Cribb, Viner, Audemars. The various Philippe stem winding patents and watches are shown as well. Philippe's other horological inventions include regulators, independent dead seconds hands, precision regulators, and, a perpetual calendar device. The free mainspring device, an invention of Philippe, is virtually the same as used in modern 8-day Hebdomas watches in which the knuckle-ended mainspring, when too fully tensed, slips out of a light groove inside the mainspring barrel wall to rest in another until a tolerant tension is achieved. A similar device exists in some self-winding watches.

Inventions of the Patek Philippe & Co. conceived between 1891-1971 are illustrated and detailed. A short story of the Patek name on watches during the mid 19th Century and its legal suppression with awarded damages reminds one of today's watch problems in the same area.

Aside from the various facets of the company's history, the real value of this book is in its many superb photographs and descriptions. One begins to realize that Patek Philippe often made unusual watches to order. The authors have located these, and photographed them in excellent color, having dismantled many to show their unusual details. These include some in the Packard Collection of the American Watchmakers Institute. Packard, it is recalled, ordered many specially-made complicated watches from this company. Packard willed these to the forerunner of the A.W.I., then the Horological Institute of America, for whom this reviewer wrote the book on this collection, "The Packard Collection of Unusual and Complicated Watches".

The most complicated watch shown in the book and produced by Patek Philippe is the Henry Graves watch made to order by Mr. Graves to surpass that in the Packard collection. This massive watch requires eight full pages of exquisitely colored photographs, some in full page size, to display its features

and under-the-dials mechanisms - a marvel of mechanical complication and artistic execution. Some have seen those highly complicated clocks with numerous dials; here shown miniaturized in the most artistic execution and detail. One is a real perpetual calendar mechanism in which the leap years are counted correctly but the mechanism includes and remembers that those of the centuries, for example, 2100, 2200, 2300 which cannot be fully divided by the number 400 cannot be counted as leap years and must be skipped, continuing its merry way for another few hundred years correctly. This requires much mathematical preparation even before its manufacture. Also, this same watch, like the one in the Packard collection, has a sky chart, but this is of the sky over New York, Graves' home, that moves as the sky's constellations do, the many major stars represented accurately. This watch was delivered to Mr. Graves in 1933, after eight years of preparation and manufacture. The book also credits the various workmen and outside specialists who were marshalled to produce this watch.

The photographic section is divided to show enamelled-scene watches, repousse, champléve, sector, bras en l'air indicating watches, multi-complicated, chronographic, chronometric and those with unusual features. Many include dates and dates of sale. A few even mention their selling price. Many were made for named royalty on order.

There are simple early watches of "Lepine calibre" design without any markings at all on the plates or bridges, some using the cylinder escapement. Those made after the 1860 period already bear the imprints of the typical Patek Philippe bridge design.

In the description, the authors refer to the pallets with poising side-bars as "moustache" pallets. Some watches are even cased in gun metal cases. Observatory awarded watches are shown with crediting names of their adjusters.

Some watches made but a decade ago show that the art of the enameller is not dead, but alive and well in Switzerland. There are skeleton, coin, universal time dial watches and tourbillons credited to James Pellaton who worked in their New York shop for a while. A giant of a man whose gentle, delicate skills were a marvel to behold, by this reviewer, many years ago. Another member of the Horological Society of New York, who worked for the New York office, was George Bergleitner who made, finished, and adjusted tourbillons for Patek Philippe. He was always proud of carrying one given to him after its retirement from observatory award competition with the grateful engraving of that company to him. Unfortunately, he is not listed in this volume.

There are two-train, key wound, split seconds "foudroyante" watches whose little seconds hand make a full revolution in one second with four 1/4 second stops on the way. These were made in the 1850-period before the heart cam's, return to zero introduction about 20 years later.

Clock watches with repeat and alarm and musical services are shown. One in the A.W.I. Packard collection, and shown here, even strikes the ship's bell time.

This book is a welcome addition to the library of horological collectors and is highly recommended. While the price of the serialized numbered, first 1,000 copies may seem high, to the owners and collectors of Patek Philippe watches, the cost is comparatively modest, since the quality of the photographs and wealth of information makes one a vicarious owner of those watches shown between its ample, coated pages. The inside covers are artistically illustrated in color by the reputed horological artist David Penney. The dust jacket, of course, features the Graves complicated giant "oignon"-sized watch.

[Remark, 2nd edition] I borrowed this book and only had a few hours to examine it.

This book, unlike many single maker books, is worth reading, providing a good history of the company, its patents and its products, together with generally very good photographs. The only criticism I have is that the section on keyless mechanisms has no diagrams and inadequate photographs; this is disappointing considering the important role Philippe played in the design of them.

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R1345 Huber, M; Banbery, A

Patek Philippe Genève - wrist watches

Patek Philippe Genève - montres bracelets

Patek Philippe Genève - orologi da polso

Geneva: Patek Philippe (Geneva: Antiquorum), ca 2006 (1988), 28 x 25 cm, 363 pp, 417 ill, 282 col ill (254 pp, 500 ill, slip case).

Dating, description, history, identification (English, French, German, Italian).

Parallel English, French, German and Italian text.

The first edition was produced in standard and deluxe formats.

The second edition, published in 1998, has been reprinted.

Illustrations of over 400 wrist watches with model numbers, serial numbers, calibres and manufacturing dates. Included are drawings of complications by David Penney.

There are only ten pages of text.

R1346 Hudson, F

Scottish clockmakers

a brief history up to 1900

Dunfermline: F. Hudson, 1984, 25 x 19 cm, 32 pp, 51 ill, 4 col plates.

Makers, history (English).

Limited edition of 500 copies.

R1347 *Hughes, RG*

R1347 **Hughes, RG**

Clock and watchmakers of Whitchurch

Shropshire: Whitchurch Archaeological Group, 1987, 11.5 x 8.5 inch, 48 pp, ill.
Makers (English).

R1348 **Hughes, RG**

Derbyshire clock and watchmakers

England: Derby Museum, 1976, 72 pp.
Makers (English).

R1349 **Hughes, RG; Craven, M**

Clockmakers and watchmakers of Derbyshire

England: Mayfield Books, 1998 (1976), 25 x 19 cm, 248 pp, 266 ill (160 pp, ill).
Makers (English).

Second edition of Hughes "Derbyshire clock and watchmakers".

R1350 **Hugon**

Etude théorique et pratique sur les engrenages

1891, 8vo, ill.

Repair, technical (French).

Listed in Robertson "The evolution of clockwork". It may be the same book as Rambal "Etude théorique et pratique des engrenages".

Theoretical and practical study of gears.

R1351 **Huguenin, C; Guye, S; Gauchat, M**

Les échappements

Le Locle: , ca 1962, 205 pp, ill.

Technical, theory (French).

Described as bringing Pellaton "Watch escapements" up to date. Includes electric watch escapements.

R1352 **Huguenin, F; Perrenoud, J**

Rapport sur la question des syndicats industriels

et leur application a l'industrie horlogère

Bienne: Fédération Horlogère Suisse, 1889, 118 pp.

History (French).

Report on the question of industrial syndicates and their application to the horology industry. Presented to the Federal Council of the Swiss Confederation.

R1353 **Huguenin, J**

Etablissage et repassage du chronographie

expose pratique

Geneva: Administration du Journal Suisse d'Horlogerie, 1907, 23 x 14 cm, 44 pp, 1 fld plate.

Repair (French).

A practical description of the manufacture and finishing of chronographs.

R1354 **Huguenin, J**

Etablissage et repassage montres a répétition

Repassage und reparatur der taschen-repetieruhr

expose pratique

Geneva: Administration du Journal Suisse d'Horlogerie (Geneva: L.-E. Privat), 1897 (1883), 8vo, 47 pp (31 pp).

Repair (French, German).

Translated by Loeske in 1903 (71 pp, 12 ill).

Practical description of the manufacture and finishing of repeaters.

R1355 **Huguenin, J**

Schlagwerke und repetitionen

Bautzen: Emil Hubner, 1903, 73 pp, 12 plates.

Technical (German).

Striking and repetition mechanisms.

Torrens lists this book, but it may an incorrect entry for James "Schlagwerke and repetitionen".

R1356 **Huguenin, P**

The inside story of the swiss watch

La suisse horlogère

L'orologio svizzero attraverso i secoli

Schweizer uhrmacherkunst

La Chaux-de-Fonds: Swiss Chamber of Commerce, 1950 (1949), 23.0 x 17.0 cm, 32 pp, ill, 2 plates.

Description, history (English, French, Italian).

The Italian translation was published in 1950.

A brief history of Swiss watchmaking followed by general remarks.

[1st edition, mediocre] This is actually an advertisement promoting Swiss watches, a pleasant bit of puff. To call it a brief history is wrong because, with the exception of Huygens, it ignores non-Swiss makers and provides a very biased view verging on dishonest. The writing is undistinguished, but there are a couple of reasonable plates showing watches. A forgettable book.

It is said to have been produced for a BHI exhibition, but nothing in the book indicates this.

R1357 Hulburd, D**The box of wonders in your pocket**

USA: Elgin National Watch Company?, 1974 (1922), 15.0 x 8.5 cm, 38 pp (23 pp, ill).
Miscellany (English).

Originally published in the "American Magazine" and then produced in at least 17 editions to 1931 and a modern reprint, with various paginations. Copies were presumably given away by watch sellers.

Reprinted (less one short paragraph) in Alft and Briska "Elgin time, a history of the Elgin National Watch Company 1864-1968".

Guide for lay watch owners.

[7th edition, 1925, fair] A fairly interesting if inconsequential booklet, providing some factual information about the construction of watches. It contains one subtle advertisement for Elgin; Hulburd was the president of the Elgin Watch Company in the 1920's. There are a few dubious statements (was Peter Henlein in jail when he made his first watch?), but such are to be expected in a tiny guide like this.

R1358 Humbert, B**Modern calendar watches**

action, detail of calibres, repair

Switzerland: Editions Simonin (Lausanne: Journal Suisse d'Horlogerie), 2007 (1954), 26.5 x 20.5 cm, 123 pp, 6 pp ads 190 ill.

Repair (English, French, German).

Published in 1954, 1956 and reprinted in 2007.

Eleven chapters: General notes (7 pages), The simple calendar (13 pages), Various patents concerning simple calendar mechanisms (12 pages), The perpetual calendar (12 pages), Modern calendar or date watches (2 pages), Calendar watches indicating only the date (6 pages), Calendar watches giving two indications (7 pages), Calendar watches giving three indications (23 pages), Calendar watches giving four indications (32 pages), Perpetual calendar watches (8 pages), and Repairs, materials (1 page).

[1st edition, excellent] The first four chapters provide very good explanations of the basic principles and main variations of calendar mechanisms, including different types of perpetual calendar.

Chapters 6 to 9 provide detailed information on specific calibres with simple calendars. Although these may appear to be irrelevant unless you have one of the calibres covered, they are actually essential reading.

In them a number of interesting variations of the basic mechanisms are clearly explained. Although simple calendars are quite straightforward mechanisms, the need to be able to correct the displays requires adding difficult and subtle complications to them, and the individual calibres described show a variety of solutions to this problem of designing correctors.

Chapter 10 describes three perpetual calendar mechanisms, one by Patek Philippe and two by Robert Cart.

In contrast to the title, there is very little on repair, with only a few remarks scattered through the sections on individual calibres. The last chapter simply explains how to order parts.

This book is essential reading for anyone with an interest in calendar watches. It is the only comprehensive source of information on them that I have found, and the information in it is as relevant to collectors as to repairers.

R1359 Humbert, B**Swiss self-winding watches****La montre suisse a remontage automatique****Die schweizer uhr mit automatischem aufzug**

mechanism, repair, description of modern calibres

Lausanne: Journal Suisse d'Horlogerie, 1960 (1955), 27.0 x 20.5 cm, 217 pp and 38 pp ads, 396 ill.

Repair (English, French, German).

Separate English, French and German editions.

The book begins with five short chapters on origins, mechanisms, mainsprings, and general advice. The bulk of the book (200 pages) describes and gives assembly and oiling instructions for specific calibres; the underlying movement is ignored.

[1st edition, very good] At first glance this is not a general repair book and it is definitely concerned with particular calibres. Detailed descriptions with diagrams are given for each model discussed, including very precise information about significant features and problems.

However, the wide variety of designs covered means that the book is of general value. It is an essential repair manual for automatic wrist watches.

R1360 Humbert, B**The chronograph, its mechanism and repair****Le chronographe, son fonctionnement, sa réparation****Der chronograph, funktion und reparatur****El cronografo**

Switzerland: Scriptar, Journal Suisse D'Horlogerie et de Bijouterie (Lausanne: Journal Suisse d'Horlogerie), 1990 (1954), 27.0 x 21.0 cm, 175 pp, 295 ill (158 pp, 295 ill).

Repair, tools (English, French, German, Spanish).

Four editions. The publisher's note suggests the 3rd edition is simply a reprint of an earlier edition, in which case so is the 4th.

Separate English, French, Spanish and German editions.

17 chapters. A brief history followed by details of the design, action, examination and repair of chronographs, and concluding with a table of faults, causes and corrective actions.

The chapters are: Historical notes; Definition of the chronograph; The simple chronograph; Retouching, assembly, defects, correction of simple chronographs; Continuous minute register; Semi-instantaneous register and the double-button chronograph; Instantaneous minute register; Minute registers at the center; Hour registers; Chronographs with rocking pinion; Chronographs without column wheels; Chronographs with friction drives; Split-second chronographs; Single-hand split-second chronograph; Stop watches; Placing the hands, dials; and Chronograph repairs.

[3rd edition, excellent] *This book provides very detailed descriptions of the design and actions of a wide variety of chronograph and stop watch mechanisms, explained by clear text and excellent diagrams. With each description there is a discussion of faults, their causes and methods of correction (as well as the overall summary at the end).*

Humbert assumes general competence and does not give step-by-step instructions for basic operations, such as cleaning.

Mechanisms with bevelled transmission wheels are not covered, but they would not offer any problem to a person who has absorbed this text.

R1361 Hundorf, K; Saluz, E

A brief history of the wristwatch

Germany: Deutsches Uhrenmuseum Furtwangen, ca 2004, 21.0 x 21.0 cm, 39 pp, ill.

History (English, French, German).

Undated

A preface followed by 18 sections. Each part consists of one page of text opposite a page of photographs.

[1st edition, good] *The first 8 sections cover the history of the wristwatch, each spanning roughly a decade. This part is descriptive, concentrating on appearance with illustrations of dials, cases and bracelets.*

The next 5 sections describe movement features; shock protection, water proofing, self winding, complications and precision.

The remainder of the book traces the history of electric and electronic watches.

This is a well written, well organised introduction for the novice. Unfortunately the photographs of movements are too small, but this would not matter much to the intended readership.

[Review by Fortunat Mueller-Maerki] *Most horological museums treat the wristwatch as a stepchild, an everyday object, without a long history. The few wristwatches on display more often than not are extraordinary items, of great rarity, with rare complications, or fancy pieces of jewelry. Under its new director, Eduard Saluz, the German Clock and Watch Museum in Furtwangen has broken out of the mould: Over the last few years they have systematically collected the necessary pieces to tell the history of the wristwatch, which after all is the most significant history in horology for the 20th century. They have created an exhibit, which traces and illustrates all significant steps - both technically and sociologically - of wristwatch history in a hand-full of display cases. It is well worth visiting.*

But few people will travel to the Black Forest just for that. So the museum has published a modest booklet summarizing this new addition to its exhibits. In keeping with the tradition started last year with its overall museum guide, the Deutsches Uhrenmuseum took the admirable step of publishing "A Brief History of the Wristwatch" in three different language editions (German, French and English).

In the opinion of this reviewer the resulting booklet is the best currently available concise overview on this subject. The authors identified 16 different technical or social developments that shaped the history of the wristwatch. Some of them are technical (like shock-absorbent pivot jewelery, waterproofing, self-winding, or quartz technology), while others are sociological (the watch brand as a status symbol, the sports watch, or the watch as a nearly-disposable fashion accessory). Each of these themes is explored on one page of text, faced with a page of illustrative examples, featuring both watches from the museum exhibit, and other illustrations, such as period advertisements.

This is not a scholarly essay on the subject, but an affordable popular introduction into a subject which most horological collectors have not given much thought. Given that not much else is available in this area, one can only hope that the publisher can find a US distributor for this innovative little text.

[Remark] *Under the heading "Fine watches make fine people", about luxury watches, the authors write: "The wristwatch was beginning to shape the image of the wearer. At a glance, the connoisseur can see clearly, yet discretely, who is standing before him". This is nonsense, because it is impossible to tell, by a discrete glance, what sort of watch someone else is wearing and such a watch only provides self-satisfaction unless you are in the company of other connoisseurs or you rudely thrust it in the face of your companion. Also, I object to the authors implying I am insignificant and unimportant because I don't wear an expensive mechanical watch! It seems that superficial appearances are far more important than character and intelligence.*

R1362 Hunter, John
Clocks

an illustrated history of timepieces

New York: Crescent Books, London W.H. Smith Ltd (Bison Books), 1991, 12 x 9.5 inch, 160 pp, 42 col ill, 140 b/w ill.

History (English).

Reprinted?

12 chapters: The Early Days, The Lantern, Clocks in Long Cases, The Search for Precision, The Bracket, Mantel and Shelf, France and the Decorative Arts, Germany and the Black Forest, Clocks for the Wall, The Skeleton Clock, Novelty Clocks, Watches, and The Electric Revolution.

With an index is.

[Reviewed by Henry B. Fried] This is a well illustrated book of clocks, many in full color with a 32-page section on watches, all arranged to show the progression and development of clocks and watches. The author is editor of the collectors and clockmakers journal, "Clocks". This is his first book and while the text reflects a fine knowledge of the evolution of timepieces, some refinements, possibly in later editions, should improve its usefulness.

The 42 color illustrations are excellent. However, their italicized descriptions are inadequate in that they often fail to list the maker, age or where each timepiece might be viewed, or its provenance. Examples such as the reproduction of Su Sung's water clock which is shown, probably from the Time Museum at Rockford, fails to mention this. Photos of two clocks by Daniel de St Leu show that one has the correct spelling; its partner's dial with "Daniel de St. Lue" and the author in his reference to these spells it "deLey." deLeu worked in London in the 1770's.

Two boxed chronometers, one an Arnold and Dent, the other in Breguet style, are called traditional types although none are otherwise identified. The Dondi astronomical clock pictured also leaves the maker of the reproduction unidentified, and a 30-day Ives patent wagon spring clock is unnamed. A full page color view of a magnificent Breguet "Pendule Sympathetic" leaves one wondering where it can be viewed if possible, although it is known in other books as a Breguet series 4. A French crystal regulator with mercurial pendulum is noted to be more decorative than precise, although many such clocks, if carefully regulated, are very good timekeepers, this reviewer's own included.

The chapter on watches is well told even if the photos are sparsely described. One page, for example, showing "six 17th century watches" actually includes a John Arnold and Son pocket chronometer movement No. 274/515 with a late 18th century Arnold chronometer balance. Beautiful wandering hour and sun and moon watches are merely bunched as "a group of 17th century pocket watches," and a pocket chronometer with the inscription, "Converted by Thomas Earnshaw" is grouped among unnamed watches.

The section on wristwatches is good with excellent photos and adequate descriptions. Electric clocks are beautifully illustrated with Eureka's, Shortt free pendulum clocks with very fine close-ups of the synchronizing system of the free pendulum timepieces.

Despite the noted shortcomings, the quality of the photos and explanations in the text make this a good buy for the general horological library and especially for the beginning collector.

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R1363 Hurd, DH

History of Middlesex County, Massachusetts

with biographical sketches of many of its pioneers and prominent men

Philadelphia: J. W. Lewis & Co., 1890, 10.5 x 7 inch, 3 vols 769, 887 and 877 pp, plates.

History (English).

There is an earlier 2 volume book "History of Middlesex County" by S.A. Drake published in 1880.

Chapter L of Hurd's history is "History of early watchmaking in America" by E. A. Marsh (which see).

R1364 Huttig, A

Der drehstuhl 'ideal'

praktische arbeitsverfahren für den uhrmacher

Halle: Wilhelm Knapp, 1921, 22 x 15 cm, 37 pp, 38 ill.

Tools (German).

Uhrmacher Fachbibliothek vol 6.

The 'ideal' lathe, practical work methods for the horologist. It includes pivoting cylinders and balance staffs, replacing a cylinder escape wheel pinion, pivot and jacot lathes, the wood chuck, grinding and lacquering, pendulum bobs, safety, simplified turning.

R1365 Hux, JR

A letter on horology

London:, 1862, 4to, 12 pp.

(English).

Listed in Robertson "The evolution of clockwork".

R1366 Huygens, Christian

Oeuvres completes de Christian Huygens

The Hague: Martinus Nijhoff, 1893 to 1934, 4to.

History (French).

Relevant parts appear in Baillie "Clocks and watches: an historical bibliography".

Contains correspondence and writings concerning the use of balance springs and the form of wheel teeth.

[Remark] Although irrelevant to this bibliography, Huygens main work on the pendulum, "Horologium oscillatorium, sive de motu pendulorum ad horologia aptato demonstrationes geometricae" (Paris: Muguet, 1673, 161 pp, ill), was available in 2003 for USD50,000.00; which I could not afford.

R1367 Illinois School of Watch Repairing**A home study course in practical watch repairing**

Illinois: Illinois School of Watch Repairing, 1954 (1945), 28.0 x 22.0 cm, 10 lessons of 211 pp, 127 ill. Repair (English).

Several printings between 1945 and 1954 and there may be small differences in pagination and content. Copies may contain a mix of dates.

Ten lessons:

Lesson 1: Inspection and disassembling a modern American or Swiss Watch (22 pages, 9 ill).

Lesson 2: Inspection and diagnosing faults (17 pages, 14 ill).

Lesson 3: Assembling a watch (12 pages, 8 ill).

Lesson 4: Cleaning and oiling (13 pages, 12 ill).

Lesson 5: Main springs, Stem and crown, Setting levers and springs (14 pages, 10 ill).

Lesson 6: The balance wheel assembly (19 pages, 31 ill).

Lesson 7: Jewels and jewelers, The escapement, Testing for mechanical order, Rating, timing and personal regulation (29 pages, 25 ill).

Lesson 8: Hardening and tempering steel, Filing and cutting, The staking tool and lathe (20 pages, 5 ill).

Lesson 9: Magnetism, Pivot work, The balance staff, General servicing, Non-standard watches (37 pages, 9 ill).

Lesson 10: Estimating and pricing, Ordering American and Swiss parts, Setting up in business, and Appendix (bibliography, American watch companies, tool makers, supply houses) (28 pages, 4 ill).

Some illustrations are full-page plates provided by watchmaking companies.

In addition, each lesson has test sheets to be completed and returned for marking.

[Lessons dated 1945 to 1949, poor] Reviewing books can be difficult because it is necessary that every word is read. In the case of this course I wanted to stop after I had read the first three lessons. Their content varied from fair to bad, and my impression was that this is one of the worst of the practical watch repair books that I have bought.

Lesson 1 begins with the following advice: "When you start this course, we want you to forget everything you have ever learned about watch repairing, either from books, from experience, or hearsay. We are going to open this whole field in a way different from that in which you have ever looked at it before". This is nonsense. The course is a perfectly standard approach to watch repair and contains nothing new or different from other courses and books.

The style of writing is consistent throughout, and I am sure there is only one author. So I suspect the Illinois School of Watch Repairing consisted of one man, the director D.M. King, who produced and sold the lessons (with a basic set of tools), and marked the students' work. Anyway, whoever wrote the lessons was clearly incompetent and probably self-taught. The structure of the lessons is OK, but there are some ridiculous errors, like stating the watch plates are made of steel and balance springs have overcoils to adjust for temperature. More importantly, the explanations are poorly written and often obscure, partly because they are superficial and inadequate. In contrast to lessons 1-7, lessons 8 and 9 are not too bad. But they are largely superficial overviews and I am sure most of the topics are copied or paraphrased from books. Lesson 10, setting up a repair business, is the only part that is reasonably competently written.

The course has no merit and its only purpose is to fill a space on a shelf where it can be forgotten.

[Remark] The cover of my copy reads "A home study course in practical clock repairing". In addition to the watch repair course there are one and a half lessons on clock repair, which I suspect are all that were produced.

R1368 Illinois Watch Co**A story of watch evolution**

from Egypt to Springfield

USA: National Association of Watch and Clock Collectors (USA: Illinois Watch Company), 1999 (1904), 18.0 x 11.5 cm, 24 pp, 19 ill.

Advertising (English).

Reprinted by Chapter 23 of the NAWCC.

A brief history of watch making followed by an explanation of balance making, hairspringing and adjusting, and a few remarks on machinery. There are illustrations of six Illinois movements and a testimonial letter.

[reprint, mediocre] The first requirement of puff, material extolling a company's products, is that it should arouse the reader. This doesn't (benign is the word that comes to mind).

The first part, the origin of the sub-heading "from Egypt to Springfield" is a superficial, inaccurate history whose goal is to describe Illinois as the cause of "the crowning epoch of watch construction" while totally ignoring everyone else (except for a few dead people like Tompion). The description of balance making and timing is quite good, but it did little to excite me and certainly didn't make me lust after an Illinois watch; but then, I have heard of Waltham, and a few other makers who are passed over in silence. An original copy would have some value as ephemera and the reprint is cheap enough that there is no reason not to have a copy, but I can't find any reason to have one.

R1369 Illinois Watch Co**Catalogue and price list of materials**

(USA: Illinois Watch Company), 1974 (nd), 97 pp, ill.

Repair (English).

R1370 Illinois Watch Co**Illinois watches and their makers**

USA: National Association of Watch and Clock Collectors (USA: Illinois Watch Company), 1999 (ca 1920), 9 x 6 inch, 52 pp, ill.

(English).

Reprinted by Chapter 23 of the NAWCC.

Talks, letters and articles from the Illinois factory newsletter, and advertising.

R1371 Imai, K**Military watch encyclopedia**

: Green Arrow, 1996, 430 pp, ill.

Description, illustration (Japanese).

R1372 Imai, K**Rolex scene 1913-1997**

London aritake collection

nd, 223 pp, ill.

Illustration (English).

About 450 Rolex watch dials and movements illustrated in color with reference numbers.

R1373 Imai, K**Rolex watches****Rolex 2421 uhren**

Munich: Callwey Verlag, 1998, 30 x 21 cm, 136 pp, 2421 ill.

Illustration, price guide (English, German).

2421 small, captioned pictures of dial views with European prices.

There may not be an English edition although I have seen reference to one. But with 18 or 20 photos on each page language is probably irrelevant anyway.

R1374 Imai, K**Rolex, 3621 wristwatches****Rolex 3621 uhren**

USA: Schiffer (Munich: Callwey Verlag), 2009 (1998), 216 pp, ill.

Illustration, price guide (English, German).

The German edition has been printed at least twice, in 1998 and 2007. The English edition was published in 2009.

The book includes history of Rolex and covers non oyster, Oyster, Bubble Back, Submariner, Explorer, GMT Master, Chronograph, Oyster Perpetual, Air King, Prince and ladies' watches.

R1375 Imai, K; Omega Watch Co**A time capsule, Omega Speedmaster**

Japan: World Photo Press, 1998, 30.0 x 23.5 cm, 213 pp, ill, 2 pp credits, 1 fld plate.

History (English).

"Offered compliments of Omega. Not for sale." Given away free to dealers (or with the purchase of a Speedmaster chronograph?).

Five chapters: The venture into space (76 pages), Heading into space (54 pages), Speedmaster anatomy (44 pages), Astronauts and their watches (14 pages, and Omega company history (13 pages).

[1st edition, poor] *After reading this book I know almost nothing about the Omega Speedmaster watch and almost nothing about space travel.*

Indeed, after I had read the first chapter I decided that this might well be the worst book I have ever had the misfortune to buy. The first 76 pages consist of seemingly random photographs and a small amount of equally random text. It appears that I am not actually meant to read all of the text, some being printed in a tiny typeface and some being unexpectedly chopped off by photographs or margins. In particular, facsimiles of documents are just incomplete scraps. Anyway, Imai must have run out of things to write about, because some of the more interesting words are duplicated in different places. And many of the photographs are just pointless decorations.

The book improves in the second chapter, where information is presented chronologically. But that information is so superficial that it is only marginally better than ordinary newspaper reporting.

There is an attempt to provide some meat in the third chapter "Speedmaster anatomy". Here at least, tables of the different Speedmaster models are presented, and a multi-page folding plate provides dial photographs of them (there are some movement photographs, but they are too small to be useful). And Imai provides detail photographs of visible changes to dials, hands, logos, pushers, crowns and bezels. However, there is no attempt to explain chronograph mechanisms; and so no explanation of the significant changes in calibres.

This brief foray into fact is followed by 2-page descriptions of Omega Speedmaster, Flightmaster, Seamaster and Chronostop watches, presumably reprints of Omega brochures. Then 5 American and 5 Russian astronauts have a photo-opportunity together with a few words about the flights they were on. Rather dull as there is no useful biographical information.

Finally, the short history of Omega is vague, superficial and occasionally wrong in detail.

What is obvious is that this book is just large piece of advertising. Two requirements of advertising are that it is adulatory and, more importantly, it is easy to read. So glossiness is everything and the least hint of anything technical is to be avoided. However, some technical information can be included to give

an air of sophistication; it is not to be read but to be admired.

For example, the NASA watch testing procedures appear twice as unreadable, cropped facsimiles before they are given in a legible form. Not that they are useful. Imai does not bother to provide details of the test results, the reasons why other watches failed are glossed over, and, most importantly, we are never told why the Speedmaster was selected.

Imai does discuss the attempts by Bulova to get one of their watches to replace the Speedmaster, a rather surprising bit of useful detail. But then, the purpose is not to examine Bulova watches but to enhance the adulation of the Speedmaster.

And finally, the details of Speedmaster models focus on the superficial and visible features of them.

In reality, the watch is of secondary importance. The book is first and foremost a photographic essay on American space travel. After all, there is only one significant event in 40 odd years when the watch was important and saved lives; the rest of the time it was just a tool like any other. But at least the watch gets some consideration. The study of space travel is reduced to superficial journalism, disjointed facts, devoid of any attempt to provide a useful history.

I do not know if Imai knows anything about watches and space travel, but if this book indicates his knowledge then he should do something else.

R1376 Imbert; Villenoisy, F de

Les coqs de montres

leur histoire, leur décoration

: Arts Décoratifs, 1890.

(French).

This book has not been seen and the only reference to it is in Bertele "The book of old clocks and watches". It may be an earlier edition of Coinon "Les coqs de montres du Mont St Michel de la collection de M.E. Coinon" or Tic-Tac "Les coqs de montres du Mont St Michel et leur classement historique".

Watch cocks, their history and decoration.

See also Tombelaine "Le mont-saint-michel et ses merveilles".

R1377 Imison, John

The school of arts

Elements of science and art

London: John Murray (London: W. Robbins) (London: John Imison), 1822 (nd), 21.5 x 13.5 cm (8vo), 2 vols 639 pp, 24 plates and 637 pp, 7 plates (xv including index, 319 pp, 3 pp errata, advertisement, 2 pp contents, list of plates, 176 pp, 24 plates) (319 pp, 20 plates).

Description, technical (English).

Six editions in nd, 1787, ca1790, 1796, 1798, 1803 (retitled "Elements of science and art", vol 2 chemistry) and 1822 (revised and enlarged by Thomas Webster). Originally 319 pp, 20 plates. The undated 2nd edition (incorrectly described by Baillie and usually dated 1790) and the 3rd edition of 1787 have an additional 176 pp and 4 plates. Later editions are much revised and expanded.

The 1798 edition is available as a Google Book PDF file, but some pages are bad and the plates are scanned folded and so useless.

"An introduction to useful knowledge, being a compilation of real experiments and improvements in several branches of science".

The 3rd edition is in two parts. The first part, the "introduction to useful knowledge", contains: Mechanics (28 pages, 1 plate); Mill work (8 pages, 1 plate); Electricity (61 pages, 4 plates); Pneumatics (45 pages, 2 plates); Hydraulics and hydrostatics (49 pages, 3 plates); Optics (81 pages, 6 plates); Clock making (24 pages, 1 plate); and Astronomy (23 pages, 2 plates).

The second part, "curious and useful miscellaneous articles", contains short notes on diverse topics. It includes instruction in drawing (17 pages, 3 plates), etching, engraving, crayon painting, making reflecting telescope mirrors, and magnetism. The whole includes assorted receipts.

A later edition contains an expanded section on the teeth of wheels which is quoted in Hawkins "A treatise on the teeth of wheels" (which see).

[3rd edition, 1787, mediocre] *The section on clocks begins by defining terminology. This is simply a recitation of terms without explanations, In the middle of it pocket watches and balances are mentioned in passing. Then there is a note on determining pendulum lengths. Imison continues by describing how to divide a circle into any number of parts. Although correct in theory he fails to comprehend the practical problem of accuracy; anyone can approximately divide, but it is not easy to do it well. He then superficially considers the problem of determining wheel and pinion diameters. Imison finishes with the calculation of trains in which watches re-appear. This section is incomplete, rather incoherent and of no interest.*

The section on mill work includes a mindless receipt for setting out the teeth of wheels on cycloid principles. As an afterthought Imison adds a 7 line explanation of cycloids and epicycloids. This section is also of no interest.

The rest of the book may be fascinating. I hope so.

[Remark] Baillie in "Clocks and watches, an historical bibliography" says "There is a chapter on clock making with one plate. It is of no interest". Another source says it includes a section on watch making; it does not (although watches are mentioned), the person failing to understand that the term "watch" was used for the going train of clocks. Both remarks are interesting because much of the section on clocks has been copied from Derham "The artificial clockmaker"; about 14 of the 24 pages being Derham's

5th edition pages 1-14 and 119-126 with some omissions and additions. This is noteworthy because it indicates that Imison's writing was 100 years out of date; something not uncommon in horological books that are known to adulterate their currency while regurgitating the archaic (see Booth for example).

Not that Imison is a bare-faced plagiarist; he frankly states in the preface that his book is simply bits culled from other un-named authors.

[New edition 1822] This is equally superficial and equally uninteresting.

The copy I have seen is a free download from the internet (Google books). This consists of bad scans of the pages with parts of some pages and plates missing. If someone is going to put in the work to reproduce such a book the least they could do is get it right.

R1378 Immisch, M

Prize essay on the balance spring

Mémoire sur le spiral

Der isochronismus der spiralfeder

and its isochronal adjustments

et son isochronisme

Chicago: Geo. Hazlitt & Co; London: FN Spon; Paris: ; Weimar:, 1919 (1871), 22.5 x 15.0 cm (7 x 5 inch), 50 pp, 7 ill (43 pp, 7 ill) (56 pp) (47 pp, 7 ill).

Technical (English, French, German).

Four German editions (1871 to 1919) and an English translation in 1872. The American edition (43 pp, 7 ill) is undated but circa 1880. The French edition of 1876 has been given as 26 pp.

The book begins with a general history and discussion of balance springs, the need for isochronism and erroneous ideas about it. Immisch then compares the behaviour of a balance with a pendulum and the balance spring with gravity followed by a discussion of the point of greatest strain in a spring, its movement along the spring and the resultant effects. He concludes with remarks on making springs and adjustment for positions.

Awarded the Baroness Burdett Coutt's prize.

[American edition, mediocre] The first time I read this it didn't make much sense, so I read it again and it still didn't make much sense. Maybe I missed the point.

Much of the essay is concerned with demonstrating that isochronism depends on the balance and the escapement as well as the spring. But how to achieve isochronism in practice is ignored (about the only precise information concerns spring making and tempering).

If you describe something technically but vaguely it is very difficult for the reader to determine if what you are saying is sensible or nonsense. I feel Immisch does just this; presenting ideas and experiments in a way that seems credible but which leave the reader with a strong sense of unease. Perhaps he won the prize because the examiners' couldn't understand his essay?

R1379 [India]

The indian horologist

1958, 24 x 17 cm, 2 vols 79 pp, ill and 45 pp, ill.

(English).

R1380 Ingersoll

Pointers about Ingersolls for their 38,000,000 friends

USA: American Reprints Co. (USA: Ingersoll Watch Co), 1970 (1914), 5 x 4 inch, 30 pp, ill.

(English).

A booklet containing information on the factory and the manufacture of dollar watches, with illustrations of models.

R1381 Ingraham Company; Holly, F

The Ingraham story

Bristol USA: E. Ingraham Company, ca 1954, 12mo, 24 pp, ill.

History (English).

History of Elias Ingraham and his company.

See also Holly "For generations to come - the life story of Elias Ingraham".

R1382 Ingram, JS

The centennial exposition

described and illustrated

Philadelphia: Hubbard Bros, 1876, 22.5 x 15.0 cm, 770 pp, 182 ill (inc 1 fld plate), fld map, 6 pp ads.

History (English).

Dated by the copyright notice.

"Being a concise and graphic description of this grand enterprise, commemorative of the first centenary of American independence, including the history of the centennial from inception to final closing ceremonies ...".

With descriptions of the buildings and their displays, including "the wonders of the Swiss watch department".

[1st edition, mediocre] This is an interesting book, but it totally ignores horology! There is one page on Swiss watches, which says nothing at all, and there is not one word about American manufacturers; a rather stunning omission considering the later importance of this event.

R1383 [Institut l'Homme et le Temps]**Le temps dans la peinture**

La Chaux-de-Fonds: Institut l'Homme et le Temps, 1994, 4to, 87 pp, ill.

Description, history (French).

An examination of horology in art.

R1384 Institute der Mensch und die Zeit**Schweizer uhren**

La Chaux-de-Fonds: Institute der Mensch und die Zeit, 1991, 30.5 x 23.5 cm, 68 pp, 151 ill.

Collection, description (German).

Descriptions of Swiss clocks and watches, 16th to 20th century, in the Institute der Mensch und die Zeit.

R1385 Institute of Civil Engineers**Catalogue of the horological library**

bequeathed to the Institution of Civil Engineers by B.L. Vulliamy

London:, 1895 (1865), 8vo, 41 pp (34 pp).

Bibliography, collection (English).

Published as an appendix to "Catalogue of the library of the Institution of Civil Engineers", second edition, 1865 (available as a Google Book PDF file).

Also available as a separate e-book?

[2nd edition, fair] A list of books and articles giving author, title, place of publication and date. It is no longer of much interest except to know what books Vulliamy owned.

R1386 International Congress for Chronometry**Antique clocks and watches****Antike uhren****Montres antiques**

Ulm: Neuen Uhrmacher-Zeitung, 1960, 21 x 15 cm, 168 pp, 135 ill.

Exhibition, illustration (English, French, German).

Selection of the timepieces displayed at the 1959 Congress exhibition.

May only be Black Forrest clocks.

R1387 International School of Horology**Complete master course in horology**

with emphasis on watch repairing, cleaning and adjusting

Chicago : International School of Horology, nd, 1, 1, 24, 4 pp.

Repair (English).

At least 7 editions.

The pagination suggests a course outline.

R1388 International Watch Co**125 years of IWC**

Switzerland: International Watch Company, 1993, 8vo, 2 small vols in slip case.

History (English, German).

Published by International Watch Company to commemorate 125 years.

A history of IWC and their watches. One volume is on Porsche designs.

R1389 International Watch Co**Watches**

a complete catalogue of masterpieces from Schaffhausen

Switzerland: International Watch Company, 2000 (1991), 191 pp, ill (164 pp, ill, loose price insert).

Illustration (English).

IWC has produced separate booklets for the "Da Vinci" chronograph, the Engineer line, the Portofino line and the Ferdinand Porsche designs (47 pp).

A catalogue, probably produced annually.

R1390 Introna, E; Ribolini, G**Arts et techniques de la montre**

dictionnaire technique illustre de la montre-bracelet

Paris: Du May, Milan: Studio Zeta Editore, 1993, 205 pp, 103 ill.

Description, illustration (French).

Perhaps 133 ill.

Art and techniques of the watch, illustrated technical dictionary of the wristwatch.

R1391 Introna, E; Ribolini, G**Famous watch houses****Maitres du temps, les montres de marques prestigieuses****Armbanduhren die klassiker**

Milan: Studio Zeta Editore, London: Hallmark Publications, 1998 (1993), 30 x 24 cm, 256 pp, 350 ill (208 pp, 300 ill).

History, illustration (English, French, German).

Separate language editions.

A broad history of major watch houses and their masterpieces.

R1392 Inventions Revue**Portraits d'horlogers suisses**

1912, 4to.
(French).

Listed in Tardy.

Portraits of Swiss horologers.

R1393 Ireland, John; Nichols, John**Hogarth's works**

with life and anecdotal descriptions of his pictures

London: Chatto and Windus, ca 1880, 20.5 x 14.0 cm, 3 volumes of 308, 324 and 324 pp, plates.

Miscellany (English).

[1st edition?, very good] Have I a perverse nature to think everyone should be familiar with Hogarth (born 1697, died 1764) and his works? "Industry and idleness" and "The election" include horological references and there is a portrait of Martin Folks. In addition there is a reference to longitude, and the "Rake's progress" illustrates a debtors prison, relevant to the life of Earnshaw (see his "Longitude ..."). Although there are better prints, this edition includes detailed descriptions of the plates.

R1394 Irk, A**Der chronometergang**

Berlin: Historische Uhrenbücher (Berlin: Verlag der Deutschen Uhrmacher-Zeitung), 2006 (ca 1923), 8vo, 86 pp, 26 ill, 2 plates (26 pp, ill, 2 plates).

Technical, history (German).

Printed in 1923 and earlier, with a modern reprint of the 1923 edition.

Wirkungsweise und Arten des Ganges, seine geschichtliche Entwicklung, die Konstruktion derselben und ihre Grundlage, Ausführung, Behandlung und Berechnung des Ganges

The chronometer escapement. Action and types, history of development, construction, treatment and proportioning.

R1395 Irk, A**Der duplexgang**

Berlin: Strauss A.-G., 1895, 32 pp, ill.

Technical (German).

The duplex escapement.

R1396 Irk, A**Der zylindergang**

Berlin., 1894.

Technical (German).

The cylinder escapement.

R1397 Isaacs, E**Raderschneiden**

nd (1982), 29 pp, 8 ill.

Watch making (German).

Wheel cutting.

R1398 Isaacs, Edward**All in a lifetime**

Maidstone: Whitehall Press, 1985, 21.0 x 14.0 cm, 150 pp, 12 plates, 4 family trees (2 fld), errata sheet. Biography (English).

Autobiography of Edward Isaacs. He was the son of Julius Isaacs and ran the Julius Isaacs comany in Sheffield.

[1st edition, mediocre] Perhaps the book's purpose is best summed up by Edward's own words: "I feel I have now served the purpose of my original intention of making my children aware of their antecedents, but hopefully other members of the family will also read this account". It is a summary of events in Edward's life presented factually and with only a few, on the whole rather uninteresting anecdotes. In it he impassionately describes his schooling, the cars he has owned, his family and his travels. The core of the book is a study of his genealogy with four family trees. So I found the book rather dull because it is written for family members and offers very little for the general reader.

[Remark] I bought this book because a bookshop advertised it as "watchmaking in Sheffield" a point reinforced by the fact that Edward Isaacs was a liveryman of the Clockmakers Company and sometime president of the Sheffield branch of the British horological Institute. In fact Edward was not a practicing horologist (he worked as a salesman and manager) and the book is almost totally devoid of references to horology. The only substantial, even remotely interesting passage in the book I give in full here: "In Geneva we were met and regally entertains by Hans Wilsdorf, the legendary founder of the Rolex Watch Co., and who remembered my father as being one of his first customers in his early days".

R1399 Isambert-Jamati, V**L'industrie horlogère dans la région de Besançon**

étude sociologique

Paris: Presses Universitaires, 1955, 8vo, 116 pp.

History (French).

Sociological study of the horological industry in the Besancon region.

R1400 Isensee**Fragen und antworten**

sowie arbeitsunterweisungen für die uhrmacher gehilfenprüfung

Halle: Wilhelm Knapp, 1930 (1909), 22 x 15 cm (20 x 14 cm), 66 pp (74 pp).

Repair, technical (German).

Tardy note 5 editions. Some editions are: 1909 (1st edn, 6, 74 pp), 1923 (4th edn, 8, 66 pp) and 1930 (5th edn, 8, 122, 6 pp).

The 4th and 5th editions (1923, 1930) were printed as "Uhrmacher fachbibliothek" vol 7.

"Über die Anfertigung und das Eindrehen von Teilen, sowie über das Reinigen der Taschenuhren."

Questions, answers and instruction for the watchmaker's assistant examination.

Covering the manufacture and turning of parts and cleaning pocket watches.

R1401 Isnardi, A**The master of Omega**

speedmaster, flightmaster, speedsonic

Italy: Edizioni Gtime, 2006, 32 x 25 cm, 367 pp, ill.

Description, illustration (English, Italian).

Parallel English/Italian text

Detailed descriptions and illustrations of the 3 specific models, including photographs from the Omega museum. With a separate price guide.

R1402 Italiaander, R**Bei Wempe gehen die uhren anders**

Hamburg: Christians, 1978, 25 x 17 cm, 274 pp, ill.

(German).

Watches go differently near Wempe. History of the Wempe chronometer works.

R1403 Italy**Gli orologi da polso**

Italy: Melita, 1991, 8vo, 31 pp and 58 plates.

History (Italian).

R1404 [Italy]**La misura del tempo**

dall'orologio solare all'orologio atomico

Milan: Museo Nazionale della Scienza e della Tecnica, 1988, 100 pp, ill.

Catalogue, description (Italian).

The measurement of time from sun dials to atomic clocks. Catalogue of the horological collection in the Museo Nazionale della Scienza e della Tecnica, Milan.

R1405 Jaccard, A**Daniel Jean Richard**

coup d'oeil sur l'origine et le développement de l'industrie horlogerie dans les montagnes de Neuchâtel et dans le Jura

Le Locle., 1885, 8vo, 55 pp.

History (French).

Daniel Jean Richard, a view of the origin and development of the watchmaking industry in the mountains of Neuchâtel and in the Jura.

R1406 Jackson, CJ**English goldsmiths and their marks**

England: Antique Collectors Club (USA: Dover Press), 1964 (1905), 11 x 8.5 inch, 741 pp, ill (696 pp, ill).

Dating, makers (English).

Produced in several editions and reprints. The 1964 reprint is of the 1921 second edition.

Standard work for makers' marks.

See also Pickford "Jackson's silver and gold marks" and Grimwade "London goldsmiths 1697-1837".

R1407 Jackson, S**J.P. Morgan, the rise and fall of a banker**

New York: Stein and Day, 1984, 9.5 x 6.5 inch, 332 pp, ill.

Biography (English).

A biography of Pierpont Morgan which includes a discussion of his collecting methods(!).

R1408 Jackson, W**The trial of William Jackson**

a watch-case maker, at the Old Bailey

London: J. Diggins, 1816, 8vo, 71 pp.

Miscellany (English).

"On an indictment for feloniously transposing and removing the marks of the Goldsmiths Company from one watch case to another."

R1409 Jacob, J; French, A; Wright, M; Palmer, F**John Joseph Merlin**

the ingenious mechanik

London: Greater London Council, 1985, 24.0 x 21.0 cm, 146 pp, 102 ill, 12 plates.

Catalogue, exhibition, biography (English).

Exhibition catalogue with essays on his life and work. Merlin (1735-1803) was an 18th century inventor and designer of musical instruments, clocks, watches, etc.

[1st edition, good] Merlin moved to England in 1760, was associated with James Cox and his mechanical museum and later set up his own museum of inventions. Although he probably trained as a clockmaker, he is more noted for musical instruments and furniture, including a gouty chair. According to the catalogue only one watch signed by Merlin has survived. It is included in the book, with a page and a half description and a colour plate, but it is unlikely that it was actually made by him. The existing clocks by him are far more interesting.

The catalogue and its substantial text is somewhat indirect. Most of the existing information about Merlin derives from other people and their derivative work; Lalande, Fanny Burney, a portrait by Gainsborough, Kirby and so on. Consequently quite a lot of the material concerns these other people.

Despite being almost if not totally irrelevant to horology in the small, much of the book provides a fascinating glimpse into this person and the times in which he lived.

R1410 Jacob, Max**Filibuth ou la montre d'or**

Paris: Editions Gallimard (Paris: Nouvelle Revue Française), 1994 (1922), 272 pp.
Novel (French).

Published in 1922 (limited edition?), 1923, 1968, 1972 and 1994.

The history of a watch made by Breguet. It is stolen, passing into the hands of female singer from the Paris Opera, who is in Venice, before coming into the possession of an old dandy. Offered as a gift to a passing actress, it is entrusted to her naval officer brother. After adventures in Japan it returns to Paris where it comes to an end, crushed under the wheels of a car.

R1411 Jacot-Colin**La compatibilité horlogère**

guide commercial à l'usage des fabriques d'horlogerie et industries annexes
Bienne:, 1919 (nd), 80 pp.
Business (French).

Listed in Tardy. 2nd edition in 1919.

Horological operations, commercial guide for the use of horology manufacturers and associated industries.

R1412 Jacot, C**Etude pratique des engrenages**

La Chaux-de-Fonds:, 1867, 12 pp, 3 tables.
Technical (French).
Practical study of gears.

R1413 Jaeger LeCoultre**Journey to the centre of time**

Switzerland: Jaeger LeCoultre, 1991, 100 pp, ill.
Description, history (English).

Produced for the 60th anniversary of the Reverso watch.

R1414 Jaeger LeCoultre**The golden book**

ca 1970, ill.
(English?).
Limited distribution "visitors book" with pictures of eminent people wearing Jaeger LeCoultre watches.
Puff.

R1415 Jaeger LeCoultre**The manufacturer's book of timepieces**

Switzerland: Jaeger LeCoultre, 2000 (nd), 15.5 x 21.5 cm, 243 pp, ill (228 pp, ill) (213 pp, plates).
Catalogue, history (English).

Produced annually and early editions exist.

A free catalogue of watches including some history of the company.

[1995, mediocre] Very nicely produced, but basically manufacturer's puff.

[Remark] I have only listed a couple of the hundreds of manufacturers' catalogues. These books have some historical significance and they may be interesting to people studying advertising. But they rarely provide useful information, and when they do the information can be found in much better forms in regular books. So I regard them as uninteresting ephemera and I have not included them in this bibliography.

R1416 Jaeger, Paul**Drehen und drehkeln**

praktische anleitung für das arbeiten an der drehbank
Stuttgart: Franckh, 1941 (1939), 23.5 x 16.0 (8vo), 89 pp, 178 ill, 7pp ads (88 pp, 177 ill).
Repair (German).

Editions in 1939 and 1941. The 1941 edition states 179 ill but there are, in fact, 178 ill.

Turning, practical instruction for lathe work. A general manual for using small lathes, including turning metal, wood and other materials. The lathe described is the Kosmos (300 mm bed and 90 mm work diameter (about the size of an 8 mm watchmaker's lathe).

[2nd edition, good] *There is no mention of horology. However the book details the general principles and practices of turning on small lathes and so is relevant. Probably a useful reference, but better, more relevant books exist.*

R1417 Jagger, Cedric

Paul Philip Barraud, 1750-1929

a study of a fine chronometer maker and of his relatives, associates and successors in the family business

London: Antiquarian Horological Society, 1968 to 1979, 30.5 x 22.0 cm and 29.5 x 21.0 cm, two volumes 177 pp, frontis, 14 ill, 21 plates and 106 pp, 10 ill, 13 plates.

Dating, history, identification (English).

Antiquarian Horological Society Monograph No. 19, with the second volume supplement published in 1979.

Volume 1 is hard cover, the illustrations are numbered 1, 2, no number, 3-13 and the plates are numbered I-XXI.

Volume 2 is soft cover and has pages 178-283, illustrations no number, 14-22, and plates no number, XXII-XXXIII.

History of the family business from 1750 to 1929.

The main volume has eight chapters: Family history up to 1820 (14 pages), Barraud and the Mudge chronometer (12 pages), Barraud in public life (10 pages), Performance of Barraud chronometers (10 pages), A commentary on the plates and the plates (33 pages), and Dating Barraud timekeepers (8 pages).

These are followed by 4 check lists on coloured paper (36 pages on chronometers, pocket watches, clocks and other items, giving movements numbers, dating and details) and 4 appendices (12 pages giving Barraud wills, apprentices, bibliography and miscellanea).

The supplement contains an historical appendix (16 pages), a technical appendix (20 pages), description of plates and the plates, supplementary check lists on coloured paper (44 pages), and an index.

[1st edition, very good] *Jagger has produced a very useful book. As he states in his introduction, "the purpose of this book is to present the evidence". To a large extent he has done just that, providing a well-researched study of Paul Philip Barraud and the companies that continued to use his name after his death in 1820, with the emphasis on chronometer manufacture. As he also notes in the introduction, Barraud "never made anything himself" and he did not make any significant contribution to horology. But Jagger correctly states that this does not mean Barraud is uninteresting. He was a manager who used outworkers and employees to establish a very important chronometer business which produced some outstanding products, and his history is certainly worth relating.*

The first four chapters cover Paul Philip Barraud, his chronometer production and his role in the Clockmakers Company. Quite often Jagger is forced to interpret ambiguous or incomplete information and often he does this well and convincingly. But there is one major problem (which I discuss below); when discussing Arnold and Earnshaw he fails to argue logically and displays an unjustified bias.

The fifth chapter discusses the performance of Barraud chronometers (trials on the Sans Pariel in particular), the booklets of testimonials (which provide valuable identification information) and the going of pocket chronometer 183 (owned by Jagger). It is a somewhat vague account which does not give much data to assess Barraud chronometers against others of the time. Much more useful are the chapter on dating and the check lists, which provide much information about extant chronometers, watches and clocks. The plates and their discussion in chapter 7 are very interesting, although the movement views are not very informative.

Finally, the sixth, somewhat less interesting chapter examines the continuation of the family business with members of the Lund family until its end in 1929.

[Supplement] *As Jagger notes, the supplement is not free-standing and depends on the main volume, without which is of not much value. A major part of the historical appendix is concerned with Clifford Lupton, who worked for Barraud, and there is more information supplementing the history given in the main volume. Likewise, the technical appendix and plates add to the knowledge of Barraud products and explains the sources for the new check lists. These lists occupy 44 pages, indicating the substantial amount of new material that had been collected. As with the corresponding sections of the main volume, Jagger has produced a very well researched examination of the Barrauds.*

[Remark] *The study of the manufacture of Mudge-style chronometers by Mudge junior and Barraud is good, but Jagger fails to ask a central question: Why did Barraud decide to use Mudge's design instead of the far simpler and better designs of Arnold and Earnshaw, which would have been much easier to make than these "elaborate machines"? It is not surprising that Barraud's attempt was just as catastrophic as Mudge junior's. It certainly supports Jagger's view that Barraud was "courageous" but his progress into this dead-end suggests an unexplained and dramatic lack of business and horological sense.*

In addition, Jagger makes what can only be viewed as a couple of snide remarks directed at Earnshaw. First he notes "... as usual, Earnshaw has distorted the facts" when Earnshaw doesn't give precise, detailed prices of chronometers in a test, picking on a minor point to discredit him. Second, he says "... the egotistical Earnshaw, who thought most other craftsmen were the scum of the earth ...", for which there is no real evidence except with regard to those whom Earnshaw considered had cheated him.

Throughout the book, especially in chapter 3, there is a superficial, emotive attack on Earnshaw, but as I have examined the Arnold/Earnshaw controversy elsewhere (see Earnshaw "Longitude - an appeal

to the public") I will limit myself to a few points.. In the introduction Jagger writes "... that Earnshaw was capable of near-hysteria when detailing his misfortunes - real and imaginary - that he'd suffered, and that he could distort the facts ... if need be". I have no objection Jagger voicing such attitudes, provided they are supported by facts and logical argument, but they are not. In a way Jagger is fair, noting Barraud's "ruthlessness is well displayed in his treatment of Earnshaw - who ... deserved better of his contemporaries" and the problems Earnshaw had with the finish of his watches and adding "poor Earnshaw couldn't win!" This ambiguity continues to the end of the chapter, where Jagger writes "I have often thought, though, (Earnshaw) was lucky Barraud himself never entered the lists for the Longitude prize; no other maker would have stood a chance". But actually, as Barraud used the designs of Arnold and Earnshaw, one of them would have won, but under a different name. The contradictions and lack of care detract from an otherwise very good book.

R1418 Jagger, Cedric**Royal clocks**

the british monarchy and its timekeepers 1300-1900

London: Robert Hale, 1983, 27.5 x 21.5 cm, 340 pp, 382 and 11 ill, slip case.

Description, history (English).

Published both in soft and hard covers.

Six chapters: Marking time, palace practice prior to 1600 (18 pages); Stuart patrons sponsor a golden era (18 pages); George I brings an epoch to an end (37 pages); The Hanovers sire a scientist king (46 pages); George IV and the French connection (69 pages); Powered precision and Victorian prowess (36 pages); and Royal pretensions, to be or not to be? (57 pages).

There are Four appendices: Relevant royal foundations (9 pages); Royal timekeepers in important catalogues (17 pages); The progression of royal horologists, 1565-1900 (11 pages); and Central to the theme, a select bibliography (2 pages).

There is a 17 page index.

[1st edition, excellent] The first six chapters provide a history of English royal patronage and survey the clocks and watches in English royal collections, which were primarily made by persons with royal warrants. The seventh chapter examines timepieces with dubious royal associations.

Although mainly clocks, there are significant sections on watches in this delightful book. Besides providing an insight into the collecting behaviour of a royal family, it contains extensive biographies of makers with important discussions of royal warrants and their abuse. Throughout there is a fascinating catalogue of the wanton destruction of clock movements by B.L. Vulliamy. And the book provides the only coherent discussion of the "Queen Mary" skull watches I have read.

A pleasure to read and a valuable reference.

R1419 Jagger, Cedric**The artistry of the english watch**

London: David & Charles; Vermont: Charles Tuttle, 1988, 29.0 x 23.5 cm, 160 pp, 93 ill, 16 plates.

Description, history (English).

Seven chapters: Background to a beginning (4 pages); Sources of inspiration (14 pages); The formative years (10 pages); Fashions in English watches, the main trends (26 pages); The personal touch (10 pages); Materials and techniques for enriching the watch (42 pages); and Postscript, the best of both worlds (3 pages).

There are by 5 appendices (33 pages) on Organisation and work methods; Areas of art on the watch movement; Watch decorators, some names recovered; Watch pillars, a progression of styles; and A catalogue of watch cock imagery. With a 1 page bibliography and 6 page index.

[1st edition, very good?] The first 4 chapters provide a history of English watch decoration, beginning with early pattern books. The main focus is on case decoration, but there is some consideration of dials, hands and movements as well. The bulk of the text covers the 17th and 18th centuries, understandably as decoration faded out after this period.

Chapter 5 gives a brief examination of personalised decoration, such as owner's names, monograms and inscriptions.

Chapter 6 provides a very good survey of decorative materials and their working, much of it extracted from late 18th and early 19th century texts.

The postscript describes one watch (by Gregson) and its chatelaine.

The first 4 appendices supply a too brief remark on work organisation, a general overview of movement decoration, a short list of makers and examples of pillar design. The last appendix gives a detailed and valuable illustrated survey of balance cock designs.

I was led to believe that this book is a history of case design and decoration and I had some difficulty understanding it until I realised Jagger is writing solely about decoration. He is not concerned with the case or the movement, simply with the embellishment of both. This becomes clear in chapter 6 where nothing is said about case making; it is all about decorative materials and their working, including some that seem unrelated to watches.

Seen in this light, the book is very good and includes excellent descriptions of gilding and processing tortoiseshell (much taken from Rees) and some wonderful illustrations.

However I felt a little uneasy because I found the approach somewhat "casual". In the preface Jagger writes "the place of the English watch within the whole broad spectrum of the decorative arts can now be regarded as legitimate and worthy of investigation". This is a laudable aim, but it needs a more precise

study to achieve it and certainly more care in developing a chronology of style.

Also, I was annoyed that there are no cross references to the illustrations and, worse, some interesting watches described in the text are not illustrated at all.

Well worth reading.

R1420 Jagger, Cedric

The world's great clocks and watches

Histoire illustrée des montres et horloges

Wunderwerk uhr

London: Hamlyn (Switzerland: Zollikon), 1986 (1977), 30.0 x 22.0 cm, 256 pp, 250 ill, 120 plates.

History (English, French, German).

Separate French, German and English editions.

There are 10 chapters: In the beginning (18 pages); The rudiments of clockwork (35 pages); Great clocks of the iron age (16 pages); The age of brass and the birth of the watch (21 pages); The seventeenth century, the golden age of clocks and watches (36 pages); Progress towards precision, the eighteenth century (35 pages); Marine chronometry, 1675 to 1820 (15 pages); The industrial revolution, the nineteenth century and beyond (30 pages); East meets west (18 pages); and Collectors and collecting (22 pages). There is a bibliography and index.

[1st edition reprint, fair] In contrast to its English title, this book is a history of timekeeping, from clepsydrae and sundials to the beginning of the 20th century. When I read this book some years ago I produced the following short summary:

“Jagger provides a well illustrated, broad-brush overview of development with little technical detail. Although well written, competent and thorough, I feel it lacks flair and no parts stood out. Despite this, it is a good introductory text and worth reading.

The lack of cross references to the illustrations, which are not numbered, is frustrating.”

Having just read it again and affirmed my previous opinion I think a few more remarks are justified.

This book reminds me of Baillie “Watches - their history, decoration and mechanism” because it is based on the same premise: everything after about 1725 is uninteresting, except for Harrison and Breguet. The great watches are those which were hand crafted and enclosed in superbly decorated cases. Watches in plain cases are uninteresting, except for those made by the outstanding master Breguet.

The two differences between the books of Baillie and Jagger are that Jagger spends most of his time on clocks (there are many more decorative aspects to describe) and he almost ignores technical aspects. He does discuss mechanisms in the second chapter, but he clearly thinks mechanical knowledge is secondary to historical and decorative knowledge. His attempt to explain movement mechanics is mediocre, partly because there are no diagrams but mainly because he is superficial and purely descriptive. Later mentions of technical matters are equally inadequate and give the impression that Jagger lacks knowledge in this area.

This approach goes a long way to explaining the limitations of the book. Chapter 8, which outlines post 1800 developments is superficial. For example, American developments after 1850 are glossed over and only dollar watches are mentioned and illustrated. How anyone writing in 1977 could ignore American railroad watches and the Hamilton marine chronometer puzzles me. I can excuse Baillie, writing 50 years earlier, but it is much harder to understand Jagger's omissions. Admittedly his approach is anglo-centric so maybe he could not face praising an upstart ex-colony. But actually it is because there is no interesting decoration to write about.

Jagger is a good writer and, with the exception of the section on marine chronometers, what he does cover is covered well. But if you are interested in early watches then I think Baillie's book is much better value. And if you are not then Baillie's book is still better value.

R1421 Jahn, GA

Anleitung zur genauen bestimmung des ganges und standes der uhren

Ein unentbehrliches handbuch für uhrmacher und freunde der astronomie

Leipzig: Reichenbach, 1842, 8vo, 239 pp, 2 fld plates, 11 tables.

Description (German).

It is available as a Google Book PDF file, but the plates are scanned folded and so useless.

The accurate setting of clocks and watches, describing several methods including star observations, sundials and transit instruments.

R1422 James Arthur Foundation

Time and its mysteries

New York: New York University Press, 1949 (1936), 8vo, 126 pp (137 pp) (102 pp, 6 ill).

History (English).

Three books published in 1936 (102 pp, 6 ill), 1940 (137 pp) and 1949 (126 pp (137 pp)). Each contains four lectures on general topics about time.

Probably nothing much about watches, but the 3rd series has a lecture on developments in portable timepieces.

R1423 James, Emile

Cours pratique et théorique de réglage de précision

Praktical und theoretical leitfaden der prazisions reglage

renfermant une collection de courbes terminales des spiraux

Genève: Librairie Stapelmohr, 1910 (1898), 18 x 12 cm, 6, 228, 16 pp, 126 ill (6, 117, 12 pp, 9 ill, 8 plates) (37 pp, 9 ill).

Repair, technical (French).

The original French edition of 1898 has been given as 37 pp, ill.

The 1906 French edition is a substantial 228 pp, 126 ill.

The German translation of 1910, by Loeske, is given as 117 pp, 9 ill, 8 plates.

Practical and theoretical course on precision adjustment containing a collection of balance spring terminal curves.

R1424 James, Emile

Les sonneries de montres, pendules et horloges

Schlagwerke and repetitionen, die lehre von den schlagwerken

pratique et théorie

Bienne: Magron (Bautzen: Emil Hubner), 1927 (1899), 7.5 x 5 inch, 96 pp, 60 ill (84 pp, ill).

Repair, theory (French).

The German translation (1903) by Loeske.

Meis "Pocket watches" gives the title as "Schlagwerke und repetitionen", but he may mean a book by Huguenin.

Striking mechanisms in watches and clocks.

R1425 James, Emile

Nouvelle méthode facile et exacte pour déterminer rapidement les dimensions des engrenages

Genève: ; Paris:, 1921 (nd), 7 pp, 3 plates.

Technical (French).

2nd edition in 1897 and 3rd edition in 1921.

A new method for rapidly determining the dimensions of gears.

R1426 James, Emile

Théorie et pratique de l'horlogerie

a l'usage des horlogers et des élèves des écoles d'horlogerie

Paris: Gauthier-Villars, 1906 (1900), 19 x 12 cm, 228 pp, 126 ill.

Repair, technical, theory (French).

Theoretical and practical horology for the use of horologists and students at horological schools.

R1427 Jamieson, John

Spurious ancient watch of K. Robert Bruce

London: Sylvanius Urban, 1785, 21.0x 13.5 cm, 2 pp.

History (English).

The Gentleman's magazine, Sept 1785, pages 687-89.

The whole volume is available as a Google Book PDF file.

[1st edition, fair] A letter by Jamieson explaining the origin of a fake watch ascribed the King Robert Bruce. Apparently a rather crude and incompetent fraud that successfully fooled many. Reprinted in Beckmann "A history of inventions, discoveries and origins".

R1428 Janssen

Discours prononce aux funérailles de Breguet 29 Oct 1883

Paris:, 1903, 8vo.

History (French).

Listed in Tardy.

Discourse given at the funeral of LCF Breguet, AL Breguet's grandson.

R1429 Janvier, Antide

Manuel chronométrique

ou précis de ce qui concerne le temps, ses divisions, ses mesures, leurs usages, etc

Paris: Firmin Didot, 1821, 16.5 x 9.5 cm, 276 pp, frontis, 5 plates.

Technical (French).

3rd edition in 1821.

Includes isochronism of the balance spring in marine chronometers.

R1430 Jap. Soc. for Scientific Developmmt

Study of the production techniques of watches and clocks

Tokyo:, 1951, 199 pp.

Description, technical (Japanese).

R1431 [Japan]

World military watch

nd, 26 x 18.5 cm, 127 pp, ill.

Illustration (Japanese).

Described as "lots of photos and descriptions of vintage, WW2 and contemporary military watches, including Blancpain, Breguet, Breitling, Elgin, Glycine, Gruen, IWC, Lange, Omega, Rolex, Seikosha and Vostok".

R1432 Japy, Frederic

Patent for five years, for various horological machines**Brevet d'invention de cinq ans, pour divers machines d'horlogerie****Pièces d'horlogerie et machines inventées par Frédéric Japy 1799**

Australia: Richard Watkins, 2006 (1799), 4to, 10 pp, 19 ill (61 pp, 4 fld plates).

History, tools (French, English).

The 1973 reprint is a limited edition of 200 copies. The 2006 translation by Richard Watkins is a PDF file.

Description of 10 machines and tools: Circular saw; Face-plate lathe; Wheel cutting engine; Pillar turning lathe; Press to cut out balances; Press to cut out wheels; Drilling machine; Tool for riveting pillars onto plates; Tool for slitting screw heads; and Draw bench.

[1st edition translation, very good] The circular saw consists of a rotating saw blade powered by a hand wheel. The sheet to be cut is placed on a table mounted on rollers and a weight causes the sheet to move past the saw blade. I presume a sheet of brass is cut into strips and the strips used with the wheel and balance presses or cut into square pieces to form blanks for plates, etc. Not much accuracy would be possible, and how the blanks are processed into disks is not explained. (This is a very early circular saw. Rees "Cyclopaedia" states that the earliest circular saws were those used at the time of Hooke to cut the teeth of wheels, but when the method was next used is not specified An internet site states that "in 1777, Samuel Miller invented the circular saw in England.)

The plate lathe holds and rotates a plate while cutters, one mounted in a slide and the other pivoted at the side, are used to shape the edge of the plate and cut a central recess. Plates are presumably cemented to the chuck. According to Japy the plate lathe can be "used to turn plates, fusees, barrels, cocks, slides and racks of watches. Each one of these parts, placed on special chucks whose tail enters and is held in the arbor of the lathe by a lock screw, receives the form which it must have by only the action of the graver, whose movement is regulated by screws and levers". The most serious defect of this lathe is that there is no way to mount a plate eccentrically and so cut an off-center feature. In addition, play in the lathe components and the reference holes, and wear of the cutters would make producing identical parts virtually impossible. However, this machine has a little intelligence built into it, although a skilled operator is still required.

The wheel cutting engine cuts a stack of wheels. It uses a fixed cutter and a stack of wheel blanks mounted on a moving carriage. There is no dividing plate. Instead an endless screw meshes with the a wheel to rotate the wheel blanks. Japy says "the pitch of this screw, is such that by turning it, the wheels that are being divided are moved exactly one tooth". It would be very difficult to make such gearing accurately. Also, different endless screws and wheels would be needed for cutting each different watch wheel.

The pillar turning lathe is simply a mill attached to a lathe; whether the result is square or round depends on whether the brass rod for the pillar, mounted in the lathe, is indexed or allowed to rotate freely. This is fine as far as it goes, but nowhere does Japy explain how the two pivots are made on the ends of the rod and consequently how the length of the pillar is controlled. Under these circumstances I would expect that freehand turning and square filing would be just as easy and probably faster.

The press to cut out balances is a screw press using a die and counter-die to punch out a plain balances including the arms. The wheel press is a drop press. First dies are used to cut out disks and then these disks are pressed again with different dies to form the arms.

The drilling machine is crude and next to useless. A piece is clamped in the tool and a drill, which is mounted on a runner in a tube and turned by a bow, is used to make a hole perpendicular to the face of the piece. But there is no way to clamp the piece in the right position other than by advancing the drill to touch it while moving the piece with one hand and clamping it with the other hand when it is in position; as Japy notes, use of the chest as well as two hands is desirable! The chances of drilling two plates alike is minimal.

The pillar riveting tool is simply a jig by which the frame and its pillars can be held while a hammer is used to rivet. It would probably be slower than doing the task by hand, but it may be a bit more accurate. However, a much greater problem than riveting is ensuring that the four pillars are turned to exactly the same length; otherwise the top plate would bend when it is fastened.

The screw head slitting tool enables a number of screw heads to be slit at the one time. The screws are held in a clamp and a hand-operated slitting file moved repeatedly over them. Japy provides no information on how the screws are held in exactly the right position and height, and it is clear that setting up the tool would take some time. Again, it is a dumb machine which enables one task to be done a little faster, but there is no mention of corresponding tools to turn and thread the screws in the first place.

The draw bench is obscure. Japy describes it as having "a winch and a chain, by means of which one makes the slide of the potence and all other objects which can be drawn through a draw-plate". Later Japy states that the winch and chain are used to draw a file, to form the slot in the potence for the slide, and that levers are used to apply pressure on the file manually, a method that is unlikely to produce uniform results.

The importance of these patents lies in the fact that several books discuss Japy's manufactory for producing watch ebauches, often said to be the first mass production of standardised watch parts. However, see Watkins "Watchmaking and the American system of manufacture".

- R1433 Jaquerot, A; Mugeli, H; Defossez, L**
Experimental research on the friction of pivots
Recherche expérimentale sur le frottement de pivotement
 Washington: Nat. Adv. Comm. Aeronautics (Neuchâtel:), 1930 (1922), 8vo, 54 pp (24 pp, 24 ill).
 Technical (French, English).
- R1434 Jaquet-Droz, P**
Les oeuvres des Jaquet-Droz
 montres, pendules et automates
 La Chaux-de-Fonds:, 1971, 24 x 16 cm, 68 pp, 48 plates.
 Illustration (French).
 The works of Jaquet-Droz, watches, clocks and automata.
- R1435 Jaquet, E**
Formulaire technique et aide-mémoire
 pour l'horlogerie et la petite mécanique
 Bienne: Charles Rohr, 1946 (ca 1915), 15.0 x 11.0 cm, 328 pp, ill, ads (288 pp, ill) (156 pp, ill).
 Technical, theory (French).
 Produced in several editions: 2nd in 1915, 3rd in 1929, 4th in 1946.
 Technical formulae and memory aid for the horologist and the small mechanic. It includes:
 Basic mathematics: tables (including the lengths of arcs of a circle for angles to 90 degrees), mathematical formulae (including derivatives, integrals, plane geometry and centers of gravity), trigonometry, analytical geometry.
 Conversion tables: douzièmes, lignes, watch sizes, English inches and English wire gauges to millimetres, and carats.
 Mechanics and physics: tables of units, densities of substances, forces, gravity in different places, inertia, strength of materials, coefficients of friction, lathe speeds, Whitworth, SI, horology and winding stem threads, temperature, expansion of solids, temperatures of fusion, temperatures for steel colours, atomic symbols, composition of alloys.
 Electricity units, resistances of metals, magnetism, condensers.
 Horology: mainsprings, train calculation, jewels, tables of trains, gears, modules, tables of full diameters for wheels and pinions, addenda factors, motion work, keyless mechanisms, escapements (lever, cylinder and pin lever), pendulum lengths, balance springs, adjustment, table of balance and balance spring combinations, dimensions of movements, standard screws and hands, cases.
 Astronomy: conversion of degrees to hours, coordinates, time, times zones, planets.
 Drawing: drawing symbols.
[4th edition, good] A pocket book containing a vast amount of information. Much of it consists of useful tables. These are the usual tables, but there are some specifically horological tables. Most of the rest provides mathematical formulae. These assume reasonable knowledge and are provided as aids to engineers. There are a few descriptive sections, such as the illustrations of keyless mechanisms and drawing symbols.
- R1436 Jaquet, E**
Horlogers genevois du XVII siècle
 Geneva: Villard, 1938, 8vo, 51 pp, 8 plates.
 Makers (French).
 Offprint from Bulletin de l'Institut National Genevois.
 Genevan horologers of the 17th century.
- R1437 Jaquet, E**
L'école d'horlogerie de Genève, 1824-1924
 Bienne: Edition Atar, 1924, 243 pp, plates.
 History (French).
 Other sources indicate 256 pp or 199 pp.
 The Geneva school of horology.
- R1438 Jaquet, E**
La participation de la suisse au développement de l'horlogerie
 Berne:, 1943, 126 pp, 30 plates.
 History (French).
 Swiss contributions to the development of horology.
- R1439 Jaquet, E**
Le musée d'horlogerie de Genève
 La Chaux-de-Fonds: Musée d'Horlogerie, 1952, 226 pp, 114 ill.
 Collection (French).
 Limited edition of 1000 copies.
 Detailed description of 289 watches in the museum's collection.
- R1440 Jaquet, E**
Les cabinotiers genevois
 Bienne: Charles Rohr Editions Horlogeres, 1942, 4to, 146 pp, 126 ill, 12 plates.
 History (French).
The "cabinotiers" were the craftsmen watchmakers, goldsmiths, jewellers, enamellers, etc.

R1441 Jaquet, E; Chapuis, A

Technique and history of the swiss watch**Histoire et technique de la montre suisse**

from its beginnings to the present day

de ses origines a nos jours

London: Spring Books (Switzerland: Editions Urs Graf-Verlag) (Boston: Boston Book & Art Shop), 1970 (1945), 31.5 x 23.5 cm (31.5 x 24.0 cm), 272 pp, 188 ill, 46 b/w and colour plates (278 pp, 37 ill, 190 b/w plates, 42 colour plates) (270 pp, 188 ill, 40 plates).

History, makers (English, French).

First published in 1945 with the English translation first published in 1953 and the second English edition in 1970 (with additional material by Samuel Guye).

The first edition contains eight chapters and an index of makers. The chapters are: The beginnings of watch-making in Switzerland (32 pages); The introduction of the watch industry to the Jura and its development (34 pages); The 18th century (20 pages); Decoration of the watch and of the movement from 1700 to 1850 (24 pages); The commerce of watch-making (32 pages); The 19th century and the beginnings of the mechanical manufacture of the watch (34 pages); Chronometry (34 pages); and The later evolution of the modern watch (50 pages).

The second English edition is identical in content to the first edition with the addition of a ninth chapter, Development of the Swiss watch industry from 1945 to 1968 (23 pages). The book was reset and the pagination is different from the first printing.

[1st English edition, good?] Chapter 1 surveys 17th century watchmaking in Geneva with information on the guild and masterpieces. It is descriptive with little technical information and the reader is infused with a sense of style. Chapter 2 examines the development of watchmaking in different regions. It is mainly a list of makers, but includes a sensible discussion of the role of Daniel Jeanrichard. Chapter 3 provides a general outline of 18th century methods of manufacture and Chapter 4 describes case decoration to 1940. Chapter 5 examines Swiss exports, country by country. I found it the most interesting section of the book, giving a terse but useful history of trade. Likewise, chapter 6 has a good history of 19th century watchmaking including Roskopf. Chapter 7 gives a brief history of watch trials and lists Swiss successes. The final chapter outlines mechanisation, watch types, education and the organisation of the industry. Much of the emphasis in the latter parts is on the wristwatch as an item of jewellery rather than as a timepiece (watches are made for "a clientele who are not greatly concerned with knowing the time") and Rolex is not mentioned.

This is the only book I know of that gives a general survey of Swiss watchmaking (at the time Donzé "Histoire de l'industrie horlogère suisse" had not been published). It contains a wealth of information and is certainly worth reading. However ...

It has taken me about three years to read this book. I would read a chapter, find something else to do and forget the book for a few months. This has worried me because, before I bought it, I got the impression that it is a very important work and I would find it excellent.

If a book is written to tell a story then it should be possible to read it and say "I enjoyed that!". In contrast, if a book is meant to be a reference work it does not need to thrill, but it does need extensive indexing and usually a good bibliography. What I am suggesting is crude, but every book must have a purpose and a form to suit that purpose. When writing a book, the authors need to define its function and build their work accordingly. Unfortunately it seems that quite often authors do not have a clear reason for writing and this lack of direction is frequently obvious to the reader.

The lack of adequate indexing and the complete omission of a bibliography mean that "Technique and history of the swiss watch" is not a reference work; it cannot be conveniently searched for specific information. Presumably, as the preface says, the "book will be read like a fine story ...". If so, I can accept these omissions provided I am entertained and, hopefully, educated.

But I found much of it dull. The main reason is that I feel it is often dry and heartless. For example, when discussing Bolle's book of remarks, Jaquet and Chapuis say "We shall not delay here over the many picturesque details of the customs of the period ...". But just such details are necessary to enable the reader to create a framework in which to appreciate the history! I learn the price of a movement was 92 batz but I have no idea what a batz was, let alone what it was worth in terms of bread, clothing or tools. And it is too glib to write "The wife ... kept him company for a part of the day with her knitting". Look at Hogarth's pictures, read Charles Dickens and note Pearson's comments (see Rees "Clocks, watches and chronometers") as examples which are probably much closer to the truth and which are certainly far more evocative of life before sewage, social security and birth control. The "Gentleman's Magazine" (vol XXI, page 612) reports 21,028 deaths in London in 1751, of which 9,543 were children less than 10 years old, while there were 14,691 christenings; not a great success rate. These statistics suggest tranquillity was more likely the exception than the rule and the wife contentedly knitting and chatting with her husband is presumably derived from the artificial portrait of a Fleurier watchmaker rather than reality.

To describe the lives of the middle-class merchants who owned shops and ignore the vastly greater numbers of workmen and child labourers who actually made the watches is to distort reality and give the modern reader a comfortable but quite misleading myth.

Another example is the chapter on commerce, where only legitimate trade is discussed. Contrast this with Saturday Magazine "Manufacture of Watches in Switzerland, 1842" and Bowring "Report on the commerce and manufactures of Switzerland". Again I see a myth, the polite myth of purely ethical activity.

These omissions occur throughout the book. In chapters 4 and 8 the authors say "... the subject is so vast that ... we must confine ourselves to generalities" and "it would be outside the scope of this work ... but we shall try to enlighten the layman ...". Similar statements occur often, to the extent that I have the impression of being offered a few baubles, while the pearls usually cast before swine have been deliberately withheld.

This view is a bit rude and unfair; the book contains much that is interesting and, at times, stimulating. But I formed it because I didn't understand the aim of the authors.

I think the answer lies in the very last sentence: "We may be sure that those who have at heart the future of this magnificent industry will not fail in their duty". If I look at this work as informative advertising, like a travel book which extols the virtues of a country to visitors, then it makes sense. Jaquet and Chapuis have written a comprehensive "travelogue" showing the beauty and greatness of the Swiss watchmaking industry. In this context the generalities, evasions, lack of references and indexing, and the orientation towards the "layman" make perfect sense and the book is good. It also explains why the "technique" of the watch is largely ignored and when mentioned it is discussed very superficially.

However, like all advertising, it has dated and the book may have lost much its purpose. Although the history is reasonable and the illustrations are nice, I feel the work is too superficial and frustrating for the serious horology student, and too long for the layman with a passing interest.

[2nd English edition] *The additional chapter covers developments from 1945 to 1966; statistics on workers, industry organisation and research. It is a terse, interesting overview.*

R1442 Jaquet, E; Defossez, L; Lavest, R

Cours élémentaire de réglage

destine aux horlogers

Le Locle: Technicum Neuchâtelois, 1958 (1923), 24 x 21 cm (27 x 21 cm), 111 pp, 143 ill (87 pp, 136 ill) (82 pp, 131 ill).

Repair (French).

At least six editions including 1923, 1945, 1951 and 1958.

Elementary course of adjustment for horologists.

R1443 Jardine, Lisa

The curious life of Robert Hooke

the man who measured London

London: Harper Collins, 2004, 19.5 x 13.0 cm, 422 pp, ill, 16 plates.

Biography, history (English).

Biography of Robert Hooke in 8 chapters: The boy from the Isle of Wight (36 pages); A sincere hand and a faithful eye (29 pages); Take no man's word for it (45 pages); The architect of London's renewal (46 pages); Skirmishes with strangers (37 pages); Never at rest (33 pages); Friends and family, at home and abroad (41 pages); and Argument beyond the grave (37 pages).

With extensive notes, bibliography and index.

[1st edition, fair] *I got this book after reading a review which said it was stimulating and enjoyable. Instead I found it to be a very well researched biography which is a bit tedious to read. Also, I found it to be not very well organised and the inconvenient format of the index made tracking down information rather difficult. Consequently I have only read the introductory sections and the parts relevant to horology. Despite that, and the fact that Jardine knows nothing about horology, there is a good examination of Hooke's involvement with pendulums and balance springs, although it is marred by the failure to examine the history with chronological precision; understanding the disputes requires great accuracy when detailing the events, as done by Ball "Bringing the work on" (which I read after writing this review).*

[Remark] *Jardine opens her book with a very important quote; Newton said to Hooke "Merely because one says something might be so, it does not follow that it has been proved that it is". I believe this statement should be central to any discussion of Hooke and, to express it differently, we should ask: to what extent did Hooke have flashes of inspiration rather than deduce and understand? Inspiration, by itself, is mere fantasy and saying "ut tensio sic vis" is no different from saying "I know how to turn lead into gold"; both might be true or both might be false. Inspiration needs to be followed, as Newton knew, by proof, and by itself is merely a stimulus. That is, when we wish to examine the scientific value of a person's work, surely we must base that evaluation on the known corpus of work that the person produced?*

For example (actually an irrelevant aside), Joseph Banks is viewed with considerable admiration, but he did not publish any scientific papers and employed scientists like Solander to do his work; he was simply a rich collector in the vein of Muensterberger "Collecting an unruly passion". This is not to belittle him, but rather to put him in perspective. No matter how great a man in other fields, Banks simply was not a scientist.

Hooke is quite different, there being ample evidence of his creativity. But there also seems to be much evidence that his mind was a breeding ground for ideas that were touched upon and then discarded for new thoughts. That this is so is not surprising because he apparently lacked the formal training and ability in logic and mathematics to turn flashes of inspiration into proven theories. One such flash of inspiration was his statement of the law of elasticity which, like falling apples, is of almost no value until its implications are worked out; which Newton did, inventing a new mathematical tool (fluxions) in the process. Vague statements about Hooke's "mathematical education" are completely inadequate if we are to understand his competency. But Jardine's suggestion that Euclid was Hooke's and Wren's "shared mathematical passion" supports the view that Hooke lacked the necessary analytical skills to do more

than suggest ideas (and Huygens considered Hooke even weaker than this indicates). He is consistently described as an “experimentalist” and never as a theoretician. In contrast, Huygens was a competent mathematician and original thinker, capable of taking an idea like the isochronism of pendulums and proving the requirement of cycloidal rather than circular motion. Galileo had the idea first, but it was Huygens who converted it into a valuable and useful theory.

Jardine’s lack of scientific and horological knowledge may be the cause of her vagueness, but in places her statements are difficult to accept. In a note she says: “the most telling criticism Hooke levels against Huygens is that his ‘geometrical’ modifications of the pendulum ... are far from simple to apply to a physical pendulum clock”. This suggestion is like rejecting Einstein’s work because it is difficult to apply it to a pedal bicycle - utter nonsense! Jardine’s note is superficial and she (and Hooke) completely fail to see the importance of the work of Huygens and the validity of Newton’s criticism of Hooke.

Likewise, in another note Jardine writes: “The pressure (Huygens) was under to produce impressive scientific discoveries (meant) the temptation to recycle English experimental research as his own, with only minor modifications, must have been intense”. Such an emotive attack on Huygens must be supported by evidence or dismissed as unjustified and unacceptable bias. But no real evidence is forthcoming and Jardine ignores Newton’s precept by implying plagiarism without proof. Anyway, Huygens was a competent mathematician and an original thinker, so why would he want to copy the vague, unsubstantiated ideas of a theoretically weak Englishman?

The real problem with Jardine’s description is not her bias towards Hooke (which may well be justified) but her lack of a coherent argument. Questions of priority and importance can only be examined by providing a strictly chronological analysis, giving a clear interpretation of what ideas and discoveries took place, and accurately defining the protagonists skills and abilities. In fact she does produce some interesting but equivocal evidence that is worth examining, which unfortunately is presented out of order. In 1665 two letters indicate that Hooke had thought of using springs instead of pendulums as early as 1662 and Huygens knew of this. Then in 1668 he apparently displayed such a watch as the Royal Society, however no information about it (particularly its accuracy) is provided. Hooke was said to have “more than 20 different ways of applying springs” which suggests he had no idea of how to actually do it and had listed every possible way in case one of them actually worked. Again we are torn between the realisation of an idea and the proof of it and we must ask why it took another seven years before the idea surfaced again. Indeed, it is hard to avoid the conclusion that Hooke did not realise the significance of the idea. It can be argued that the 1668 display fell on deaf ears because watchmakers (with very few exceptions) were not members of the Royal Society. But it is possible that Hooke used a straight spring acting like a hog’s bristle, a method of regulating a watch that predated both Hooke and Huygens by more than a century. In which case Hooke’s work before 1675 was derivative and had nothing to do with balance springs. This makes sense when we remember that Hooke’s law of elasticity was first published as an anagram in 1676, long after these events.

In 1672 Huygens published his “Horologium Oscillatorium” with the proof of pendulum behaviour. Hooke’s vitriolic response reminds me of Earnshaw; both are said to rant and rave but Hooke’s words are considered justified whereas Earnshaw’s are not. Which is interesting because Hooke’s claim is not supported by evidence whereas Earnshaw’s claim is. Hooke says he invented “an other way” 12 years earlier (1660) but there is no information about what this way was and no explanation of why no such clocks were built in the intervening years. Again I am left with the feeling that Hooke may have had an idea but he was incapable of turning that idea into a practical reality. In contrast, almost immediately after the publication of Huygens’s book the production of pendulum clocks started in earnest. Jardine confuses the situation a little when she says Hooke wrote a letter with “an apology for his hostile remarks concerning (Huygens) ‘circular pendulum’ - by which Hooke means a hair-spring”; however it is clear Hooke must have been referring to cycloidal cheeks. Likewise, she annotates a letter from Huygens in which he writes “circular pendulo-watch” by adding “balance-spring watch”; however, we must remember that the going train of a clock was often called the “watch” and in fact it is more likely that Huygens is writing about pendulum clocks.

In January 1675 Huygens announced the balance spring and 4 months later Hooke produced such a watch, made by Tompion and signed “Hooke invented 1658”. Again, almost immediately after the publication of Huygens’s idea the production of balance spring watches started in earnest. In contrast, from 1658 to 1668 Hooke’s supposed invention lay dormant and, except for the claim of displaying such a watch in 1668, it continued to be ignored for a further 7 years. Under these circumstances it is hard to credit Hooke with the balance spring, just as his claim for discovering gravity was dismissed as nonsense.

R1444 Jarman, TC

The Rolex reference guide

USA: TC Jarman, 2000 (1999), 112 pp, no ill (71 pp, no ill) (43 pp, no ill).

Identification (English).

3 editions in 1999, 2000 and 2001.

Information on Rolex model numbers, cases, bracelets, serial numbers and model descriptions.

The 2nd Edition includes a brief history of the Rolex company, interesting trivia, Tudor watches, the Cellini collection and dial code charts.

The 3rd edition includes history (9 pages), certification, model numbers and descriptions (39 pages), case reference tables, bracelet identification, case and lug sizes, Tudor watches (7 pages), the Cellini collection, dial codes, fakes, notes (9 pages), and a 9 page addendum with retail prices.

R1445 Jeanbourquin, W**Le prix de revient dans l'industrie horlogère**

Genève: Radar et Générales, 1955, 8vo, 183 pp.

Business (French).

The cost of the horology industry.

Thesis for the School of Commerce and Economics, Neuchâtel.

R1446 Jeanneret-Oehl, A**Souvenirs du séjour d'une horloger neuchâtelois en Chine**

Neuchâtel: George Guillaume Fils, 1866, 20 x 13.5 cm, 136 pp, frontis.

Description, history (French).

It is available as a Google Book PDF file.

Recollections of the stay of a Neuchâtel watchmaker in China.

Twelve chapters: Plan of the trip; Recollections of London; One hundred and fifty days of the sea voyage; Macao, arrival in Canton; Factories and commerce, Blockade; Preparations for war; Hostilities; Adventure at a pagoda; Military expedition to Nankin; Conflagration of the great city; and Resolution.

Nothing about watches and so the title is a bit misleading.

R1447 Jeanneret, FAM; Bonhote, JH**Biographies neuchâteloise**

Le Locle: E. Courvoisier, 1863, 8vo, 2 volumes 560 pp and 514 pp.

Biography, makers (French).

Volume 1 is available as a Google Book PDF file.

Neuchâtel biography with biographies of 250 people listed in alphabetical order. Volume 1 covers "A" to "J" and includes, amongst many others, Ferdinand Berthoud, A.L. Breguet, Courvoisier, Dubois, Ducommun, Favre-Bulle, Gagnebin, Grandjean, Houriet, Huguenin, Jaquet-Droz, Jeanneret and Jeanneret-Gris. Volume 2 includes Perrelet.

R1448 Jeanneret, FAM; Bonhote, JH**Etrennes neuchâteloises**

Le Locle: Courvoisier, 1863 (1862), 19.0 x 12.0 cm, 160 pp (152 pp).

History, makers (French).

Neuchâtel gifts.

Includes 18th century watch and clock makers.

Listed under Jeanneret for 1862 and Bonhote for 1863.

R1449 Jelmini, J-P**Les Sandoz**

une famille neuchâteloise du moyen-age au 3e millénaire

Switzerland: Gilles Attinger, 2000, 463 pp, ill, plates.

History (French).

With a chapter on the Sandoz horologists.

R1450 Jendritzki, H**Die reparatur der armbanduhr**

Berlin: Michael Stern (Halle: Wilhelm Knapp), ca 2000 (1937), 8vo, CD Rom (155 pp, 106 ill) (107 pp, 73 ill).

Repair (German).

Two editions in 1937 and 1949. The 1949 edition is reproduced on CD Rom, see Stern "Horology CDs", CD 2.

The repair of the wristwatch.

The format of this book appears to be different from "The swiss watch repairer's manual".

R1451 Jendritzki, H**The swiss watch repairer's manual****Le manuel suisse de l'horloger rhabilleur****Der moderne uhrmacher****El manual suizo del relojero reparador****Moderne uurwerkreparatie**

Berlin: Michael Stern (Lausanne: Journal Suisse D'horlogerie et de Bijouterie) (Amsterdam: N.V. Heisterkamp) (Switzerland: Scriptar), 1977 (1953), 27.0 x 21.0 cm, CD Rom (136 pp, ill) (196 pp, ill).

Repair, tools (English, French, German, Italian).

The book has been translated into nine languages and reprinted several times in 4 editions. The 1988 5th edition is reproduced on CD Rom, see Stern "Horology CDs", CD 2.

23 chapters: Terminology; The standard equipment of a watch repairer; The standard equipment of a watch repair workshop; Fault-finding during dismantling; The hands; The dial; The motion work; Keyless work (its defects, making a winding stem); The click-work; The staff, balance and roller; The balance spring (the flat spring, centring the balance spring, fitting a new balance spring, the Breguet spring); The escapement (the lever escapement, the pin pallet escapement, the cylinder escapement); Pivots, Jewel holes; Wheels and pinions; The mainspring barrel; The mainspring; The screws; Cleaning; Assembly and oiling; Watch adjusting (some aids to watch adjustment and timing machines); The case, glass and strap; and Tables (Motion work numbers of teeth, calculation of uncommon trains, conversion table for mainspring heights, table for calculating the daily rate from the interval between 2

coincidences, reduction table for daily rate, and conversion table from lignes to millimetres).

[1st edition, excellent] *A beautifully clear, well organized book. It consists of a series of numbered diagrams and photographs of parts, tools and techniques, and detailed explanatory text in paragraphs with corresponding numbers. It is a book written around the illustrations. The sections on fault finding, including those with the timing machine, are invaluable.*

It is probably the best book for the learner, and one that more experienced repairers can usefully re-read from time to time.

R1452 Jendritzki, H

**The watchmaker and his lathe
L'horloger moderne et son tour
Der uhrmacher an der drehbank
El relojero moderno y su torno**

Berlin: Michael Stern (Lausanne: Scriptor), 1982 (1959), 27.0 x 20.5 cm, CD Rom (87 pp, ill).

Repair, tools (English, French, German, Spanish).

Originally printed with the title "The modern watchmaker and his lathe". Separate English, French, German and Spanish editions. The 1982 printing is reproduced on CD Rom, see Stern "Horology CDs", CD 2.

Twenty short chapters followed by 6 pages of illustrations giving examples of lathe use. The chapters cover general points, the modern lathe, the headstock, collets, wax chucks, hand rests, the tailstock, turning between centres, gravers, slide rest tools, face plates, measuring instruments, special jobs, balance staffs, winding stems, pinions, jewel setting, screws, and driving the lathe.

[2nd edition, good] *An interesting book which provides some good practical information.*

Much of the text is descriptive, giving a summary of lathe tooling, but it also includes practical advice on lathe use. Although the practical tasks are explained well they are presented in a rather "cookery-book" style; sometimes the text is a bit superficial and I would have found more precise information useful. But the text is clear, the photographs excellent (although I found the diagrams disappointing) and the reader should have little trouble filling in the necessary detail. And it is the only book I have read that describes headstock and slide rest maintenance adequately.

Unfortunately the second edition attempts to tread a delicate line between textbook and advertising puff. The advocacy of Bergeon tools is excessive and tends to distract the reader; the examples of use at the end is basically an advertisement showing the versatility of the Bergeon lathe. But considering this book has been "entirely re-edited and updated ... assisted by Marcel Bergeon" it is not surprising.

R1453 Jendritzki, H

**Watch adjustment
Le réglage d'une montre a balancer spiral**

Lausanne: Scriptor, 2006 (1963), 26.5 x 20.5 cm, 109 pp, 214 ill, 23 pp adverts.

Repair, technical (English, French).

Editions in 1963, 1967 and 1972. The 2nd edition was reprinted in 2006.

A glossary (4 pages) followed by three parts: The controlling system (25 pages); Preparation of the oscillating system for adjustment (45 pages); and Adjustment (36 pages). There is no index.

Part 1 covers: The motion of the balance and spring; The balance; Temperature compensation; and The balance spring.

Part 2 examines: Poising the balance; Effect of balance poise errors; Applying the balance spring; The terminal curve of the Breguet spring; Balance cock, index and curb pins; and The regulator index.

Part 3 contains: Past and present practice; Sequence of operations in adjustment; Condition of the watch prior to adjustment; The balance amplitude; Adjuster's notes; Sequence of operations during adjustment; Example of notes made during adjustment; Example of poise correction to the balance and spring; The aural method for rapid adjustment; Deduction of daily rate from observation over x hours; How carefully are wrist watches adjusted at the factory?; To what extent can one improve the performance of a wrist watch?; Example of a correction to the poise of a balance and spring; Adjustment of a wrist watch; How is one to improve a watch which has different rates dial up and dial down?; What should be done if the watch does not gain in the short arcs?; How is one to correct the difference of rate hanging and lying?; The timing machine; Experimental demonstrations using the timing machine; Checking the rate of watches; Chronometers; Official testing institutions; The knowledge of the repairer regarding chronometers; and Example of the calculation of a certificate of performance for a wrist watch.

[1st edition, very good] *This is a very clear, well organised practical manual, similar to his "The Swiss watch repairer's manual". As with that book, it consists of a series of numbered diagrams and photographs with detailed explanatory text in correspondingly numbered paragraphs. There is no theory and little explanation, because Jendritzki is only concerned with guiding the experienced repairer through the actual process of adjustment. Indeed, it seems Jendritzki is not comfortable writing about theory; the first part is largely a collection of facts with little attempt at explanation, and in a few places it is obscure.*

However, the book doesn't actually say much about adjusting. The first part discusses pinning points and overcoils and second part about preparing the watch for testing. But the third part is mainly about watch testing and testing standards. So there is not much practical guidance in adjusting and, although the second and third parts are very well written, I did not find the book as helpful as I hoped.

I have noticed that some authors recommend methods of adjusting that are condemned by others, and

vice versa. It is clear that adjusting is an art which requires an intuitive feel and great skill more than the routine application of particular theories or methods.

[Review by Henry B. Fried] *Mr. Jendritzki, a well known Swiss teacher and author, has just published another book, this one exclusively devoted to watch adjusting practices and principles. This is the first such thesis on this precise subject since H. C. Kelly and Walter Kleinlein published their books on adjusting in the early 1930's. Therefore, this new volume covers the subject from a fresh and entirely new perspective, using the most modern methods and newly developed techniques. Watch adjusting can be defined as the art of getting watches to time precisely under varying conditions. In this respect, Prof. Defossez mentions, in the preface, that the remarkable results obtained in official tests and the availability of frequent and precise time-checks by the layman required each watchmaker to complete his repairs with the average watch keeping much better time than many "railroad" watches did years ago.*

The methods of teaching put forth by Mr. Jendritzki are made understandable by the employment of over 200 easy-to-understand drawings and clear photos. Among some of the topics covered in this volume are: the effects of the escapement on timekeeping; amplitude and isochronism; positional changes; pivot shapes and their influence on timing; regulator pin adjustments; and balance poise. A separate chapter deals with the monometallic balance and its effects on the adjustment rates.

While the average watchmaker knows little or has few facilities to test or experiment with temperature adjustments, Jendritzki covers this in a short but comprehensive chapter, indicating ideas on this adjustment of the compensating balances and the conduction of the various tests. Tests of the Volet, Straumann and other balances are described and pictured for easy understanding.

The effects of the balance spring on both isochronism and position timing are treated equally as well as pinning, studding and collet relationships. Centers of gravity, and the Caspari effect of elastic point of attachment are more of the pertinent topics treated. A whole section is devoted to practical instruction in hairspring manipulation as it concerns position adjustment-isochronism.

Watch adjusting is one of horology's finest arts, requiring a discriminating discernment as well as a critical eye. In Switzerland and elsewhere, the adjuster is regarded with extreme respect. In the various observatory trials and in published results, the adjuster's name appears, together with the watch winning a mention or an award, and the various companies prize their adjusters with as much pride and jealousy as an American baseball manager would a twenty-game winner or a .400 hitter. Prof. Jendritzki, in his latest book, covers this subject well, revealing many of the tricks that will make many watchmakers shorten the time needed to bring their stubborn watch to behave in the various positions and run evenly throughout the day. The author realizes that not every horologist has the equipment that is used in the factory so he has thoughtfully covered these ideas and methods with the every-day tools and materials available to the average watchmaker. The illustrations are attractive and the type large and easy to read. Drawings and photos are first-rate.

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R1454 Jendritzki, H

Werkstattwinke des uhrmachers

Berlin: Michael Stern (Halle: Wilhelm Knapp), ca 2000 (1945), 18 x 13 cm, CD Rom (3 vols of about 80 pp, 80 ill each).

Repair (German).

Three or more booklets and several printings between 1945 and 1950. Werkstattwinke 1 to Werkstattwinke 3 have a total of 240 drawings and sketches, so probably each booklet has 80.

Reproduced on CD Rom, see Stern "Horology CDs", CD 2.

"80 zeichnungen und aufnahmen des verfassers. Herausgegeben von der "Uhrmacherkunst".

Workshop hints for horologists. 80 drawings and sketches of the author from "Uhrmacherkunst".

R1455 Jendritzki, H; Stern; Heydt

Die armband und taschenuhr in der reparatur

handbuch für uhrmacher und uhrenliebhaber

Berlin: Florian Stern, 2007 (2004), 24 x 17 cm, 312 pp, ill, CD ROM.

Repair (German).

This is probably both "Die reparatur der armbanduhr" and "Der moderne uhrmacher" (The swiss watch repairer's manual) on CD ROM.

R1456 Jenzen

Uhrzeiten

die geschichte der uhr und ihres gebrauchs

Frankfurt: Jonas Verlag, Frankfurt: Historisches Museum, 1989, 24 x 17 cm, 336 pp, 242 ill, 16 plates. Collection, catalogue, exhibition, makers (German).

Volume 42 in the series "Kleine Schriften des Historischen Museums".

Catalogue of an exhibition of clocks and watches in the City of Frankfurt, with a list of Frankfurt makers.

R1457 Jequier, F

De la forge a la manufacture horlogère

XVIII - XX siècles

Lausanne: Bibliothèque Historique Vaudoise, 1983, 23.5 x 16 cm, 717 pp, few ill, map.

History (French).

Only a few b/w illustrations

Five generations of entrepreneurs in the Vallee de Joux.

History of the Vallee de Joux, and its people. The social history of the valley and the economic impact of horology, concentrating on the Lecoultre family.

With 34 appendices, glossary and bibliography.

Jequier is professor of history of economics at the University of Lausanne.

R1458 Jequier, F**La main et l'outil**

collection de machines et d'outils, catalogue de l'exposition temporaire

Switzerland: Musée International d'Horlogerie, 1987, 24 x 17 cm, 141 pp, 187 ill, 8 plates.

Collection, catalogue, description, tools (French, German).

French text with short descriptions in German.

Hand and tool, collection of machines and tools. Catalogue of the exhibition of March 27 to September 27, 1987. Jequier wrote the preface.

R1459 Jequier, F**Une entreprise horlogère du Val-de-Travers**

Fleurier Watch Co

Neuchâtel: Baconniere, 1972, 21.5 x 15.5 cm, 406 pp, no ill, map, 3 graphs.

History, biography (French).

A watchmaking enterprise of the Val-de-Travers, Fleurier Watch Co.

A history of the Fleurier Watch Company, a family company of the 19th and 20th centuries. The company was absorbed into the Societe des Garde-Temps SA in 1968.

Six chapters.

Chapter 1: The Val-de-Travers and the village of Fleurier (physical and human geography, history, social and economic evolution, Fleurier and the Chinese watch, Edouard and Charles-Henri Bovet).

Chapter 2: Origins of the families (traditions, the workshop, the second generation, J-H Jequier, D-L Petirpierre, C-A Jequier-Borle, Jrequier Brothers and Co. at Fleurier, other sons of J-S Jequier, economic and social conditions in the 2nd half of the 19th century).

Chapter 3: Fleurier Watch Company 1902-1915 (the Swiss watch industry 1890-1914, economic and social evolution in Neuchâtel, the origin of the Fleurier Watch Co., the fusion of the Fleurier Watch Co. with C Jequier-Borle).

Chapter 4: Prosperity and crises (the Swiss industry 1914-1920, growth 1915-1920, the crisis before the war 1920-1936).

Chapter 5: Return to prosperity (the Swiss industry 1936-1952, the company 1936-1939, the second world war, after the war 1946-1952).

Chapter 6: The last 15 years of the family company 1953-1968 (the Swiss industry from 1953 to now, the Fleurier Watch Co. 1953-1968).

The are 15 short appendices, extensive bibliography, glossary of terms and indexes.

[1st edition] This book is a formal socio-economic study of the company, produced under the auspices of the University of Neuchâtel; probably a dissertation for a higher degree. (Jequier is professor of history of economics at the University of Lausanne.)

The bibliography includes many dissertations. Several are listed in this bibliography having appeared in book lists (usually without noting that they are theses).

R1460 Jespersen, J**From sundials to atomic clocks**

USA: Dover (US Dept of Commerce), 1982 (1977), 24 x 16 cm, 175 pp, ill.

Technical? (English).

"Understanding time and frequency".

R1461 Jessen, P**Der ornamentisch**

geschichte der vorlagen des kunsthandwerks seit dem mittelalter

Berlin: Verlag für Kunstwissenschaft, 1920, 8vo, 384 pp, 223 ill, frontis.

History (German).

Includes case decoration.

R1462 Jewelers' Circular**Trade marks of the jewelry and kindred trades**

USA: Jewelers Circular, 1998 (1896), 26.5 x 18.0 cm, 388 pp, ill (436 pp, ill) (180 pp).

Makers (English).

The editions were: 1st edition 1896, supplement 1898, 2nd 1904, supplement 1909, 3rd 1915 (325 pp, ill), 4th 1922, 1934, 5th 1943 (228 pp), 6th 1950.

There are modern reprints of the 1915 3rd edition (1988) and the 1934 edition.

This book contains an indexed list of trademarks used in the United States and Canada followed by articles on trademark law, gold and silver marks, a history of American makers' marks, and marking laws in USA and Canada.

The trademarks are arranged by type of product: jewelry, badges, rings, sterling silver, silver plate, watches (33 pages), watch cases (17 pages), clocks (9 pages), materials & tools, gemstones, pens & pencils, leather, ebony & ivory/shell, cut glass, miscellaneous and jobbers. There are 3 indexes; by letter,

word and name, by name of pattern, and by company name.

[4th edition 1922, very good] *A very useful book and certainly the best guide to American trademarks that I have seen.*

The trademarks are related to their American "agents" many of whom are subsidiaries of overseas manufacturers; so in many cases a watch name can be related to the maker rather than just the distributor. The articles on law and hallmarking are short histories which are very interesting and well worth reading.

See also Kochmann "Clock and watch trademark index".

R1463 Jewelers' Circular

Workshop notes for jewelers and watchmakers

USA: Lindsey Publications (USA: Jewelers Circular), 1966 (1892), 25 x 18.5 cm, 303 pp, 5 ill (218 pp, no ill).

Repair (English).

Printed in 1892 and 1899. The latter described as the 3rd edition but no reference to a 2nd edition has been found, although this might have been the second part printed separately. The modern reprint is of the first edition.

Brearely "Timetelling through the ages" says this book was compiled by Brassler.

Practical receipts on manufacture and repairing of watches and clocks, etc. by "one who has contributed such matter to the Jewelers' Circular".

In two parts. Part I (presumably the original text from 1892) has 104 pages, mainly on watches, followed by 88 pages on jewelry working. Part II is 99 pages of additional material on the same topics concluding with a reprint of New England Watch Co "Pointers for watchmakers and repairers". The only illustrations are in Part II: 2 on regulator pins and 3 relating to the duplex escapement (copied from the New England booklet).

[3rd edition, fair] *The book consists of very short remarks and a few longer pieces, including extracts from the writings of Gannev, Sandoz and Grossmann. They are in no apparent order, but perhaps by date of publication. Most concern repair, but there are many which discuss principles. Quite a few are unacknowledged extracts from other books, such as Saunier "Watchmakers' handbook". There is considerable repetition, many topics being covered several times.*

I think the main interest in this book lies in showing what watch jobbers were given to read and the insight into their standard of education. Much of the material is fairly basic and at times blatantly contradictory. There are a lot of interesting techniques, particularly for Swiss cylinder and English fusee repair. However, despite the index, the repair tips can be found more easily in other books and there is little to recommend this collection as a source of information. The notes on principles, mainly isochronism, are vague and of little merit.

The most fascinating suggestion is that a watch should be adjusted like a violin or piano; the parts of the escapement "must vibrate in unison, and produce a clear, harmonious, musical tone". Although I doubt if adjusting a watch to a C major chord would be much use, the idea actually has some merit. As with banking to drop, the danger was (and is) that jobbers will mindlessly follow recipes without realising that understanding is required. Too much of the text is more akin to "old wives' tales" than reasoned techniques.

The absence of illustrations is explained away early on: "... omitting the illustrations as every watchmaker is so thoroughly acquainted with ...".

R1464 Jobin, AF

Classification of swiss watch movements and watch materials

La classification horlogère des calibres de montres et des fournitures d'horlogerie suisses

Klasifikation der schweizerischen uhrwerke und uhrenfurnituren

Berlin: Historische Uhrenbucher (Geneva: La Classification Horlogere) (Lausanne: Journal Suisse d'Horlogerie) (Switzerland: Andres & Cie), 2009 (1936), 28.0 x 21.5 cm, 320 pp, ill; 330 pp. ill; 336 pp ill. Description, identification, terminology (English, French, German, Spanish).

3 volumes: 1936 (blue cover, showing more than 3000 movements from over 50 factories), undated circa 1939 (brown cover) and 1949 (red cover).

The modern reprint is a facsimile re-edition of the three volumes.

Multi-lingual French, German, English and Spanish which "gives as complete information as is possible to compile, on the entire production of calipers and spare parts of the Swiss watch factories". The companies covered are:

Volume I (1936): Angelus, Stolz Frères, Altus, Arogno, Aurore, Bettlach, Buhre Paul & Barbezat, Buser Frères & Co., Cortebert Watch Co., Doxa Watch, Dreyfuss & Co., Enicar, Eros, Eterna, Eta, Felsa, Fleurler, Fontainemelon (F.H.F.), Frey & Co., Glycine Watch Co., Hora, Imhof, Kurth Frères, Langendorf Watch Co., Lavina, Liengme & Co., Marvin Watch Co., Matter F., Meyer & Studeli, Michel A., Minerva, Moeri F., Montilier, Olivia Watch, Omega Watch Co., Optima Watch, Orion Watch Co., Patek, Philippe & Co., Perfecta, Peseux, Le Phare, Phenix Watch Co., Record Watch Co., Recta, Child, Sonceboz, Tavannes Watch Co., Unitas, Vacheron & Constantin, Venus, Wasa, Welta, Zenith, Zodiac.

Volume II (1939): Alpina Watch, Altus, Astin, Aubry, Beguelin & Co, Buhre Paul & Barbezat, Büren, Bulla Watch, Bole, Breitling, Buren, Buser Frères & Co., Champagne, Doxa Watch, Dreyfuss & Co., Dulux, Ebauches, Enicar, Enila, Eros, Eterna, Eska, Frey & Co., General Watch Co., A.G.M., Gindrat, Glycine Watch Co., Grana, Helvetia, Henex, Imhof, International Watch & Co. (Iwc), Jeannin Numa,

Kocher & Cie., Lanco Watch, Kurth Frères, Langendorf Watch Co., Lavina, Longines, Maitre L. & Fils, Mido, Omega Watch Co., Patek, Philippe & Co., Perret & Berthoud, Pery, Phenix, Pronto, Econvilier Watch Co., Record Watch Co., Revue Watch, Rolex Watch Co., Schild, Silvana, Sportex, Tavannes Watch Co., Thommen, Tissot, Universal Watch, Zenith

Volume III (1949): Aerni Charles, Alpha Watch, Alpina Watch, Angelus, Beguelin & Co, Bielco Watch, Bueche-Ross H., Buhré Paul & Barbezat, Bulla Watch, Buser Frères & Co., Busga, Cortebert Watch Co., Damas Watch, Dom Watch, Doxa Watch, Ebauches, Ebel, Ebosa, Election Nouvelle, Enicar, Essor, Eska Watch Co., Eterna, Flora Watch, Frenca Watch, Gala Watch, General Watch Co., Geneva Sport Watch, Gerber-Morgenthaler A., Glycine Watch Co., Golaz & Ce, Grossenbacher A., Hallauer Jean, Helvetia, Heuer Ed & Co., Homberger-Rauschenbach E, International Watch & Co. (Iwc), Jeannin Numa, Jobin Es Fils De Paul, Juillard & Cie, Juillard Emile, Ocher & Cie Lanco Watch, Lanco, Langendorf Watch Co., Lavina, Le Coultre & Cie, Leonidas, Liengme & Co., Longines, Lunesa Watch, Luxor, Maitre L. & Fils, Mardon Watch, Marvin Watch Co., Mido, Minerva, Moeri F., Mulfi, Muller Henri, Nicolet Watch, Olma Watch, Omega Watch Co., Optima Watch, Orator Watch, Orel Watch, Patek, Philippe & Co., Perret & Berthoud, Pierce, Precimax, Pronto Watch Co., Reconvilier Watch Co., Record Watch Co., Recta, Revue Watch, Rolex Watch Co., Sada, Schild, Schwarz-Etienne Les Fils De Paul, Silvana, Stolz Freres, Surena, Thommen, Tramelan Watch Co., Unia Watch, Union Horlogere, Universal Watch, Vacheron & Constantin.

[Review by Fortunat Mueller-Maerki] *For the collector of vintage Swiss watches dating from the first half of the 20th century it has often been difficult to positively identify and date the many different calibers of movements (both pocket watch and wristwatch) that were made at that time by the numerous players in the then highly fragmented Swiss watch industry. The most common movements, particularly those made by the Ebauches group, or the big brands like Rolex, Omega and Patek are reasonably covered in the common price guides, and in a few brand specific reference books (such as "Omega Saga" by Richon). But for the vast majority of makers there are no specific books and it is virtually impossible to locate movement images.*

Fortunately a series of movement identification guides was published in Geneva for the global repair trade in the years 1936, 1939 and, after a break for world war II, in 1949. Unfortunately not many were exported from Switzerland, and most of the few existing copies were used for many years as working tools in repair shops until they disintegrated decades ago. Original copies are virtually impossible to find; not even the National Watch and Clock Library in Columbia, PA, or the AWCI Library in Ohio ever had a copy. Florian Stern in Berlin, a retired teacher of watch repair, who has made it his life's mission to preserve horological literature has located a set and in 2009 produced a high-quality facsimile edition.

Each of the three volumes contains over 300 pages of information and each volume covers over 30 different brands in alphabetical order. The introductory part of each volume includes a table showing an enlarged image of each major movement component with the correct name of the part in French, German and English, and conversion tables for the various measurement systems (douzaines, lines, millimeters and American 'Size').

Each brand section (ranging from 2 to 20 pages per brand) starts with an 'Advertisement' for the brand (anywhere from 1/3 page to a full page, typically showing an image of the factory building), followed by life size illustrations of all their current movement calibers, followed by illustrated parts lists for each of the movements.

The originals were scanned at high resolution, and printed on good quality paper, making the facsimiles easier to use and more useful than the originals. The resulting books are clearly a useful and valuable reference and research tool, rather than a literary read.

Even if costly, this set of books is an indispensable tool for the serious collector of Swiss watches of the 20th century to correctly identify the movement, and Mr. Stern deserves the gratitude for having made this tool available once again to a wider range of collectors.

[2nd edition, 1939, very good] *The book begins with general information on parts identification by the Jobin system and watch hand styles. This is followed by specific information for watches of Swiss companies produced at the time of publication. In most cases both front and rear movement views are given, making it valuable for identification.*

The text is interspersed with many pages of advertisements which occupy a large part of the book. Although a rare and useful reference, the bookshop prices for it seem excessive.

R1465 Johann, A

Allgemeines lehrbuch der uhrmacherkunst

Traite général d'horlogerie

Paris: (Aarau: Christen), 1881 (1862), 19 x 12.5 cm, 330 pp, 35 plates 32 tabs (319 pp) (412 pp).
Technical? (French, German).

Printed in 1862, 1879 and 1881.

Tardy gives the author as Johann, but it may be Hiller.

R1466 Johns, G; Zinner, E

Literature of time

in the Ernst Zinner collection San Diego State College Library

San Diego: San Diego State College, 1970, 25 pp.

Bibliography (English).

R1467 Johnson, C**Clocks and watches****Les horloges et les montres**

Paris; New York: Odyssey Press, 1965 (1964), 11 x 17 cm, 44 pp, ill.

Description (English, French).

Separate French and English editions

A miniature book described by one person as a "cute, fun book" giving a short history.

R1468 Jones, BE**Watch cleaning and repairing**

London: Cassell & Co, 1940 (1918), 18.5 x 12.0 cm, 156 pp, 73 ill.

Repair (English).

11 editions between 1918 and 1940. There is no evidence that the book has been revised and I suspect all "editions" are identical in content. Edited by Jones from contributions to the "Work" magazine by "G" and "Horologist". An "Amateur Mechanic and Work" handbook.

16 chapters: Tools and materials; Cleaning American key-wound watches; Cleaning Swiss lever watches; Cleaning and repairing Swiss cylinder watches; Cleaning and repairing English going-barrel, fusee and verge watches; Cleaning and repairing modern keyless watches; Mainsprings: selecting, removing, fitting etc.; The lever escapement, its action, correction and repair; Balance, balance-staff, roller and impulse-pin repairs; Balance springs or hairsprings, selecting, fitting, straightening, etc.; Pivot, pivot-hole and jewel-hole repairs; Wheel repairs and corrections; Regulating watches, remedying gaining and losing; Watches stopping, causes and remedies; Demagnetising watches; and Some miscellaneous matters.

There is an index.

[11th printing 1940, very good] Chapter 1 indicates that the book is for amateurs and the list of tools might suggest for novices. As is the wont of English authors, we are asked to buy things we do not understand and expected to make and flirt pivot drills on page 2. Then it is suggested we buy a gross of this, a dozen of that and half a gross of flatted garnet pins. If you are a beginner you should ignore this chapter. However, you should ignore the rest of the book as well. By the time the reader has reached chapter 4 it has become clear that this book is for competent workmen and explains tasks which are well beyond the novice, especially as the explanations assume skills and experience which are not covered.

Chapter 2 begins with examining the balance and its pivots. Then good, clear cookery-book instructions are given for disassembling, cleaning and assembling an American full-plate movement, with some vague suggestions for fault finding.

Chapter 3 clearly explains the different arrangement of Swiss movements with hanging barrels and hollow center arbors.

Chapter 4 is an examination of cylinder escapement faults and their repair. The advice is precise and very good.

Chapter 5 is mainly concerned with fusee and fusee chain repair.

The style suggests these chapters were written by one person.

In contrast, chapter 6 on keyless work is rather vague and superficial; it includes remarks on Waterbury and Ingersoll watches. Chapter 7 then discusses relatively simple tasks, such as how to use a mainspring winder. I presume these were written by the other author. The following chapters revert to quite advanced work.

If we view the book as an advanced repair guide then there is much good advice, especially in the early chapters, but I think other books are more accessible and better organised.

R1469 Jones, FD**Die design and diemaking practice**

New York: The Industrial Press, 1945 (1930), 8vo, 956 pp, ill.

Technical (English).

Second edition in 1941, reprinted in 1945.

A treatise for die designers and die makers containing illustrated descriptions of a large variety of selected dies for all kinds of power press operations, with practical information and data on approved designing practice and die construction.

"It includes some pages on dies for watch hands, cases, dials and sub presses for watch clicks."

R1470 Jones, J**A sketch of the history and principles of watch work**

London:, 1845 (1842), 8vo, 16 pp, 4 plates.

Description, history (English).

Allix "Postal bid catalogue 1" gives the date 1842 and other sources 1840 and 1845.

Allix in "Postal bid catalogue 1" says "similar to the small book by Adam Thomson" (which see).

R1471 Jonquieres, M de**Notice sur LFC Breguet**

Paris: Gauthier Villars, 1886, 25.5 x 17.0 cm, 16 pp.

History (French).

Notice on LCF Breguet (AL Breguet's grandson).

R1472 **Joseph, F**R1472 **Joseph, F****Schleifen und polieren der edelmetalle**

Leipzig, Stuttgart: Ruhle-Diebner Verlag (Leipzig, Verlag von Herm. Schlag), 1991 (1929), 21 x 14 cm, 110 pp, 100 ill (121 pp, 95 ill).

Repair (German).

4 printings in 1912, 1926, 1929, 1938.

Reprinted in 1988 and 1991.

Polishing and burnishing precious metals with details of work methods.

R1473 **Josephi, W****Kunstlerische taschenuhren**

Brunswick:, 1906, 8vo, 20 ill.

(German).

Artistic pocket watches.

R1474 **Journal Suisse d'Horlogerie****Livre d'or de l'horlogerie**

cinquantenaire du Journal Suisse d'Horlogerie et de Bijouterie

Switzerland: Journal Suisse d'Horlogerie et de Bijouterie, ca 1940, 118 pp, ill.

History (French).

The date is given variously as circa 1920 and circa 1940.

Produced for the 50th anniversary of the Journal Suisse d'Horlogerie et de Bijouterie.

R1475 **Journal Suisse d'Horlogerie****Montres et bijoux de Genève**

Lausanne: Journal Suisse d'Horlogerie, 1942, 4to, 12 ill, plates.

Illustration (French).

Watches and jewellery of Geneva.

Includes articles on watches and makers together with advertising.

R1476 **Jubinal de Saint Albin****Collection Jubinal de Saint Albin**

châtelaines et breloquiers montres XVI - XIX siècles en or, argent, cuivre, acier, cristal de roche décorées d'agate, pierres dures, diamants, d'émaux, champlevés et peints

Paris: , 1938, 25 x 19 cm, 40 pp, 13 plates with 72 ill.

Collection, catalogue (French).

The Jubinal de Saint Albin collection of chatelaines and watch charms, 16th to 19th centuries in gold, silver, copper, steel, rock crystal decorated with agate, jewels, diamonds, enamel and champleve.

Catalogue of auction at the Hotel Drourot in 1938.

R1477 **Judy, Dean****100 years of vintage watches**

a collector's identification and price guide

USA: Krause Publications, 2004 (2002), 27.5 x 21.0 cm, 256 pp, 1000 ill (224 pp, ill).

Price guide (English).

Timeline of watch history (2 pages), Introduction (2 pages), five chapters, Glossary (4 pages) and Sources for further information (1 page). The chapters are: Why a watch (6 pages), Urban prospecting for the vintage watch (8 pages), Condition, condition, condition (8 pages), Buying and selling (4 pages), and Watch values and identification (186 pages). The last chapter is sub-divided into Watch values and identification, Pocket watches, Wrist watches, Character watches, and Production numbers and dates.

[1st edition, poor] The hardest thing about this book was working out what Judy was trying to do. The title is "a collector's identification and price guide" and the back cover states "Whether you are just starting out in search of a vintage watch or are already a seasoned watch collector ...". So it is for collectors. But, no. Chapter 2 begins "So, you've decided to start buying, selling, and yes, maybe even collecting a few vintage watches." So it is actually a book for dealers! Not only that, it is clear that it has been written for beginners. In which case, how well does Judy handle this aim, to teach novices how to become dealers?

The introduction sets the scene by explaining why the book is restricted to keyless watches from the period 1870-1970; because such watches can be worn. It then goes on to give some examples of how dealers can make huge profits by buying very cheaply from ignorant people and selling dear to collectors. This picture of an ideal world ignores bad deals completely and imparts a false image of the dealer's life.

Chapter 1 is a very brief history of watchmaking, with emphasis on American railroad watches, and this is quite good. But included is an explanation of American watch sizes which is utterly confusing. What on earth does "18 inch x 1/30 inch = 1-23/30 inch or approximately 1-3/4 inch diameter" mean? Clearly Judy is either using his own unique version of arithmetic or he has no idea how to explain sizes. And he then goes on to discuss jewelery. Although this is marginally better, it is apparent that Judy belongs to the "more is better" school of jewelery, which is as naive and incorrect as his analogy of jewelery to car engines. More significant is that nowhere does he describe how watches work; indeed there is absolutely no information in the book about movements. Consequently he uses terminology without explanation, even though the reader does not know his endstone from his staff.

In Chapter 2 Judy explains how to buy watches. Most of the advice is sound (buy very cheap, sell very dear), but his suggestions on how to use Ebay are largely wrong.

Chapter 3 discusses condition. After a heart-warming fantasy about buying a mint, very valuable watch for \$50, Judy explains how to examine a watch and then looks at restoration. The obvious problem here is that some aspects of condition are very hard to determine, but Judy suggests all is pretty easy. However, a watch that has been carefully repaired may look mint even though it has had major work done on it and assessing any better-than average watch is fraught with difficulties. Once again undefined terminology is used (how can a novice understand how to check a canon pinion when he doesn't know what one is?). Restoration focuses on dial refinishing (if done well it cannot be detected) and case polishing.

Chapter 4 simply summarises some basic rules about buying and selling and gives suggestions about what is "hot" and what is "cold" (necessary knowledge for the dealer). But Judy says "always buy from a reputable dealer", thus switching back to collecting and making the previous chapters largely irrelevant. And he includes questions to ask over the telephone when someone rings up with a watch for sale. The questions are sensible, but unfortunately the seller probably can't answer most of them; how many members of the public do you know who can distinguish gold filled and gold plated cases, and who can tell if a dial has been restored?

The bulk of the book is the last chapter on watch values and identification. This has very good photographs, mainly dial views, and many watches have retail price estimates. In line with the earlier emphasis on railroad watches, the chapter begins with 5 pages of dials and cases featuring trains; however Judy does not explain that many of these hide poor quality Swiss movements. The rest of the chapter surveys makers in roughly alphabetical order. Like all such books, the usefulness of it is restricted by the facts that once the price estimates become out-of-date they are fairly useless, and it is very difficult to value watches which are not illustrated, especially when they are significantly different or dependent on slight variations.

The book ends with tables of serial numbers and dates, a glossary (of little use because many of the terms are meaningless in the context of this book), a list of a few American dealers and suppliers, and a bibliography listing 6 books (one of which is totally irrelevant because it deals with watches from the 18th century and earlier; one is on watch repair and another is a coffee-table book on Movado).

Despite its title, this book is not about collecting, but about buying and selling, in other words, dealing. And it is quite inadequate. What the amateur dealer needs to know are the basic principles: profit margins, expenses, the effects of inflation, a bit of rudimentary accounting and the need for an intuitive sense of value. The book should explain why dealers need profit margins greater than 100%. And it should seriously examine the problems associated with repairs. For example, a Rolex Tudor watch that needs the dial and case refurbished is worthless because the repairs will cost more than the expected retail sale price. Unless, like Judy, you are a competent, trained watch repairer and can do it yourself. Indeed, the amateur dealer (who often pretends to be a collector) lacks the knowledge and skills, and is largely restricted to near perfect watches as a result. Certainly he will have the occasional, stunning success, but most of the time he will do no better than get his money back and will have many loss-making transactions. The reason? He simply doesn't have the understanding or the time. After all, for successful dealers like Judy it is a full-time business.

R1478 Judy, Dean

Warman's watches field guide

USA: KP Books, 2005, 13.0 x 10.5 cm, 512 pp, ill.

Collecting, identification, price guide (English).

An introduction (37 pages) followed by photographs of watches, most with retail price estimates; 229 pages on pocket watches and 237 pages on wrist watches. The book concludes with 6 pages of production numbers and dates, covering 32 American, 1 German and 5 Swiss companies. The German company, Lange, is not mentioned anywhere else in the book.

[1st edition, fair] This book is limited to watches manufactured between 1870 and 1970, which the author classes as vintage watches. The introduction covers where to look for watches, watch condition, restoration, buying and selling. It is assumed the reader will use the services of a watch repairer and not do any work on watches, and restoration is limited to the dial and case.

The illustrations of watches are arranged by manufacture, with the emphasis on American makers. In addition, there are some miscellaneous examples; the book begins with dials and cases having illustrations of trains, and there are sections on miscellaneous Swiss watches, the Movado Ermeto, cases (niello, repousse and others) and character watches.

Although there are photographs of pocket watch movements and a few wrist watch movements, these are too small to serve a useful purpose and the focus of the book is on dials and cases. This is not surprising as Judy writes in the introduction "I must say that the outward appearance is probably the most important factor in most peoples' minds".

In assessing this book I am guided by the title words "field guide". A field guide is a convenient book which you take out with you and which enables you to identify the things you are looking for; birds, gemstones, watches, whatever. So how does this book stand up to this task? I think it fails quite badly.

The most obvious problem is the small number of examples. If I come across an identical watch to one illustrated in this book, then I will have an idea of its value in America in 2005. But I will have no idea of the value of the vast numbers of other watches I will come across. The book provides no information about assessing watches (other than the usual 0-10 overall grading), no information about movements and no references to books. As movements are frequently recased, providing a value for a watch with a picture of the dial is hopelessly inadequate unless we are buying the dial and not the movement. In a number of

places only one watch by a manufacturer is shown and it is simply impossible to extrapolate from that to other watches by the same maker. And other makers are illustrated by museum pieces (without price estimates naturally) which we will never come across. Consequently, using this book is like going out bird spotting with a book that shows only a small number of birds, some of which are extinct; it won't take long before a better book is purchased.

A more difficult problem with the book is that ignores the subtleties of watch collecting. Without understanding some of the finer points of movement design and decoration, it is not possible to understand why two seemingly similar watches can have distinctly different valuations.

As I have argued elsewhere, unless you are collecting status symbols, a reasonable understanding of watch mechanisms and the relevant history is essential. For example, to collect American railroad grade watches (the focus of the first half of the book) without quite detailed knowledge of the companies and their products is to warm the hearts of dealers to the detriment of you bank balance; it is impossible. Similarly, how can you buy a Patek Philippe wristwatch on the basis of 5 examples?

This book is nowhere near as good as Shugart "Complete price guide to watches" and given a choice I would take Shugart with me and leave Judy at home.

R1479 Judy, Dean**Watches, Warman's companion**

USA: Krause Publications, 2007, 5 x 8 inch, 272 pp, 900+ col ill.

(English).

In two sections: Introduction and Watch values and identification.

[2007, review by Paul Krichten] So, you have an interest in collecting vintage watches. Maybe you are new to the NAWCC and are just beginning a collection. You have gone beyond the basic three watches (dress watch, sport watch, and "I don't care what happens to it" quartz watch) and desire some direction. Then maybe, this book can be a basic guide in assisting you in the search for vintage watches to add to your collection.

Compact and inexpensive, the book is composed of two sections: (1) Introduction and (2) Watch values and Identification. In the first part, the author defines a vintage watch as pre-quartz (1970-1980) and wearable, and begins the search. Where? ... flea markets, garage sales, auctions, antique shops, the Internet, and several other locations are discussed as to what may be available. Now that you have found a watch of interest, how do you assess the most important factor - condition? Using some basic tools, one will examine various parts of the watch and learn how to grade its condition. Besides looking good, it really is nice if the watch works properly too. The author recommends becoming friends with a professional watchmaker to assist you in learning about watches, their condition, and their restoration if necessary. Lastly, since there are people out there who are more concerned about your money than you may be, tips on the buying and selling of watches are discussed.

The second part and bulk of the book, Watch Values and Identification, is "meant to be a guide for you in the search for the current market value of your watch." There are over 900 color photos of watches in average to near-mint condition with appropriate retail price ranges. The watches are categorized alphabetically by manufacturer and accompanied by a paragraph or two relating to the history or speciality of the company. Sections include pocket (predominantly American), wrist (predominantly Swiss), and character (predominantly Disney). The photos are excellent and display many rare and exceptionally beautiful examples of the watchmaker's art.

It should be noted the author's work, as explained by the publisher, is available in three versions. The reviewed book is the middle of the three and intended for the average collector. The smallest, "Warman's Watches Field Guide, Values and Identification" at \$12.99 has fewer photos, less information, and is intended for the novice. The largest, "100 Years of Vintage Watches" at \$24.99 has larger photos, more information, and is intended for the dedicated collector.

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R1480 Juillerat, V**Cours d'horlogerie élémentaire**

étude privée et unique

1937, 100 pp.

(French).

R1481 Julius, CC**Masonic grandfather clocks, mantel clocks, watches**

pocket knives, rings, balls and more watch fobs

USA: CC Julius, 1985, 8.5 x 5.5 inch, 73 pp, ill.

Description (English).

Limited edition.

[Review by Henry B. Fried] This is a later edition, expanded to include the items in its title.

Four tall case clocks are pictured; one by BreadbeltGeo (who is not listed in Baille's or Loomes, but there is a Breadbelt Geo listed in these works as of 1811). Other clocks mentioned include Silas Hoadley, a Scottish clock of the early 19th century, a 20th century 9 tubular chime, pillar, shelf and banjo models. English verge watches, elliptical Swiss, Tiffany, and additional Dudley models are described. Elgin pocket watches with dial and case Masonic ornamentations are also included.

The remainder is a catalog collection of knives, articulated rings, fobs, lapel pins, tie pins, belt buckles,

cigar cutters and seals.

Like its earlier edition, this too could be improved with more careful editing and proofreading. Together the two booklets should interest those collectors who are Masons.

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R1482 Julius, CC

Masonic memorabilia

York, PA: CC Julius, 1991, 9 x 6 inch, 156 pp, ill.

Description (English).

Masonic items including clocks, watches and fobs.

R1483 Julius, CC

Masonic timepieces, rings, balls and watch fobs

Pennsylvania: CC Julius, 1987 (1983), 6.75 x 5.75 inch, 51 pp, ill, plates.

(English).

Limited edition. The dates 1983 and 1987 have been given; it may have been reprinted.

With a bibliography?

[Review by Henry B. Fried] C. Clark Julius, a devoted member of the Masonic order, has assembled and photographed many different items that bear the Masonic motif. In this booklet, there are 40 photographs that show 23 watches.

The oldest Masonic watch, according to the author, is by Burtenshaw, Aldgate of London (not listed). The watch has a porcelain dial covered with colored Masonic motifs. The author places a date of 1768 for this watch, which may be in error. This reviewer places the date closer to 1800 basing his judgment upon the photographs shown.

A Tobias fusee watch having a balance cock filagreed with Masonic emblems is shown. Square 19th century watches, various triangular pocket and travel clocks, and American watches made by Waltham, Elgin and Hamilton are also pictured. The Waltham, Hamilton, and Elgin watches also have Masonic emblems on the cases.

Three pages are devoted to the Dudley skeletonized Masonic watch. The information given is an encapsulation of the Dudley story told by Stoltz and Parkinson.

Watch fobs are very well represented. Other jewelry and items are also included.

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R1484 Jully, M

Les roues dentées

notions théorétiques et traces pratiques

Paris: E Bernard, 1904, 8vo, 148 pp, 5 fld plates.

(French).

The teeth of wheels, theory and practical design.

R1485 Junghans AG

Gebrüder Junghans AG katalog

Catalogue generale

Schramberg: (Paris:), 1929 (1911), 33 x 26 cm, 201 pp, ill (116 pp, ill) (132 pp, 350 ill).

Catalogue, description (German).

Illustrated catalogues.

R1486 Junod, CA

Le statut légal de l'industrie horlogère suisse

Genève: Librairie de l'Universite, 1962, 8vo, 330 pp.

(French).

The legal statute of the Swiss horological industry.

Law thesis.

R1487 Junquera, P

Relojera palatina

antologia dela coleccion Real Espanola

Madrid: Blasco, 1956, 8vo, 116 pp, 40 plates.

Collection (Spanish).

Clocks and watches in the Palacio Real, Madrid.

R1488 Jurgensen, JA

Jules Jurgensen

manufacturer of high-class time-keepers and of marine and pocket chronometers

Copenhagen: Jules Jurgensen, 1900, 12 pp.

Biography (French).

R1489 Jurgensen, JFU

De emploi des machines en horlogerie

spécialement dans la fabrication de la montre de poche de leur principal inventeur Frédéric Ingold

Neuchâtel:, 1877, 8vo, 16 pp.

Tools (French).

The use of machines in horology, especially for the manufacture of pocket watches, by their principal

inventor Frederic Ingold.

There are some quotes from this in Société Suisse de Chronométrie "Quelques notes sur Pierre Frédéric Ingold et les travaux de E. Haudenschild" and Berner & Audetat "Pierre-Frédéric Ingold, 1787-1878".

R1490 Jurgensen, Louis-Urbain**Mémoires sur l'horlogerie exacte**

Paris:, 1832, 4to, 63 pp, 5 fld plates.

Technical (French).

Robertson "The evolution of clockwork" says this is the French translation of "The higher horological art" but the pagination suggests otherwise. Bertele says it is a revision of "Principes généraux de l'exacte mesure du temps par les horloges" by Jurgensen's son Louis-Urbain and again the pagination seems wrong.

Five articles on precision horology, isochronism of pendulums, a double wheel escapement, a compensation pendulum and an astronomical regulator.

All clocks?

R1491 Jurgensen, Louis-Urbain**Uhrmagerkunstens literatur samlede i chronologisk orden**

Copenhagen:, 1839, 28 pp.

Bibliography (Danish).

A chronological bibliography arranged by language.

Robertson "The evolution of clockwork" gives 628 pp.

R1492 Jurgensen, Urbain**Die höhere uhrmacherkunst****The higher horological art**

egelu für die genaue abmessung der zeit durch uhren

Leipzig: Zentralantiquariat der DDR (Copenhagen:), 1980 (1842), 398 pp, ill.

Repair (German).

2 vols?

I am confused. "The higher horological art" is an English translation of part of the second edition of "Regler for tidens neolactige afmaaling ved uhre" which appeared in the Horological Journal circa 1873. However, it may be a translation of the book "Die hohere uhrmacherkunst".

R1493 Jurgensen, Urbain**Regler for tidens neolactige afmaaling ved uhre****Principes généraux de l'exacte mesure du temps par les horloges****Allgemeine grundsätze der genauen zeitmessung durch uhren**

Paris: (Copenhagen: N. Moller et Fils), 1840 (1804), 4to, 242 pp, 27 plates (241 pp, 18 fld plates).

Technical, bibliography (Danish, French, German).

Danish editions in 1804 and 1839.

The French translation was printed in 1805 (254 pp, 19 folding plates) with later editions in 1838 and 1865.

The German translation appeared in 1840 (2 volumes 117 pp and 23 plates).

R1494 Kaduck, JM**Collecting watch fobs**

a price guide

USA: Wallace Homestead Book Co, 1973, 11 x 8.5 inch, 97 pp, 548 ill, loose price guide.

Description, price guide (English).

A price guide for American fobs (watch chain medallions) with 557 fobs illustrated.

The book contains sections on what is a watch fob, why collect fobs, which fobs are the best to collect, materials, manufacturers, the reverse side of the fob, reproductions, modern fobs, dating, pricing, collecting.

R1495 Kahlert, H**Uhren 1913**

Furtwangen: Deutsches Uhrenmuseum, 1980, 21.0 x 15.0 cm, 88 pp, ill.

Description (German).

Extracts from watch and clock catalogues printed in 1913.

R1496 Kahlert, H; Muhe, R; Brunner, G**Wristwatches, history of a century's development****Armbanduhren, 100 jahre entwicklungsgeschichte****Les montres-bracelets, cent ans d'histoire**

USA: Schiffer Publishing (Fribourg: Office du Livre) (Munich: Callwey), 2005 (1983), 31.0 x 23.5 cm (28 x 26 cm), 520 pp, ill (410 pp, 1994 ill, price guide) (398 pp with about 1000 ill, 48 plates, loose price guide) (504 pp, ill).

Description, history, identification, makers (English, German, French).

Five editions with separate language printings. The 1985 French edition is given as 304 pp, 1100 b/w ill, 16 plates.

The 3rd edition has 11 sections: Origin of a new type of clock (8 pages); Wristwatch versus pocket watch (32 pages); Technological changes (18 pages); Construction and function of a classic wristwatch (13 pages); Automatic watches (10 pages); Special types of wristwatches (10 pages, alarm, watertight,

chronograph and complexities); The outer form (4 pages); German wristwatches (5 pages); On the way to the quartz watch (4 pages); Collecting wristwatches (11 pages); Appendix (13 pages, Jaeger-Lecoultrre movements, sizes of formed movements, manufacturers and trade marks, lignes to millimetres).

The first 11 sections contain about 75 pages of text within 145 pages with loosely related illustrations. These sections are followed by illustrations. They begin with 48 colour plates on separately numbered pages C1 to C48 followed by 251 pages of black and white photographs organised into 11 categories: Forerunners and early to 1925; Thirties to the sixties; Women's; Watertight, aviators' and observation; Automatic winding; Chronographs, Calendars; Chronometers and tourbillons; Repetition and luxury; Alarms, varieties and curiosities; and Electric.

There is a one-page index in small type.

[3rd English edition, good] *The history is very good, but the technical sections are expressed in descriptive generalisations and lack desirable depth, even though they contain some useful information. Unfortunately the English translation is somewhat stilted and most of the illustrations in the 3rd edition are of only fair quality. Together with the inadequate text I find it hard to rate this book highly despite an urge to do so.*

Certainly it is a good book, but I do not find it as useful as I would have liked.

See also Meis "Pocket watches from the pendant watch to the tourbillon".

R1497 Kalisher, B

Chronograph to complication

the art and technology of accurate timing

New York: Kalbe Press, 2007, 31.0 x 23.5 cm, 232 pp, ill.

Advertising (English).

Nine sections: The history of time (3 pages), Master watchmakers (4 pages), Chronographs and timing devices (78 pages), Time zones and travel complications (26 pages), Calendar, moon phases, tides and sunsets (22 pages), Repeaters and alarms (6 pages), Tourbillons (28 pages), Grande complications (16 pages), and Unique innovations (38 pages).

[1st edition, poor] *The first two sections contain the only text by Kalisher, who edited the book. The history is not a history at all, merely a few scattered, almost random facts. And the list of master watchmakers provides very brief notes and a portrait for 15 makers; it is superficial and uninformative. The rest of the book consists of two-page spreads. The left page contains some text about the maker and the particular watch, and the right hand page has a single photograph of the watch. It is clear that both the text and the photographs are advertising material provided by the watch companies. As with most advertising, the text is grandiose and superficial. Indeed, I am not sure where the book ends, as some of the last pages may be just advertising rather than advertising selected by the editor. Thus the book is the same as Naas "Grand complications" but updated.*

There is one interesting aspect of this book. It illustrates the extraordinary lengths modern watchmakers go to, to tart up obsolete, inaccurate technology and add meaningless complications (see my article "Confabulations, a humorous look at complications, NAWCC Bulletin, No. 367 (April 2007): pp. 163-172). Clearly the driving force is to capture the attention of the rich dilettantes who know nothing about horology, will never learn anything about horology, and who are motivated by the need for self-gratification.

I have no objection to advertising material, but this book is deliberately deceptive. The sub-title "the art and technology of accurate timing" implies it contains some useful information. However, there is not one explanation of mechanisms and not one photograph of a movement. And by producing a substantial hard-back book the buyer will tend to believe it has some long-term value; when, in fact, it is simply a collection of ephemera. But many people will not discover this until after they have paid for it.

It is a waste of money.

[Remark] *The dust jacket has 6 "endorsements" by a race-car driver, a television executive, an adventurer, an actor, and two people who should know better, Patrizzi and Sobel. Patrizzi writes the book "describes all the functions of incredible complicated watches". Well, if "you press a button and see pictures" describes a television, then yes; if you want to be that superficial. Dava Sobel states that "Kalisher can talk about it with authority". Maybe he can, but as he hasn't bothered in this book it doesn't matter.*

Of course, dust jackets only include the most ebullient and fanciful praise, but in this case they are quite revealing. It seems the first three of the six know nothing about watches, which is appropriate.

R1498 Kalisher, B; Ritzenber, P; Kozusko, D

The art of the watch

for the lover of fine things, the collector, the horologist

New York: Kolbe Press, 1996, 9 x 9 inch, 200 pp, ill.

Description (English, French).

With parallel English/French text.

I have seen reference to another identical book but listing Critchell, Blackwell and Patrizzi as the authors. I have presumed this is Kalisher under the translators of the English text.

"The best of the watchmaker's art that transcends nationality, language and time itself". It is "a portrait gallery of the world's finest watches, presented as works of art ... sponsored by the American Clock and Watch Museum and edited by Bertram Kalisher".

75 full page photographs of watches from different manufacturers with some company and other information on the facing pages in both English and French.

[Review by Eileen Doudna] According to its editor this book is a "portrait gallery of the world's finest watches, presented as works of art." One needs to note immediately that only wristwatches are included in this volume. A beautiful photograph of a wristwatch is shown accompanied by a brief, non-technical description in English and French. No movements are shown as the presentation is more about the artistry of the watches than their technical attributes. Approximately 100 watches are included and for each a current address is given for the company responsible for it. This in itself indicates that rather than being a retrospective of the history of watches, only those companies currently in business have been included, although many of the firms have been around for decades. This book is presented as both a means to recognize the achievements of contemporary watchmakers and to benefit the American Watch and Clock Museum in Bristol, CT.

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[Remark] See my review of Kalisher "Chronograph to complication". I wonder if Eileen Doudna has been "polite" and has avoided expressing an opinion of this book.

R1499 Kaltenbock, F

Viennese timepieces**Die Wiener Uhr**

Vienna a centre of clock and watchmaking in the 18th and 19th century

ein zentrum der uhrmacherei im 18 und 19 jahrhundert

Munich: Nicolaus Gunther, 1993 (1988), 28.5 x 25.5 cm, 263 pp, 527 ill, plates, cardboard slip case.

Description, history, makers (English, German).

Separate English and German editions.

Description of 18th and 19th century watch and clock making in Vienna.

13 sections: The Viennese clockmakers' craft (42 pages); Pocket watches (18 pages); Coach watches (8 pages); Travelling clocks (17 pages); Specimen clocks (6 pages); Zappler clocks (6 pages); Walking-stick watches (2 pages); Manikin clocks (2 pages); Bracket clocks (23 pages); Mantle clocks (43 pages); Longcase clocks (19 pages); and Index of Viennese clock and watchmakers (22 pages).

The book concludes with a biography, index of subjects (in German) and index of names.

Only 28 pages of this book are concerned with watches.

[1st English edition, good] The introduction, *The Viennese clockmakers' craft*, is in three sections. First, there is a history of clock and watch making in Vienna. Then there is a "formal and technical" section which is partly technical (discussing pendulums), but much is a discussion of case styles. And third, there is the reproduction of the text from a book published in 1823 which describes clock and watch making in Vienna. This part is good, but the translation is, in places, strange. There are several places where it is interspersed with the original German text and there are errors which make it difficult to understand at times, especially in the translation of the 1823 text.

The main body of the book consists of very good photographs with short captions.

Although the photographs of watches are interesting, this is primarily a book about clocks. Other than the history and the list of makers, there is not much for watch collectors.

R1500 Kaltenbock, F; Schwank, B

Watch-keys**Taschenuhrschlüssel**

three centuries of history and development

geschichte und entwicklung der Taschenuhrschlüssel uber drei jahrhunderte

Munich: Nicolaus Gunther Verlag, 1983 (1982), 28.5 x 21.5 cm, 109 pp, 21 ill, 54 b/w plates, 12 col plates.

History, identification, illustration (English, German).

First published in German in 1982 and then in English in 1983. There is a deluxe limited edition of 20? copies in a slip case as well as the normal edition.

The text consists of 31 pages with 21 illustrations, and is followed by the plates. Over 700 keys illustrated.

[1st edition, good] The text provides a useful and interesting history of the development of watch keys and their design, including some remarks on the influences of trends in art, reproduction of paintings, and illustrations from early pattern books. A calendar key, a tipsy key and a music box key are shown in pieces, giving some information on their design.

The photographs, in chronological order, provide a good survey of keys and the trends in their design.

The book includes 6 pages of facsimile reproductions of the patent applications of Sanderson, a lunar and calendar key, and Norton, a repeater key, including the drawings of the latter. It would have been much better if readable transcripts of the handwriting were provided.

Keys are basically very simple and there is not much that can be written about them. The authors have provided a good, well documented survey.

See also Vacheron Constantin "Keys of time, tales by Emile Gardaz".

R1501 Kamada, Masahisa

Tokei, timekeepers

Tokyo: Nikkan Kogyo Shimbunsha, 1955, 212 pp, figs.

Repair, history (Japanese).

Technical horology. Escapements. Electrical horology. Timing.

"The chapter index is in English but otherwise Japanese text. Covers horological theory, repairing, history and suggested reading."

Listed in Pertuch.

R1502 Kames, A**Translations**

Kames appears as an author or translator of some books, but other bibliographic sources are vague. He wrote or revised a number of books which were published in the "Schriftenreihe der gesellschaft fur zeitmesskunde und uhrentechnik" but I have not been able to clarify their interrelationships. These books are:

"Zweiter bericht mit 6 abhandlungen uber uhren" (second report with 6 papers on horology), Vol 2, 1930, 140 pp, tables, Berlin

"Fortschritt und forschung in der uhrentechnik" (progress and research in horology), Vol 4, 1932, 258 pp, 70 ill, Berlin.

"Prazisions und kurz zeitmessung" (accurate and fast timing), Vol 9, 1938, 184 pp, ill, Berlin. (I think this might be Bock "Reglage et construction de la montre").

"Messen und prufen" (measurement and examination), Vol 10, 1939, 255 pp, ill, Berlin.

"Reglage et construction de la montre", Vol 11, 1941, 162 pp, ill (see Bock & Kames).

R1503 Kansas City School of Watchmaking**Lessons**

Kansas: School of Watchmaking, 1965 (ca 1950), 4to, 200 pp, ill.

Repair (English).

Loose leaf lessons on watch and clock repair.

R1504 Kaser, L**The escapement for beginners**

Kansas City: L. Kaser, 1946, 9 x 5.5 inch, 20 pp, 21 ill.

Description (English).

The author says "There are no end of books on the market on the escapement and most of them are written by advanced watchmakers for advanced readers or students; therefore, I am attempting to write something simple, practical, and in language understandable by the beginners in school and at the watchmakers bench".

R1505 Keating, HRF**Dead on time**

London: Mysterious Press, 1989 (nd), 21.5 x 14.5 cm, 202 pp.

Novel (English).

"Indian Standard Time: "Indian Stretchable Time", remarks one of the characters in Inspector Ghote's newest investigation. With the murder in a Bombay watchmaker's shop of the heir to an influential landlord from deep in the timeless Indian countryside, Ghote finds himself enmeshed in problem after problem arising from different attitudes to the clock as he moves from busy, bustling Bombay to a village India, lovingly described, even confronting with happy shrewdness that clue, familiar from a thousand detective stories, the watch with the smashed hands. Plagued on the one hand by a director-general of police obsessed with a rigorous punctuality and on the other by a powerful landlord determined to preserve a countryside where time is measured not in minutes but by seasons, Ghote finally pins down his man -- dead on time."

As a murder mystery I found this book to be reasonable, but certainly not exciting. The writing is a bit pedestrian, and the plot, although sensible, did not stimulate me.

However, the use of time and watches is convincing, because Keating knows enough to avoid the silly pitfalls other novelists cannot not avoid. The mentions of Indian watch manufacturers, and fake Rolex and Seiko watches are all consistent and sensible. Indeed, it was a relief not to have to cringe at some stupidity!

R1506 Keelhoff, F**La suspension a ressort**

Genève: Administration du Journal Suisse d'Horlogerie, 1909 (nd), 24 x 15 cm, 32 pp, 3 ill.

(French).

2nd edition in 1909.

Pendulum suspensions, and so not relevant.

R1507 Keelhoff, F**Theory of terminal curves for the hairspring****Théorie des courbes terminales du spiral**

Brussels: F. Keelhoff (Brussels: Académie Royal de Belgique), 1933 (1921), 25 x 16.5 cm, 68 pp, 4 ill.

Theory (French, English).

Theory of balance spring terminal curves.

R1508 Kegelmann, PM**Uhren sammlung aus privatbesitz**

1976, ill.

Catalogue (English, German).

Bilingual auction catalogue of watches and automata.

R1509 Keir, David

The Bowring story

London: Bodley Head, 1962, 22 x 14 cm, 448 pp, 10 plates, fld diagram.

Miscellany (English).

One of the pitfalls of buying books on the basis of bookseller descriptions is that a few dealers are more interested in turnover than customer satisfaction. I nearly bought this book on the grounds of a description provided by a bookseller: "History of the Bowring family of watchmakers originating during the Napoleonic Wars. Including appendices, index and family tree". I was thinking that it might provide information about John Bowring, author of "Report on the commerce and manufactures of Switzerland". But in the process of searching for a copy to buy I found 3 other copies which were described as (in summary):

"150 years of Canadian seafaring and shipping enterprise. The story of a firm of cargo, passenger ship & tanker owners and later Lloyds Insurance brokers and underwriters. A Newfoundland shipping company which started with the work of a young watchmaker in London."

There may indeed be some watch related content, but I won't take the risk.

Wood "The days of John Wood watchmaker (1793-1872)" is another interesting example. But in this case the seller did not explicitly mislead; precisely no information other than the title was provided!

R1510 Keith, WH

A family tale

or history of American watchmaking

1883, 24 x 18 cm, 269 pp manuscript, no ill.

History (English).

Although a transcript has been prepared, it has not yet been published.

Five chapters: The old foreign watch makers (18 pages); The early efforts of American watch makers (20 pages); The Boston Watch Company (38 pages); The Waltham Improvement Company (161 pages); Conclusion, or examination of an article published in the "Waltham Record April 6th, 1883 (26 pages).

[transcript, very good] *When I first heard of "A family tale" I assumed, from the title, that the manuscript was an autobiography. It is not. The word "family" refers to the "family" of American watchmakers, business men, workers and others who were involved in creating the American watchmaking industry. Seen in this light, the manuscript holds promise of being one of the most important documents in the history of American watchmaking.*

A biography of William Keith has been provided by Small ("Luther Goddard and his watches, NAWCC Bulletin, No 52, Feb 1954, 104-108, 126). Keith was bound apprentice to the Goddards in 1817. After his apprenticeship in 1824 he worked with his brother as T. & W. Keith, Jewelers and Watch-repairers. Some time before 1837 he moved to Boston and in 1852 he moved to Waltham.

The first chapter is a brief summary of the development of the pendulum, balance spring and escapements, which Keith states is largely taken from Thomas Reid "A treatise on clock and watch making, theoretical and practical". It is confused and vague. It is difficult to avoid coming to the conclusion that Keith didn't know much about the subject. There is no information about what he did before his involvement with the Waltham Improvement Company, but I would suspect that it had little to do with watches and watchmaking; otherwise his involvement with Waltham would have been markedly different from the purely administrative role that he had. Small states that he was "an excellent watchmaker", but I am tempted to suggest that he had little interest in watch making and probably turned to business management early on.

After some general comments on industry, Chapter 2 discusses early American watch makers. Almost the entire chapter is devoted to the Goddards and Keith provides much interesting and important detail. Indeed he is the primary source for all later studies of the Goddards; this chapter forms the basis of Crossman's section on the Goddards and it has been reproduced in P. L. Small "Luther Goddard and his watches", NAWCC Bulletin, No 52, Feb 1954, 104-108, 126 and No 53, April 1954, 181-187.

The most fascinating aspect of this chapter is that there is no mention of the Pitkins. However, if Keith's involvement with watches ceased circa 1835 this would make sense.

Chapter 3 provides a history of the pre 1857 period, the Boston Watch Company, with which Keith was not involved. After a brief general history, Keith explains how he helped ensure import duties were not abolished. He then begins his explanation of why he was deeply offended by Dennison receiving the title of "father of American watchmaking". Most of this consists in an extensive quotation of a letter from Howard to Keith. Again, it seems that this section is the primary source used by Crossman; Howard's letter is certainly a reliable and very important testimony.

Chapter 4 is the bulk of the manuscript. The entire chapter is devoted to Keith's role in establishing the company in Waltham, creating the Waltham Improvement Company, and in transferring the watch company to the Waltham Improvement Company under its new name of the Waltham Watch Company. The majority of the chapter has nothing directly to do with watchmaking, the watch company being an independent entity with which Keith was not involved until after Robbins took over. Keith provides a detailed, blow-by-blow account of the history of the Improvement Company of which he was the main and central figure. Much concerns board meetings and the financial viability of the company. The watch company only appears in the story after the bankruptcy and the takeover by Robbins. And this is because Robbins decided to sell the watch company, which he owned, to the Improvement Company and take up shares in the latter. Except for some information about the auction, Keith is only concerned with

relating the business arrangements. However, within this there is mention of watchmaking in the context of business conditions and the need to reduce employment during economic downturns and the civil war. Again Keith is the primary source for later discussions; in particular, he is quoted quite extensively by Charles Moore in "Timing a century". Because Keith is writing about his personal involvement, most of the information relevant to watch making occurs when he was put in charge of the watch company while Robbins was overseas, and it is during this period that conflicts between Robbins, Keith and Dennison come to a head.

Chapter 5 is the reason for the foregoing. In it, Keith discusses the 1883 article in the Waltham Weekly Record. This article unequivocally states that Dennison is the single person responsible for developing watchmaking in America. It is clearly biased and presents a distorted history of events. Indeed, Keith believes the article was written by or for Dennison, which is quite credible. Keith offers us his reasons for why the article is wrong. They are adequate, but not particularly convincing. However, Keith's aim is not to reject Dennison completely. He makes it clear that Dennison played a very important part, but he was not the only important person. And he argues that equal respect should be paid to many people; indeed, the entire Boston Watch Company. This explains the dedication at the beginning of the manuscript: "Dedicated to the survivors of the Boston Watch Company, and its heirs at law of its deceased members, and to the employees of said company, and to the original stockholders and employees of the Waltham Improvement Company, and to the past and present stockholders of the American Watch Company, and to its past and present employees ...". Not one, but many deserve the recognition that Dennison took to himself.

My first reaction to Keith's history was that it is relatively unimportant. But then I realised this reaction was because much of it was familiar, Keith's manuscript forming the basis of other published histories. Indeed, we owe a great debt to Keith and there is no doubt that this document is one of the most important in the history of American watchmaking. It is limited because it is autobiographical and rarely discusses events that Keith was not directly involved with, and so provides primarily a study of business arrangements. But it remains an essential starting point for research. As with all contemporary documents written by participants in events, unless compelling evidence exists to the contrary, Keith's views must be taken as providing a correct history on which all future writing needs to be based.

R1511 Keller**Von der halsuhr zum tourbillon**

alte uhren aus einer Schweizer privatsammlung
Switzerland:, 1986, 24 x 17 cm, 48 pp, 16 ill, 4 plates.
Description, exhibition (German).

From the pendant watch to the tourbillon, old watches from a Swiss private collection.
Catalogue of an exhibition of 146 pieces, described and illustrated.

R1512 Kelly**Kelly's directory**

of the watch, clock and jewellery trades
nd (ca 1872), 8vo, about 800 pp.
History, makers (English).

R1513 Kelly, HC**A practical course in horology**

Philadelphia: D.N. Goodchild (Peoria USA: Manual Arts Press), 2008 (1944), 20.0 x 13.5 cm, 179 pp, ill (192 pp, 66 ill).
Repair (English).

Three sections followed by a glossary, bibliography and index: General principles (4 chapters, 48 pages on wheel work, gearing, lever escapement, balances and balance springs); Practical repairing (7 chapters, 65 pages on train problems, jewellery, balance staffs, pivoting, balance spring fitting, lever escapement adjusting, and cleaning and oiling); and Adjusting (5 chapters, 45 pages on preliminary notes, positional, isochronism, temperature, practical work). Each chapter ends with some test questions.
The book is solely concerned with watches.

[1st edition, mediocre] The first two chapters (on trains and gears) are purely practical with no theory; their purpose is to demonstrate basic calculations. Chapter 3 defines the terminology of lever escapements and describes their dimensions as matters of fact and without much explanation. Likewise chapter 4 gives a brief descriptive summary of balances and balance springs. This first part is of no consequence and of little interest

Parts 2 and 3, on repair and adjusting, have the same style. They provide very brief notes on a few topics and have little value; Kelly provides good factual statements, but there is insufficient detail.

Kelly, in a letter written by him in 1956, notes that "this book was worked out when I was at Bradley (Bradley University, Peoria) and contains much of the training program Bradley used at that time". Indeed it reads more like a synopsis or syllabus than a book, and it was presumably meant to be used in the context of lectures and practical classes given by Kelly. Without such direct teaching the book does not have much value. Gardner "Catalogue of the Torrens collection" says "quite a famous book", but I have no idea why and I can't recommend it except to book collectors.

R1514 Kelly, HC

R1514 Kelly, HC

Improve your watch repairing skills

nd.

(English).

I have come across only one reference to this (giving the title with no details) and it is probably Kelly's "Improve your clock repairing skills" incorrectly described.

R1515 Kelly, HC

Modern methods in watch adjusting

USA: Shaw & Borden, 1933, 19.0 x 13.5 cm, 114 pp, 13 ill.

Repair (English).

Introduction (6 pages) followed by six parts:

Part 1, Preliminary consideration (8 pages): Mechanical defects; The arc of motion of the balance.

Part 2, Adjustment to positions (17 pages): Effect of balance out of poise; Balance spring in position error; Use of the regulator pins in adjusting; Adjustment to the horizontal positions.

Part 3, Adjustment to isochronism (16 pages): The total length of spring on isochronism; The Breguet spring on isochronism; Correct formation of terminal curves; Improper overcoils and the methods of correction.

Part 4, Adjustment to temperature (5 pages): The compensating balance.

Part 5, Escapement adjusting (28 pages): Banking to drop; The draw; Drop and shake; The safety action of the double roller escapement; The safety action of the single roller escapement; Slide and the theoretically correct escapement; The angular test; Practical application of escapement tests.

Part 6, The practical work of adjusting (29 pages): Fitting balance springs; Practical problems in position adjusting; Practical problem in temperature adjusting; Practical problem in isochronal adjusting; Final timing and regulating.

There is a 3 page index.

[1st edition, mediocre] The introduction is a short, inadequate history of watches. It serves no useful purpose and I have no idea why Kelly included it.

Fundamental to adjusting is the need to have the watch in excellent condition, and checking, repairing, cleaning and testing the escapement are essential pre-requisites. And so I think Part 5, which provides an explanation of lever escapement adjusting, should have come first. It is based on banking to drop and so not applicable to most non-American watches; the method is, however, both undesirable and unnecessary. The other sections provide rather vague and descriptive explanations of adjusting in a cookery-book style. The primary method is manipulation of the regulator pins and other techniques are glossed over or ignored. Most of the practical examples are based on escapement adjusting and general watch condition, such as replacing mainsprings and poising balances, which is not adjusting at all. But these methods produce the desired results in all the examples.

I learned very little from this short book and much better studies of adjusting exist. So I would not try too hard to find a copy.

R1516 Kelly, HC

Watch repair

Peoria: Charles Bennett, 1957, 20.5 x 14.0 cm, 284 pp, 145 ill.

Repair (English).

An introduction on time followed by 15 chapters in three sections: Practical horology (clock and watch repair, 79 pages); Clock and watch mechanics (gearing, escapements, striking mechanisms, automatic watches, chronographs and calendars, 124 pages); and Theory (pendulum and balance spring, 51 pages). There is a short bibliography and an index. About 171 pages relate to watches.

There are 15 illustrations on 4 plates which have been reproduced from US War Department "Ordinance maintenance wrist watches, pocket watches, stop watches, and clocks - technical manual TM 9-1575" (which see).

[1st edition, mediocre] Imagine you have just enrolled at Bradley and purchased your tools (screwdrivers, files and so on). In a practical room you are allocated a watchmakers bench with a lathe, staking set, friction jewellery tool and other items. And you have teachers and this book to help you through the lessons.

This is the context in which I feel the book should be read. Otherwise it makes little sense and has not much value.

After a partly incomprehensible discussion of time and the care of small tools and polishing, the section on watch repair provides quite good but far too brief notes on cleaning, mainspring hooks, stems, broken screws, closing pivot holes, friction jewellery, pivot polishing, fitting factory staffs, replacing roller jewels, truing and poising balances, truing and untangling balance springs, adjusting lever escapements, tightening canon pinions and fitting hands. The tools used are not explained and not illustrated; presumably lathe work and the use of staking sets and jewellery tools was done in practical classes or with other books. This smattering of repair techniques and their incomplete description has the hallmarks of a practical manual for the classroom. Similarly, I feel chapter 4 on repair and adjusting problems was probably a guide for use when students were given watches to adjust and examine under supervision. It contains specific examples of timing machine use and some interesting examples of causes of stoppage.

Part 2, the mechanics of horology begins with factual, largely unexplained statements and formulae for trains and gearing, followed by 3 chapters on escapements and clock striking work. These are followed

by chapters describing automatic, chronograph and calendar mechanisms; included are mechanisms by IWC, Lecoultre, Pierce, Rolex and Venus. There is no repair information. Part 3 contains a more theoretical chapter on balances and balance springs. This outlines the basics of isochronism, temperature compensation and positional adjustment. Again, there is no practical material. These two sections contain interesting descriptions, but they are no better than other books.

As a repair book, "Watch repair" is next to useless. As a source of descriptions of mechanisms it is quite reasonable. As a student course manual it is good. But, consequently, it has little value to us now.

Considering that there are only 55 pages on watch repair and significant sections on clocks, the title of this book is peculiar. But this is explained in a letter written by Kelly in 1956, which I found pasted in my copy of his book "A practical course in horology". The book was originally called "Horological theory and practice" and the publisher changed the name to "Watch repair" "with the idea that the new title would have greater sales appeal"!

R1517 Kelly, HC

Watch repairing as a hobby

New York: Association Press (USA: Charles Burnett), 1974 (1957), 8.5 x 5.5 inch, 125 pp, ill.

Repair (English).

R1518 Kemlo, F

Kemlo's watch repairer's handbook

USA: Carey Baird & Co (Boston: A. Williams & Co), 1911 (1869), 20.5 x 13.0 cm (19.5 x 13.0 cm), 93 pp, 6 ill, 32 pp ads (93 pp, 6 ill, 5 pp ads).

History, repair (English).

Tardy lists 6 printings but probably there are ten.

Subtitled "Being a complete guide to the young beginner in taking apart, putting together, and thoroughly cleaning the English lever and other foreign watches, and all American watches."

In three "sections". The first half of the book (37 pages) describes the disassembly, cleaning and assembly of an English fusee lever watch (these instructions are given without illustrations). This is followed by a page on Swiss watches and 2 pages on escapements.

The second section of 18 pages discusses the American watch; history, disassembly, advantages, 2 cuts of Waltham movements, the US of Marion company, and the selection and care of a watch.

The final 29-page section is on watch and clock repair.

[1st edition, 1869, mediocre] The first section is quite readable, but its purpose seems to be to explain why fusee watches are bad. Kemlo stresses the advantages of not having "the frightful array of seven hundred and twenty-one" parts in the fusee and chain; which is a good point, but Kemlo fails to explain it and probably doesn't understand the significance. The following (far too brief) chapters on American watches have just a little interest for the remarks on watch making and United States at Marion watches. The latter part of the book (26 pages) contains notes on watch repairing (omitting the simple, common tasks of "putting in a mainspring, a hairspring, or a jewel") and tables of trains. Some notes are strange; making balance staffs with off-centre pivots, for example. This section was copied almost word-for-word from Stelle "American watchmaker and jeweler" which was written just a few years earlier (this is acknowledged in the preface without naming the source explicitly).

Quaint is the word that comes to mind and I would not be surprised if Kemlo and Stelle knew nothing about watches at all. The majority of the book being trite there is little of interest except for the book collector. I have no idea why it was printed so many times, but maybe the later editions contain something worth reading.

[1908 printing] There are two significant changes from the first edition. The title page, which was prettily printed in red and black, is now plain black. And the reproduction is relatively poor (presumably the original plates were used and they had nearly worn out).

Book sellers often list later printings of this book as having about 120 pages, suggesting the text has been revised. But the extra pages are just an expanded publisher's book list. Certainly all printings up to 1908 are simply facsimiles of the first, and so my fervent hope for some improvement has been dashed.

R1519 Kemp, Robert

The englishman's watch

England: John Sherratt, 1979, 25.5 x 19.5 cm, 148 pp, frontis, 139 ill.

Collecting, history (English).

A description of the author's collection of "commonplace", mainly post 1830 watches.

The first half of the book (11 chapters, 60 pages) presents watches in reverse order, from the most recent to the oldest and, consequently, divided by type and country of manufacture.

The second half (13 chapters, 72 pages) discuss a number of different topics: Rarer escapements; Leverization (verge conversions); Regulation; Pocket watch cases; The recased watch; The dress watch and goliath; Pocket watch accessories; The provenance of a watch; Restoring a watch; Collecting watches; The massacre of the watches; The analysis; and Horological literature.

The book concludes with 139 black and white photographs of representative pieces.

[1st edition, excellent] Kemp justifies his approach by the fact that most earlier authors have ignored developments after 1830 and the order reflects the way most collectors will acquire watches. Rather than have lots of photographs and few words, he provides a substantial text giving much historical information, largely based on or reinforced by researching his own collection.

There are indications of less than adequate knowledge and some of the information is confused, perhaps

inaccurate. But he has provided a stimulating, honest example of the thoughtful collector and shown how even an ordinary collection can be both fascinating and educational.

Really I should judge this book less highly because Kemp's naivety and inaccuracies make me hesitate. But provided it is read with caution I must strongly recommend it as one of the best books for the novice collector and even the more experienced (because of the good examples and photographs of ordinary watches).

R1520 Kemp, Robert**The fusee lever watch**

England: John Sherratt, 1981, 24.5 x 18.5 cm, 117 pp, 12 ill.

Dating, description, history, identification, makers (English).

An introduction on watch collecting.

7 chapters (54 pages) describing the evolution and characteristics of the English lever escapement.

5 chapters (22 pages) on the slow train watches of Thomas Yates, the Massey lever, the rack lever, Savage two pin escapement and the English fusee chronograph.

The book concludes with lists of Liverpool watchmakers (22 pages) and Liverpool case makers (3 pages). The illustrations are line drawings; mainly of levers, Coventry and Liverpool engraving styles and Massey roller variants.

Written as a companion to "The englishman's watch".

[1st edition, very good] *The purpose of the book is to examine English levers, an area ignored by other writers until very recently. Kemp provides very useful information about styles and identification (including a 14 page chapter on different plate engravings), and some interesting suggestions on the development of this escapement, including the penchant of other writers to ignore the contributions of provincial makers. Most importantly he provides a valuable discussion of Massey lever watches.*

As with his previous book, "The englishman's watch", I feel uncomfortable with some naivety and dubious explanations (particularly dial manufacture). And the lack of illustrations is occasionally annoying. However, I must rate this book highly because it has great merit for the careful reader. Unlike many books, which do little more than provide a cavalcade of pretty photographs, Kemp grapples with the task of providing useful information and does so very well.

R1521 Kendal, James**A history of watches and other timekeepers**

England: EP Publishing (London: Crosby Lockwood and Son), 1978 (1892), 18.0 x 12.5 cm, 252 pp, 85 ill. History (English).

There is no table of contents in my copy, but as there are no chapters this is presumably correct.

A number of small topics which can be divided into:

Time (24 pages) including time divisions, calendars and time cycles.

Sun dials and clepsydrae (24 pages) including sun dial mottoes.

History of clocks and watches (157 pages). These topics are primarily about clocks, including early clocks, introduction of the pendulum, curious clocks, St. Paul's clock, the Westminster clock and house clocks. The sections relevant to watches are: The Clockmakers' Company (4 pages); Fob watches (5 pages); Perfection in timekeepers (3 pages on jewellery, motion work and repeaters); Horologists of renown (37 pages including descriptions of escapements); Laws relating to horology (2 pages); and Personal associations (11 pages).

Watches (27 pages) covering compensation, movements, cases, keyless mechanisms, complications and the care of watches).

Marine chronometers (11 pages).

[1st edition, good] *A history with well written sections on time, sun dials and clepsydrae, but otherwise a fairly ordinary compilation of information enlivened by some interesting anecdotes. The highlight is Kendal's objections to dividing the day into two 12 hour periods: "... both personally and through the firm of Kendal and Dent, I have, by offering substantial prizes, ... striven to roll away from the path of progress the huge mountains of supineness and ignorant obstruction which still blocks the way". But I can forgive his inability to predict the quartz watch when he says "... the general adoption of the lever escapement and the going barrel may be called the last epoch in the history of the watch"; although he is basically right in terms of mechanical watches.*

The book is supposed to have been written by F.J. Britten although this is not clear. Some text is identical to his "Former clock and watch makers and their work", and the style is similar, but minor plagiarism seems to have been common and some diagrams are apocryphal, in that they appear unchanged from one book to the next.

The "Dent" in the partnership Kendal and Dent is not related to E.J. Dent.

See Britten "Old clocks and watches and their makers" for a further comment.

R1522 Kendrick & Davis**Catalog of watchmakers' tools**

Lebanon USA: Kendrick & Davis, nd (1899), 23.5 x 15.5 cm, 83 pp, ill (ill).

Catalogue, tools (English).

"No 7", presumably the 7th edition, was most likely printed in 1929.

[No 7, fair] *A well illustrated trade catalogue of tools concentrating on staking sets, balance tools and mainspring winders. With a price list but no information on tool use.*

R1523 Kendrick & Davis**K&D staking tools and how to use them**

New York: Hammel, Riglander & Co, 1958, 21.5 x 14.0 cm, 36 pp, ill.

Repair, tools (English).

This catalogue gives detailed descriptions of the sets and individual parts made by K & D. It also includes screwdrivers, mainspring winders, electric motors, a demagnetiser and other hand tools. There is a fold-out price list attached to the back cover.

[1958 edition, fair] This booklet is unrelated to Kendrick & Davis "Staking tools and how to use them". There are a few remarks on the use of components, including a brief summary of friction jewellery, but it contains almost no "how to use" instructions. It is simply a product catalogue and so of not much use. See also Lucchina and Perkins "The watchmakers' staking tool"; the appended catalogue in that book appears to be a different edition of this booklet.

R1524 Kendrick & Davis**Kendrick & Davis book of tools**

Lebanon USA: Kendrick & Davis, 1908, 5.5 x 8.5 inch, 148 pp, ill.

Repair, tools (English).

Several editions? The only books sighted are Number 6.

Illustrated catalogue of tools with some descriptions of their use.

Edition No. 6 contains details of truing and poising balances.

R1525 Kendrick & Davis**Staking tools and how to use them**

USA: Arlington Book Co (USA: Kendrick & Davis) (USA: Kendrick & Davis), 2002 (1910), 13.0 x 21.0 cm (15.0 x 19.5 cm), 100 pp not sequentially numbered, 92 ill, 8 pp modern ads (163 pp, ill).

Repair, tools (English).

Reprinted in 1983/4 by Kendrick & Davis, and in 1988 and 2002 by Arlington.

The 1st edition has a 72 page catalogue of staking tools with prices followed by a 91 page guide to their use.

The Arlington reprint is a facsimile that omits all except 6 pages of the catalogue. There are several references to pages that are not reproduced, but the missing information is not significant.

The Kendrick & Davis reprint appears to have the same contents as the Arlington reprint.

[1st edition, excellent] The catalogue describes features of the tools (friction sleeve, die binding, Inverto) followed by illustrations and prices of tools, punches, stumps and accessories. It includes Rivett tools sold by K & D after taking over that company. It is interesting to see that K & D sold second quality sets marked as "special" at reduced prices; these days they are probably sold second-hand as the best made! The second part covers the use of the staking tool to adjust cannon pinions, close holes, bush, stretch wheels and levers, stake balance staffs, rollers and pinions, and replace cylinder escapement pivots. In addition, it gives details of pivot grinding and polishing, making diamond laps, grinding and polishing lever forks, polishing flat steel and grading diamond powder.

Quite unexpectedly, considering the title, a large portion of the book is concerned with polishing and there is much very valuable material on this; not only how to polish, but how to make polishing laps and tools. Lucchina and Perkins "The watchmakers' staking tool" is possibly a better and more complete work on the staking tool itself, but this book is very useful in that regard and the polishing information is excellent.

[Remark] The book that started it all! This bibliography began life as a catalogue of my personal, quite small library. Then, when reading this book, I realised that some books might have very important information hidden within them. And other books were, to be polite, disappointing. So I extended my library catalogue to include some information on the contents and quality of my books. Then, foolishly, I started adding information about books that I did not own. Some fifteen or twenty years later (I am not sure how long) this is the result.

R1526 Kenison, Arthur**Frederic C Dumaine, office boy to tycoon**

USA: Saint Anselm College Press, 2000, 23.5 x 15.5 cm, 277 pp, 65 ill.

History (English).

Twenty chapters of which chapter 9 ("Replacing the mainspring at Waltham Watch, 13 pages) and chapter 16 ("Waltham Watch goes to war", 19 pages) discuss Dumaine's management at Waltham. The majority of the book concerns the Amoskeag company.

[1st edition, good] A biography of Frederic C. Dumaine (1866-1951), a broom maker's son who became a prominent industrial leader. He was a New England industrialist associated with Amoskeag Mills in New Hampshire, the Waltham Watch Company, Fore River Shipyard and the New York and New Haven Railroad.

This is a well written, interesting biography of F.C. Dumaine, who controlled Waltham from 1923 to 1943. Derived from Dumaine's diaries, oral family history, an unpublished book by Dorothy Wayman, and Moore "Timing a century", Kenison presents a well researched examination of Dumaine's management of companies and strongly supports the view that he was a sensitive and caring manager who achieved much at Amoskeag and Waltham.

Although Kenison is an economist, the book is written for the lay person and there is no formal study of Dumaine's management. Consequently, although much anecdotal evidence is presented supporting Dumaine's approach and dismissing the interpretation of Landes in "Revolution in time", there is no

serious comparison of the two points of view, and a reasoned choice between them is not possible from this book. Kenison quotes Dumaine saying "if you don't like the rules, change them, but change them according to the rules", implying that anything goes provided you don't break the law. Later he quotes J.P. Morgan saying that there "are always two reasons why one does something, a good reason and the real reason". Both highlight the ambiguity in this book. Dumaine certainly seems, on the surface, to have been fair and to have struggled on behalf of workers by, for example, keeping plants open and withholding dividend payments. But the extent to which these were the public "good" reasons deflecting attention away from the "real" reasons is not examined. As a result I felt a little uncomfortable with the glowing picture that Kenison paints of Dumaine and I wonder if he may have been not quite as close to God as we are asked to believe.

[Remark] The startling discrepancy of opinions about Dumaine deserve some comment. His three main management roles (with the Amoskeag cotton mills, Waltham and the New Haven Railroad) have all produced this diversity, with one group, including Moore and Kenison, regarding him as a saviour and the other, including Landes, painting him as an asset stripper fattening himself and other shareholders at the cost of the business. Unfortunately, both Landes and Kenison describe rather than analyse events and, in both cases, they fail to present any unequivocal arguments that might clarify the situation. However, I suspect a partial explanation may lie in Dumaine's personality and the distinction between "good" and "real" reasons for his actions. In order to see this we need look at Amoskeag as well as Waltham.

I think Kenison focuses on the "good" reasons and tends to choose words that suggest but do not demonstrate generosity. For example, his description of Amoskeag's "paternalistic outlook", providing full board in company boarding houses and renting company houses to workers ignores the fact that such provisions were essential if there were to be workers to work. As at Waltham and Elgin, factories were built in the middle of nowhere, but requiring large workforces, and so the companies simply had to provide accommodation. Implying that the board of \$2.25 per week was low without providing details of when and comparisons with the cost of living and other such schemes (let alone examining whether this was a profit making venture or not), means it is not possible to decide if this was largesse or hard-headed business management. Later he points out that in 1917 workers "benefited" by pay rises and had the "advantage of board at \$5 a week", but again no comparative data is provided and we are required to assume generosity from the choice of words. In fact he indicates this "welfare" was provided to tie workers to the company. Dumaine's 1912 provision of property mortgages that enabled workers who stayed with the company for 15 years to purchase land for \$2 sounds wonderful; but Kenison does not mention how many employees benefited and there are no statistics at all for the length of time workers stayed with the company. Nor is there any discussion on the cost of this welfare to the company and whether it was cheaper than raising wages - or perhaps done to try to offload unwanted assets.

A parallel scheme for buying shares also aimed to tie the worker and guarantee labour in the factory. This is why the mill was "peaceful" when workers elsewhere were on strike.

Similarly, Kenison says as a "curious prelude to Dumaine's business career ... a Pan American delegation (visited) Amoskeag ... Waltham Watch and traveled on the New Haven and Boston and Main rails. Dumaine eventually would play a vital role in all three businesses". Presumably the delegation visited other companies which Dumaine had nothing to do with, and travelled on other trains, so probably there is nothing "curious" at all. Likewise, to say "Dumaine was paid only \$15,000 a year by Amoskeag" (in 1898), implying a pittance, without giving comparative data is potentially misleading; I suspect this salary was about 30 times that of workers. This unabashed support for Dumaine is not a problem until we try to assess it in the light of the view expressed by Landes.

Probably the most interesting and persuasive "good" reason was the attempt by Dumaine to withhold dividend payments and so retain cash to enable the company to continue running, and so provide employment and support for the local community. This was done at both Amoskeag and Waltham, but the attempts were partly nullified by stockholders going to court and forcing dividend payments against Dumaine's will. This, together with anecdotal evidence quoted by Kenison and a positive interpretation of the above points, quite strongly suggest that the survival of the businesses he ran was central Dumaine's policies.

In contrast, I think Landes focuses on the "real" reason for Dumaine's actions, which he believes was pumping money out of companies and into his personal accounts and the Dumaine's Trust.

To justify such a contention, or even to propose that Dumaine was just incompetent requires some reasonably convincing evidence, and the only factual data I have access to is that presented by Moore. Unfortunately, it is apparent that Moore understood very little about watch manufacturing and much of the critical information he gives is too vague. However, two points are fairly clear.

First, in the 20 years from 1860 to 1879 Robbins spent about \$3.482 million on machinery (including some furniture and fixtures), an average of about \$174,000 per year; see Hoke "Ingenious yankies". In contrast, Moore "Timing a century" notes that Dumaine spent \$1.288 million on new machinery in the 20 years from 1923 to 1942, an average of about \$65,000 per year or 1.5% of the value of machinery. Kenison (quoting William Kilbourn, a division manager under Dumaine) notes the single motor, shafts and belts used to drive all machines was replaced by individual electric motors on each machine, but there is no indication of how much of the \$1.288 million this took and hence how much was actually spent on retooling. Also, there is no allowance for inflation in these raw figures. Even if nothing else changed the amount spent by Dumaine is alarmingly low, but as he switched Waltham from making pocket watches

to wrist watches, which would require substantial retooling, it is patently ridiculous.

One anecdote given by Kenison deserves repeating because it reflects the inherent problems at Waltham: "New England in the 1930s was a leader in medical advances, just as it is today. Apparently one of our best known surgeons had come up with an idea to save a certain kind of brain injury patient through a revolutionary surgical procedure. It required the sewing of a very small severed nerve in the brain. The doctor needed a very small gold needle that would allow the nerve to be sewn together in much the same way as a seamstress would work on a hem. Massachusetts General Hospital contacted F.C (Dumaine) on the theory that if such a needle could be made, Waltham Watch could do it. It took three months and the only way the eye of the needle could be constructed was to taper the 'fat end' and bend it around into a loop. The needle worked, the operation was successful and the patient lived a normal life. Everyone involved with the project was proud of Waltham's accomplishment.

"The 'Old Man' had a needle packaged and sent to one of the heads of the watchmaking industry in Switzerland, together with a newspaper account of its creation and success. Also included was a note offering the following challenge: 'Match this if you can'. About 90 days later a package from Switzerland arrived. It contained Waltham's needle split laterally three ways, drilled and threaded. No note accompanied it."

This clearly demonstrates that Waltham's machinery and methods were sadly out-of-date in the 1930's. Related to the low expenditure on new machinery is "research", the in-house design of machinery. Moore has no idea if any "research" was done after 1923. He carefully analyses the effects of research since 1850 in terms of the average time to make a watch, which dropped from 21 man days to 2.2 man days in 1883 and gradually reduced to about 1 man day by 1937. It is apparent from this that Moore equates research with production efficiency and one may suspect Dumaine had the same view. However, this economic attitude totally ignores the problems of interchangeability and the inherent difficulties in wrist watches compared to pocket watches. And from another quote we can infer that there were serious problems with machines failing to repeat accurately and tolerances being too high. Because Moore doesn't mention maintenance at all we are forced to assume it was part of "research" or so insignificant it didn't deserve mentioning; either way it is a stunning oversight. This view is supported by Hoke ("Ingenious yankees") who says "... Church died in 1905 ... Many of Church's machines were still in use when much of the factory machinery was sold at auction (in 1954). By then, it was worn out and sadly out of date, yet still testified to the last of a series of dazzling American watch factory mechanics ...".

Consequently, if the management of Waltham had long term goals for the company then Moore hints at either incompetent neglect of or deliberate failure in maintaining production machinery. Moore's excuse, low employee morale rather than poor tooling, lacks conviction, especially as it appears after a chapter in which Dumaine's labour policy is discussed in somewhat glowing terms. Further, neglect seems hardly likely as Dumaine had already had over 20 years experience with machine manufacturing and there is no indication of changes in policy throughout his 20 odd years at Waltham (or, apparently, from Amoskeag as Landes argues the same "policy" of running down equipment occurred there). What seems to have changed was the move from in-house machine design to purchasing tooling from Switzerland and presumably this is why there was not much "research" and no mention of maintenance. In which case management was either incompetent or had very short term goals with no regard for the long term effects of policies.

The second point comes from Moore's rather vague statement that "Guilden ... agreed to purchase Dumaine's interest at \$11 per share of B stock" and Kenison's remark "Dumaine would have had from the Waltham Watch sale more than the \$3.75 million ...", which is the equivalent of about 360,000 class B shares and far more than actually existed. Initially Dumaine only owned some 10,480.5 class A shares (whose dividend was fixed at 20% of profits), originally costing \$10 per share. Kenison vaguely remarks that "F.C. had bought Waltham Watch Company stocks through the Dumaines Trust to maintain voting control ..." and a crude approximation on the basis of Moore's summary of outstanding shares (not bought back by Waltham), and assuming Dumaine was paid at the same rate as the later re-financing undertaken by Guilden, it would appear that Dumaine would have to have owned about 82,000 of the original 162,000 shares (of which only 100,707 were still privately held). So we may presume that during his 20 year tenure he increased his holdings until he personally owned a controlling interest of about 80% of Waltham. An alternative view is that Dumaine owned about 50% (based on his proportion of the original share distribution) and if he valued his holding at 50% of the total assets in 1943 (reported by Moore) then he should have received about \$4.3 million, which is sufficiently close considering the vagueness of the data.

Kenison does not provide much information about the ownership of the Amoskeag holding company. This company took most of the liquid assets from the manufacturing company (about \$16 million in cash and securities) and it existed until at least 1951, 15 years after the manufacturing company was liquidated. Originally the shareholders of the holding company were the original shareholders of the manufacturing company, but it would be useful to know who were the shareholders in 1951 when Dumaine died and if, as with Waltham, there had been a transfer of ownership to Dumaine - Kenison does note that Dumaine's holding in the company rose from 4% in 1925 to 22% in 1935.

These "good" and "real" reasons might be better understood if we called them "social" and "personal" reasons for actions. Then we can see that they are not necessarily incompatible but could co-exist. For Dumaine to achieve his personal ambitions he had to manage companies so that they ran profitably and, in doing so, he necessarily provided workers, the community and shareholders with desirable benefits.

Only by doing this could he create cash to siphon off into his personal accounts. So I think the dispute over Dumaine's actions should not be about what he did but rather the balance between these reasons and how he handled the obvious conflict of interest. Did he put personal gain before company viability and so deliberately or negligently destroyed businesses?

The above was written based on the first edition of Landes "Revolution in time" and before I read the second edition of his book. Although the revised book is basically the same, in it Landes adds an interesting "epilogue" with one sentence worth quoting: "you move the cash from one place to a second and then empty the second". This is the crux of the dispute and, as far as I can see, Kenison does not provide an answer to this (quite well documented) accusation.

R1527 Keystone**The art of engraving**

a practical treatise on the engraver's art with special reference to letter and monogram engraving
USA: Keystone, 1904 (1903), 199 pp, 200 ill.
(English).

2nd printing in 1904.

Specially compiled as a text book for students and reference book and guide for engravers. Detailed instructions for engraving letterforms (block, script, shaded, old English, ciphers) on objects (spoons, coffin plates, thimbles, etc).

There are 30 chapters: Introduction; Mechanical Drawing; Tools and materials for the beginner; First exercise in engraving; Methods of cutting block letters; Script letters; Cutting small or lower-case script letters; The formation of script capitals; Looped script; The practical use of script letters; Engraving coffin plates in script; Engraving on Thimbles and inside of rings; Engraving inscriptions in script; Old English; Method of cutting old English; Some uses and styles of old English; Roman Letters; Odd Letters; Engraving in Spoons and on Bangles; Shaded old English; Engraving script inscriptions; Inscriptions in Different styles of letters; Engraving on spoon handles; Letters on spoon handles and lockets; Designing and engraving ciphers; Entwined and ornamental ciphers; Parallel line ciphers; Flower leaf ciphers; Block ciphers.

R1528 Keystone**The jeweler's index**

a composite catalogue of all the lines handled by or used by the jewelry trade
USA: Keystone, 1924 (1922), 500 pp, ill.
Identification (English).

Published in 1922 (464 pages) and 1924 (third edition).

Produced annually over a number of years.

R1529 Keystone**Watch and clock escapements**

USA: Dodo Press (USA: Lindsay Publications) (Philadelphia: Keystone), 2005 (1904), 24.0 x 16.0 cm, 252 pp, ill (179 pp, 183 ill).

History, repair, technical (English).

Originally published in three series of articles in "The Keystone" and then as a book in 1904. The author is sometimes given as Thorpe, but the only mention of him is in the copyright notice and he probably is not the author (other copyrights are registered in his name).

There is a modern reprint from 1997 and a "large format" reprint from 2005.

"A complete study in theory and practice of the lever, cylinder and chronometer escapements, together with a brief account of the origin and evolution of the escapement in horology".

There are 5 chapters: The detached lever escapement (102 pages); The cylinder escapement (20 pages); The chronometer escapement (22 pages); History of escapements (16 pages); and Putting in a new cylinder (8 pages). These are followed by an index and 11 pages of advertisements for other books.

The only information about clock escapements occurs in the chapter on history.

[1st edition, good] Chapter 1, more than half the book, centers on escapement drawing. It begins with making 2 tools (a degree gauge and a fixed, one degree divider), both based on a radius of 5 inches. Then there are 21 pages describing drawing an English (ratchet tooth) lever escape wheel and pallets; these and all following drawings are based on an escape wheel radius of 5 inches. Within this section there are instructions for making dividers and a bar compass. Then there are about 11 pages on drawing a Swiss (club tooth) escape wheel and pallets.

At this point the main theme is interrupted by 12 pages detailing how to make a working escapement model to be used as a window display and help explaining watch mechanisms to customers. It includes details of frosting the brass plates, making the regulator and polishing steel.

The chapter continues with a discussion of fork and roller action, jewel pin size and drawing them, including comments on friction and banking to drop. Then making a jewel pin setter and an angle measuring gauge are detailed (the angle gauge being used to measure lock, drop and impulse) and some remarks are made about balances, barometric pressure and the shape of rollers.

The chapter continues with double roller action and design, making a guard pin, tangential locking, drawing circular pallets with tangential locking, power loss, pallet action (with further drawings), scaling down the drawings to actual escapement size, making a large, adjustable model, further notes on measuring angles, setting pallet stones and making an escapement matching tool.

Throughout there is a critique of Grossmann's escapement designs (as given in "A practical and

theoretical treatise on the detached lever escapement for watches and timepieces") which the author says are incorrect.

Chapters 2 and 5 examine the cylinder escapement. Chapter 2 begins by emphasising the necessity of understanding the escapement in order to be able to repair it satisfactorily instead of by "dumb luck" and then goes on to detail the drawing of the escapement, providing reasonably clear instructions. Chapter 5 explains how to put in a new cylinder, with advice on replacing a cylinder of the wrong size and when the escape wheel teeth have been trimmed. The focus is on measuring and use of a cement chuck.

Chapter 3 on the spring detent escapement is more descriptive and does not teach the reader everything necessary to draw it. It discusses the design and action of the escapement and some problems with it.

Finally, chapter 4 on history is a brief survey of escapements based on the verge and anchor, mainly concerning clock escapements. It is translated from "L'Almanach de l'Horlogerie et de la Bijouterie". Although interesting, it is strange.

As the focus of the book is on escapement drawing, chapters 4 and 5 are out of place.

[Remark] *This is a difficult book to assess. To understand it fully it is necessary to actually follow the instructions and produce the drawings which are delineated; even magnifying the drawings in the book so that they are legible and carefully reading the text is not sufficient, and that is all I have done. The crux of the problem are the questions: why draw escapements and who would benefit by doing so?*

The book is an odd mixture of drawing to unjustified specifications and "reasoning", which at times is very vague, interleaved with a little practical tool-making.

The tool and model descriptions are peculiar. For example, the angle gauge at the start of the book is explained but no-where is the reader told how to divide the scale, a non-trivial task unless a division plate is used. Similarly, the instructions for the first escapement model include details for making the arbors, frosting the plates and polishing the steel work, but cutting the escape wheel and the lever are ignored even though these are the central, vital components. These sections make me wonder, who is the intended audience?

Similar problems occur with the drawing instructions. We are told on page 13 that we are drawing circular pallets and the on page 14 it changes to equidistant; these terms are not defined and unless we have some knowledge of the topic we would be immediately confused. Likewise, we are told to draw lines 60 degrees apart, but it is not until later that it is explained why (two and a half escape wheel teeth occupy 60 degrees). To a large extent the reader is expected to mindlessly follow instructions and the odd bits of "reasoning" are often obscure and inadequately related to the drawings being produced. Although I suspect the argument is basically sound I cannot help feeling it is the wrong approach. On page 56 the author writes "Drawings help wonderfully in reasoning out not only correct actions, but also faulty ones, and our readers are earnestly advised to make such faulty drawings in several stages of action." However, from my experience half an hour with the escapement model distributed by Barkus taught me much more, much more easily than many, tedious drawings. Admittedly the Barkus model is only one form of escapement and two or more models are needed (something that Barkus and the author of this book overlook), but I think such practical experience would be far more productive.

Another strange statement in the book is on page 30: "The principle reason for (the club tooth escapement) finding so much favour is, we think, chiefly owing to the fact that this form of tooth is better able to stand the manipulations of the able-bodied watchmaker, who possesses more strength than skill." I would regard this as a bit of fun if it did not, indirectly, cast doubt on the whole book. Surely a muscle-bound dolt would be incapable of drawing escapements, let alone making and using such delicate tools as the escapement angle measurer?

Finally, it would seem that the author means by "theorise" to draw and contemplate ideal, very large escapements and he makes no attempt to consider how such drawings can be accurately converted into small, real escapements.

To go back to my question: why draw escapements and who would benefit by doing so? It seems that this book is directed at watch repairers and is written on the principle that if a watch repairer can do a good scale drawing he will be better able to repair watches. I disagree. As I have indicated, the process of drawing is almost completely mindlessly following instructions and the few conceptual remarks are fragmentary and unsatisfactory. Further, the book only makes good sense if the reader has already studied Grossmann and other books on escapements to build up the necessary background and understanding, something that I suspect not many watch repairers have ever done.

R1530 Kieffer, H

Jauges de tolérance et contrôle des pièces

l'application pratique des jauges et des calibres en liaison avec le contrôle des pièces dans la fabrication des petites et grandes séries

Lausanne: Scriptor, 1948, 312 pp, ill, ads.

(French, German).

Tolerance gauges, the practical application of gauges and calibres in the fabrication of small and large series.

R1531 Kienzle, H

Hellmut Kienzle uhren museum

Switzerland; 1975, 21 x 15 cm, 118 pp, 69 plates.

Collection, catalogue, description (English, German).

Text in English and German.

Auction catalogue for the collection of Hellmut Kienzle which was never sold.
After the initial (1974) catalogue which sought buyers for the entire collection in a single lot, the collection was offered for sale by auction in 1975 and this catalogue produced. At the last minute the Baden Wurttemberg government stepped in and stopped the sale.
There are several other (small, modern) catalogues of the collection.

R1532 Kienzle, H**Hellmut Kienzle uhren museum**

die sammlung die nicht zur versteigerung kam
 Zurich: Ineichen, 1984 (1975), 23 x 17 cm, 144 pp, 2 ill, 69 plates.
 Collection, catalogue, description (English, German).

Limited edition of 300 copies?

This book is a reprint of the 1975 auction catalogue and includes values of the pieces in Swiss Francs. It is sometimes confused with the original.

R1533 Kienzle, H**Uhrensammlung Hellmut Kienzle uhren museum**

Switzerland: P.A. Ineichen, 1974, 21 x 15 cm, 52 pp, 50 plates.
 Collection, description (English, German).

Limited edition of 300 copies.

Sale catalogue for the collection of Hellmut Kienzle.

This catalogue was produced when buyers were sought for the entire collection at a price of 12 million DM.

As no buyer was found the collection was then offered for sale by auction in 1975 and a new catalogue produced. At the last minute the Baden Wurttemberg government stepped in and stopped the sale.

R1534 Kindler, PF**Die uhren**

ein ubriss der geschichte der zeitmessung
 Newport USA: (Einsiedeln: Benziger & Co), 1990 (1905), 21 x 13 cm (17 x 11 cm), 212 pp, 72 ill (190 pp, 65 ill).

History (German).

Printed in 1905 and 1912 with a modern reprint of the 1905 edition in 1990.

Timepieces, training in the history of time measurement. It covers all types of timepiece and includes pocket watches and chronometers.

Gardner "Catalogue of the Torrens collection" describes this as "general horology".

R1535 King, Andrew**From a peal of bells, John Harrison**

England: Usher Gallery, 1993, 35 pp, 30 b/w ill.
 Exhibition (English).

Illustrations by David Penny.

Catalogue for an exhibition at the Usher Gallery with information about John Harrison and his brother James.

R1536 King, Hilary**The marine chronometers of the Baudin expedition to Australia 1800-1804**

England: Antiquarian Horological Society, 1997, 14 pp, 13 ill.

History (English).

Offprint of Antiquarian Horology.

R1537 Kingsley, R**Watches (the collector's corner)****Watches (centuries of style)**

Rochester England: Grange Books, 2002 (1998), 21.5 x 21 cm, 64 pp, 135 ill.

Collecting (English).

Two different books or one book under two titles? "Centuries of style" is listed as published in 1998, and "The collector's corner" as 1999, but both have the same publisher and format.

A concise introduction to collecting watches with information on how to buy, restore, identify and care for watches.

Watches (centuries of style) is described as: "Traces the fascinating history of personal timepieces, noting the most prestigious makes and offering practical tips to collectors. Personal timepieces did not exist until the 16th century, when the mainspring was invented, enabling clocks to become portable. As the horological science became more sophisticated, moving parts of timepieces became smaller, and during the 18th century pocket watches became fairly commonplace among the rich. With intricate movements & ever more elaborate cases, pocket watches were items of great beauty. In the 19th century the first wrist watches were produced, but they were not mass-produced for another 100 years. Illustrated with a stunning array of color images. A valuable & beautiful reference book."

In contrast, "Watches (the collector's corner)" is described as: "This practical and informative book tells the fascinating story of the invention and development of wristwatches. From World War I watches to the modern day Swatch the range of collectable wristwatches is breathtaking. The beauty and complexity of these infinitely varied collectibles is highlighted and movement and design considerations are explained. The book provides an overview of the market in wristwatches & gives the collector valuable information

and advice about starting a collection, judging the condition of vintage pieces, the collectability of different watches and tips on how to care for a collection. Full-color photos of beautiful and unusual watches." So they appear to be different books.

R1538 Kistner, A**Die historische uhrensammlung Furtwangen**

Furtwangen: Druck A. Uttenweiler, 1925, 19 x 13 cm, 173 pp, 31 ill, 16 plates.

Collection (German).

Early description of the Furtwangen collection.

See also Muhe and Kahlert "Die geschichte der uhr, Deutsches Uhrenmuseum Furtwangen".

Only Black Forest clocks.

R1539 Kittel, A**Der konstrukteur**

und das konstruktions-zeichen in der uhrmachere

Leipzig: Diebener, 1907 (1896), 8vo, 102 pp, 164 ill (91 pp, ill).

(German).

The title "Konstruktions und lehrbuch fur der uhrmacherei" (1907) may be a separate book or a later edition.

Technical horology. Escapements. Construction of clocks and watches.

R1540 Kittel, A**Die rad verzahnungen**

durch eine praktische anleitung leichtfasslich dargestellt nebst einer neuen vorricht, die radzahne richtig herzustellen

: A. Send, 1889, 8vo, 42 pp, 21 ill in 8 plates.

Technical (German).

Wheel teeth by a practical, easily understood framework of instruction, with a new method for cutting teeth.

R1541 Kittel, A**Lehrbuch für den uhrmacher**

in schule und werkstatt

Leipzig: Kühtmann, 1896 (1893), 92 pp, 163 ill.

Technical (German).

Textbook for horologists in the school and workplace.

R1542 Kittel, A; Emele, J**Vorlagen für den unterricht im fachzeichnen der uhrmacher**

1886, 28 pp.

(German).

Proposal for teaching technical drawing to horologists.

R1543 Kiu Tai Yu**Antique Chinese calibre pocket watches**

first Asian tourbillon maker, mystery tourbillon creator

2006, 543 pp, ill.

Description (Chinese).

R1544 Kiu Tai Yu**Time in pocket**

89 rare pieces from asia's largest and finest private pocket watches collection

Hong Kong: Kiu Tai Yu, 1992, 31 x 24 cm, 200 pp, 300 ill.

Description, collection (English, Chinese).

Catalogue of the author's collection, including a tourbillon wristwatch made by himself.

[Review by Henry B. Fried] Mr. Kiu Tai Yu has become very well known as a watchmaker. He was invited, along with a selected few, by George Daniels to exhibit their masterpieces along with his own in the 1994 Basle Watch, Clock and Jewelry Fair, special section of "Horologerie Creatures Independent." Mr. Yu exhibited five of his own complicated hand-made wrist watches, all with exposed tourbillon lever escapements.

The author's personal collection was selected with certain eclectic standards. Thus, each of the items in this book are those with original cases, dials, hands and movement parts. Further, he gathered a very representative selection of each type of watch which includes various types of escapements, repeating, perpetual calendar, moon phase, chronograph services and automation. If these were especially made for the oriental market, it became even more receptive to his taste.

Thus, the 89 watches are unique in their individuality. The book, "Time in Pocket", is a two-language catalog of this collection. Each watch is artistically pictured with good descriptions in English as well as in his native tongue.

The book is divided into three main sections. The beginning segment is composed of 32 watches expressly made for the oriental market. The second section is the largest, containing various pocket watches from England and Europe. All 48 watches qualify as collectors' items with universal appeal. The last section of 14 watches are those with particular and unusual appeal.

Thus the entire collection is a crystallization of Mr. Yu's taste. The oriental watches are mainly those made in Switzerland and include the Fleurier-Bovet type of movement decoration and the duplex, double-

duplex and one with double duplex escape wheel but with lever, roller table impulse to the balance. There are watches with both Chinese and Roman numerals on the dials, minute repeaters with polychromed enameled oriental portraits. There is a Patek Philippe 52 1/2 minute karrusel, Bonniksen-type, especially made for the Prince of India, as well as others made in the 19th century for the eastern market.

The watches from Europe are those typical of the late 18th century such as verge, English rack levers, virgule and ruby cylinder types. There are Massey lever watches and movements with dual-train independent seconds, Liverpool levers ... observatory award karrusels, Swiss detent escapement watches and those with back and front dial indications, exposed tourbillon Swiss watches of the 1910 period, as well as a good representation by Swiss and German makers.

A final two pages show five wrist tourbillon watches made by the author in 1991 and 1992. The book is produced in high quality binding, paper and color photos both in life and much enlarged sizes. Mr. Kiu Tai Yu is a comparatively young man and most likely more will be heard from him and his unusual handmade watches.

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[Remark] *English and Chinese text, but not much of it.*

R1545 Kleinlein, WJ

Practical balance and hair-spring work

USA: Arlington Book Co (Waltham, USA: WJ Kleinlein), 1992 (1925), 20.5 x 13.5 cm (17.0 x 10.5 cm), 115 pp, 43 ill (116 pp, 44 ill).

Repair, tools (English).

Only one edition in 1925? The reprint is a facsimile printed in a larger format. It is stated to be a limited edition of 500 copies.

In 3 parts.

Part 1 (9 chapters, 48 pages) covers truing and poising balances: tools, truing flat, eccentric pivots and short arms, fitting screws, detecting errors in truing, and poising.

Part 2 (4 chapters, 48 pages) is on balance spring work: selecting and colletting, truing, vibrating and overcoiling.

Part 3 (9 chapters, 16 pages) includes special tools and notes.

The reprint is identical to the first edition except it omits three sections (pages 68-70) and one figure from the end of the book. These discuss changing staffs on monometallic balances and truing them.

[1st edition, excellent] *This book is purely practical and can be summed up in Kleinlein's own words: "consistent practice and thoughtful attention always produces a time when a particularly difficult operation becomes a simple matter". He must have practiced and given as much care to writing this book as he wants his readers to do with regard to its contents. And the result is a delightful book with precise, very clear instructions and explanations, which are much better than AZ "Hairspringing, the manipulation of old and new springs" and most other works on the topic.*

I don't think I have learnt much I didn't know from other books, but I have learnt it more easily and with more pleasure.

[Remark] *According to "40 years of excellence", a presentation available from the web site www.awco.org, "In the late 1890's Waltham hired a couple of Swiss designers to modernize their watch designs. One of them may have been Walter Kleinlein." I have not been able to verify this, but it seems very likely that Kleinlein was employed by Waltham.*

R1546 Kleinlein, WJ

Rules and practice for adjusting watches

Waltham USA: WJ Kleinlein, 1948 (1920), 17.5 x 10.5 cm, 133 pp, 28 ill, tables (108 pp, 28 ill).

Repair (English).

There were three printings in 1920 (1st edition), 1940 (2nd edition) and 1948.

Four parts, part 4 being added in the 2nd edition.

Part 1, temperature adjustment (5 chapters, 28 pages), covers the compensation balance, equipment, observatory and commercial rating, practical methods of correction, and the middle temperature error.

Part 2, isochronal and positional adjustment (10 chapters, 68 pages) includes general considerations, theory and practice, pinning points, regulator pins, factory and repair shop adjusting, practice for beginners, vertical corrections, examples of 3 position adjustments, examples of 5 position adjustments, timing and final regulation.

Part 3, special notes (1 chapter of 11 pages), includes balance truing and poising and treating rusty balance springs.

Part 4 (added in the 2nd edition) has 3 chapters (24 pages) on adjustment of watches with self-compensating balance springs and monometallic balances.

[2nd edition, excellent?] *Although generally applicable, the book was written to explain the adjustment of American lever watches. That is, adjustment to a very good standard as opposed to the level of excellence required for competitions.*

The first part, temperature adjustment is quite short because Kleinlein believes the repairer is not likely to do such work. What he says is clear and interesting, although I was a little surprised at his concern with balance appearance when discussing moving screws.

The main part, part 2, on isochronism and positions, is written for experienced watchmakers and, although the word "theory" occurs quite often, it is a purely practical consideration. However, Kleinlein

does justify his approach by providing sensible reasons for it. As with his other book. "Practical balance and hair-spring work", the approach is simple and direct with very clear explanations; indeed much better than many other books. This section ends with 4 examples of 3-position adjusting and 6 examples of 5-position adjusting. These illustrate the principles covered earlier in the section.

In Part 3, Special notes, Kleinlein stresses the need for high quality workmanship and discusses specific problems, including cleaning, balance truing and balance spring truing.

Part 4 considers monometallic balances with self-compensating (Elinvar) balance springs. He begins by providing the results of several tests on groups of watches, and then he examines the problems of temperature variation and slow vertical rates. The emphasis is on the effects of using soft balance springs compared with the much harder steel springs used with compensation balances. He also notes the problems caused by variations in the quality of the metal used for balance springs (something which has presumably been overcome in more recent years).

Kleinlein is an excellent writer and his books deserve to be read.

[Remark] According to "40 years of excellence", a presentation available from the web site www.awco.org, "In the late 1890's Waltham hired a couple of Swiss designers to modernize their watch designs. One of them may have been Walter Kleinlein." I have not been able to verify this, but it seems very likely that Kleinlein was employed by Waltham.

R1547 Kleinstuck, RE

Über das Verhalten von taschenuhren

Weida i Th.: Thomas & Hubert, 1913, 49 pp.

Repair (German).

About the behaviour of pocket watches.

R1548 Kleisl, JD

Le patronat de la boîte de montre dans la vallée de Delémont

l'exemple de E. Piquerez SA et de G. Ruedin SA a Bassecourt (1926-1982)

Delémont: Editions Alphil, 1999, 8vo, 245 pp, ill.

History (French).

Makers of the watch case in the Delemont Valley.

"The book tells the story of two watch case companies, Piquerez SA and Ruedin SA in Bassecourt in the Swiss Jura. Jean-Daniel Kleisl recounts both the successes and setbacks experienced by both firms and their bosses, union struggles that marked the century and the industrial development of the village. Four topics are discussed: the family, production, social and financial analysis.

"A pictorial record of 25 pages (employers, factories, advertising, workers at work), and appendixes (accounting, patents, testimonials) complete a book which provides useful elements of comparison that looks at the history of family capitalism."

R1549 Knirim, K

British military timepieces

Uhren der britischen Streitkräfte

a documentation in pictures

eine bilddokumentation

Germany: Pomp Publishers, 2009, 30 x 22 cm, 792 pp, about 5000 ill.

History (English, German).

Bilingual English and German.

Watches and clocks of their Majesties forces:

Part 1. History of navigation and the observatories.

Part 2. Chronometers and clocks.

Part 3. Deck and pocket watches.

Part 4. Wrist watches.

Part 5. Commonwealth, allies and Japan.

Part 6. Appendix.

[1st edition, review by Fortunat Mueller-Maerki] The dedicated aficionado of military watches is in all likelihood already familiar with Konrad Knirim's earlier book 'Military Timepieces – 150 Years of Watches and Clocks of German Forces', first published in German only in 1998, and available since 2002 in an expanded bilingual German/English edition. That book rapidly became the 'bible', the 'must have reference tool' for horological collectors in that specialized segment. Now Knirim has set out to create a similar book on the timepieces (both watches and clocks) used and issued by the British armed forces, including the army, the navy and the airforce.

By personality, Knirim is more the passionate collector than the detached observer or analytical scholar, and that is reflected in his publications. Wisely he subtitles his books "A Documentation in Pictures", and that is exactly what they are, and as such they are unsurpassed in the depth and breadth in which they cover their subject matter. The author has systematically collected military timepieces for over 25 years since his first purchase at auction of a lot of British aviation watches. His once formidable collection of British military watches was sold long ago, so when he decided to complement his earlier book on German military watches with a volume on Britain he had to rely on a series of horological friends – in Great Britain and elsewhere – to 're-build' his database. Given his prominence among military watch specialists he had no problem gaining access to most of the relevant museums and private collections. For several years he systematically photographed every British military timepiece he could identify,

documenting dial, case and movement. From among the resulting 20,000 pictures he selected about 5000 photographs, showing over 1200 different timekeepers (complemented with reproductions of hundreds of related ephemera items, such as service manuals, in-situ photos of the pieces in use, etc) and assembled them into the bulk of the book under review. These several hundred full page images have been expertly composed by the author on his computer using imaging software and thousands of photographs.

The images are interspersed with various texts (mostly published previously elsewhere, by a large number of different authors, some only as extracts or synopses, but also including some short texts by Knirim himself) ranging from one to 20 pages in length. For the most part these contributors are recognized experts in their area. Nevertheless, this approach toward creating the text portion of the book has its limitations. The narrative is episodic rather than continuous, and there is no way to assure that all aspects of the subject of the book are covered, and there is some duplication of information provided. Altogether there are about 80 such text-blocks spread throughout the book.

Knirim chose to define his subject broadly, somewhat arbitrarily including sections on the John Harrison sea clocks, a selection of observatory precision regulators, and an overview of the history of the British marine chronometer. In the opinion of this reviewer the resulting 'Part I' of the book is its weakest part; not only is each of these three subjects a huge sector of horological history in its own right, but there exist in depth monographs covering all these areas in a more scholarly and complete manner. Likewise, in the final part of the book the timepieces of the Canadian, Australian, New Zealand, South African and Indian armed forces are covered, which, given the nature of the British empire, is of course appropriate and most interesting, but then some sections on military timekeepers in the USA, France and Japan were also included. This reviewer feels that these latter parts were added primarily because the author hated to discard 'material that was available', rather than because they belong in the book.

The book is broadly organized by type of timekeeper, starting with clocks and chronometers, and progressing to pocket and deck watches, followed by wrist watches. Within these broad categories, the structure is chronological or by branch of armed service. The nature of the book as a documentation rather than a narrative sometimes makes it not easy to find a specific subject, but a keyword index (primarily names of makers and model numbers) is a great help, although more index entries by watch type would be helpful.

The scope of coverage of the subject is truly extraordinary. There is no type of military timekeeper that is left out: divers watches, radio room clocks, zig-zag clocks, sector clocks, aircraft panel clocks, pilot watches, deck watches, instrument timers, chronographs, chronometers, artillery watches, surveying watches, sidereal watches, trench watches, parachuters' watches, bomb timers, and many others – all make their appearance. The quality and thoroughness of the pictures is very good; in most instances a specific timepiece is shown both in a dial view and a movement view, and - wherever relevant - clear pictures of both the inside and outside of the back covers (with their all important marks and engravings) are shown as well.

This is not the kind of book that anybody will read cover to cover, but rather a reference book to consult for specific information, or also a 'browsing book' to leaf through for picking up tidbits of fascinating morsels of information on horological or military history. The text throughout is bilingual in German in the right hand column, in English in the left hand column. All picture captions have been translated by the author as well. The author's mother tongue is not English, so there are a few isolated translation errors, but most of them are easy to identify, such as when the term 'mantel clock' is used to describe a wall hanging clock. Readers who have even a minuscule of knowledge in German should read both picture captions as different features may be highlighted in the German and English texts: So e.g. on page 366, showing a pair of civil time / sidereal time deck watches described as having a "sliding cover"; only the German text reveals that the 'slide' alternatively obstructs the view of one of the two watches.

No publication of this magnitude is perfect; some of the minor issues noted by this reviewer include the lack of a good overall bibliography on the subject of British military horology, and clear citations on where and when some of the text contributions were first published. Also on the wishlist is a more detailed, more structured table of contents that more clearly distinguishes chapter headings and third party text contributions.

But these minor criticisms pale in comparison to the admiration for the dedication shown by the author in collecting this information and getting it into a printable format. All the image processing, typesetting, proofreading and layout work was done by the author himself, delivering a set of print ready Acrobat files on a disc to the printer/publisher. That has allowed for a reasonable sales price for a massive publication of this sort that surely accounts only for production and distribution cost - the thousands of hours Knirim must have spent collecting and organizing the material clearly were a labor of love, without compensation. The horological community owes the author - and his many contributors - deep gratitude for creating a comprehensive and in depth documentation covering British Military Horology, a subject area which hereto was covered by only a few smaller, very partial publications.

R1550 Knirim, K

Die uhren der deutschen streitkräfte

1870-1990

Bottrop: Pomp, 1998, 30 x 22 cm, 444 pp, 1400 ill.

Description, history (German).

German military timepieces.

34 chapters covering:

World War I (precision clocks and early German marine chronometers).
 The empire of 1871 and William II, the imperial navy (ship clocks, observation clocks, torpedo boat clocks, wrist-watches).
 The Prussian air force.
 The army of the empire.
 Trench warfare wrist-watches.
 The military industrial complex of the empire.
 Armed forces of Austria and Hungary.
 The Weimar Republic until 1933.
 Airmen in the Weimar Republic.
 Bomb timer stop watches of the 20's.
 World War II.
 The navy (precision pendulum clocks, ship clocks, radio operator clocks, chronometers, deck watches, naval watches, chronographs of the navy artillery, torpedo stop watches, naval wrist-watches, clocks on submarines).
 The air force (meaning of labels and stamps on air force timepieces, station and radio operator clocks, airplane clocks, wrist watches, Swiss supplies for Germany, pilot chronographs, special clocks for speed and ranging, compasses).
 The army (fortress clock installations, station and radio operator clocks, vehicle clocks, watches, chronographs and stop watches, wrist-watches, time fuses).
 The SS.
 The armed forces of the Soviet zone and the GDR.
 Paramilitary organizations of the GDR.
 The national people's navy (ship clocks, stop watches, deck watches, equipment of divers).
 Air-defence (airplane clocks, pilot wrist-watches, cosmonauts).
 Ground forces of the NVA (clocks in radio vehicles, armoured personnel carriers and tanks, wrist-watches).
 End of the NVA.
 The German Federal Armed Forces.
 US clocks with the German Federal Armed Forces.
 The Federal Navy (chronometers, ship clocks, deck watches).
 The Federal Air Force (airplane clocks, pilot chronographs, wrist-watches).
 The army (instrument and station clocks, stop watches).
 Chronographs.
 The end of mechanical timepieces.
 Bibliography.
 Documents.

R1551 Knirim, K**Military timepieces****Militaruhren**

150 years, watches and clocks of German forces

150 Jahre Zeitmessung beim deutschen Militär, eine Bilddokumentation

Germany: Verlag Peter Pomp, 2002 (1998), 636 pp, over 4000 ill.

Description, history (German, English).

New edition of "Die Uhren der deutschen Streitkräfte 1870-1990" with parallel German/English text. Describes over 1000 timepieces in seven chronological sections.

[2nd edition, review by Fortunat Mueller-Maerki] *The first edition of this book quickly became not only the undisputed reference work for anything involving the timepieces of the German military forces 1870-1990, but with 1400 color illustrations on 440 pages, set new standards for the comprehensiveness, thoroughness and visual details provided in a specialized horological monograph. It's only drawback for the military horology enthusiast in the Anglo-Saxon world was that all the text was in German. The new second edition has not only added much material (it grew to 625 pages), but the text is now fully bi-lingual German/English, and must have close to 2000 images.*

Knirim is an Engineer/Physicist by training, but a collector by passion. Some 25 years ago he acquired at auction a lot of surplus military aviation timekeepers just as the RAF was starting to replace its mechanical timepieces with electronics, and immediately got helplessly hooked as this specialized area of collecting exploded. Eventually he specialized in timekeepers used by the German military. Knirim is a self-admitted compulsive accumulator/collector, who has amassed ephemera, images and information about his subject at a rate commensurate with his specialized timepiece collection.

Quite accurately the frontispiece of the book describes it as "A Photo Documentation", and that is precisely what it is. The book is organized into 7 chronological sections, made up of 41 chapters (mostly by branch of service). Each chapter starts with about a half page of introductory German text (faithfully translated into English in the right column), and the remainder of the chapter is made up by a dazzling array of images and their bi-lingual captions. The images are virtually all in color and are very good; most pieces are pictured from front and back, plus movement shots as appropriate, supplemented by close-ups of labels, markings or technical details as warranted. While some of the images are reproductions from auction catalogs, the vast majority were taken by the author. The aim was clearly to provide as much

visual information as possible, rather than strive for the artistic beauty of a coffee-table book. A significant portion of the pictures are reproductions of ephemera related the specific timepiece or the category, including advertisements, technical drawings, test sheets, military inventories and photos showing the timekeepers in their intended original settings. Knirim deserves high praise for his perseverance in collecting and researching these additional materials.

While a translator was employed to produce the introductory English text for each chapter, the author himself has supplied both the German and the English image captions. In the introductory remarks he apologizes for his limited English skills, although there is no need to do so. It is noteworthy that the English captions are not always literal translations of the German ones, but rather free translations. Sometimes details are added to either the German or the English text that are not part of the other language version; e.g. this reviewer noted one page mentioning "Sapphire bushings" in the German description of a chronometer which were not mentioned in the English text; and elsewhere a "brass bezel" was part of the English description without being mentioned in the German caption. I do not find that these idiosyncrasies distract from the value of all the information presented, but I would advise any reader who has even a rudimentary command of the other language to scan both texts on a piece one is particularly interested in.

Nobody is going to read this book cover-to-cover in one sitting. Its nature as a "Photo-Documentation" makes this hefty volume more suitable for "browsing" or as a reference book, the latter function being augmented by a substantial index. As a further service to his readers Knirim, in the appendix, reproduces the concordance tables of serial numbers and manufacturing year for selected manufacturers.

"Military Timepieces" is a must for even a casual collector of military timepieces (including marine chronometer enthusiasts), but will provide a most pleasant browsing experience for almost any horological collector or researcher.

R1552 Knudsen, C**La montre mixte indiquant l'heure sidérale et l'heure moyenne**

système Stromgren et Ohlsen

Copenhagen:, 1917, 8vo, 14 pp, 2 ill.

Technical (French).

Listed in Tardy.

Double watch indicating sidereal and mean time, the system of Stromgren and Ohlsen.

R1553 Knudsen, J**Urban Jurgensen & sonner**

2001, 397 pp, ill.

History (Danish).

A history of the Jurgensen watchmakers from the start until the present day.

English and German translations are said to be in preparation.

R1554 Koch, R**Uhren und zeitmessung bi-lexikon**

Leipzig: VEB Bibliographisches Institut, 1989, 22 x 16 cm, 303 pp, 203 ill, 15 tables, 40 plates.

Dictionary (German).

A German lexicon of over 1500 words and phrases used in the sphere of clocks, watches and time measurement.

R1555 Koch, R**Uhrmacherlehrbuch**

Grundlagen

Halle: Wilhelm Knapp Verlag, 1959, 21 x 15 cm, 280 pp, 295 ill, plates.

Repair (German).

R1556 Kocher-Aeschbacher, H**Automatische uhren**

Ulm: Verlag der Neuen Uhrmacher-Zeitung, Wilhelm Kempfer, 1969, 21 x 15 cm, 153 pp, 34 ill, 12 tables.

History, technical (German).

The history, function and design of automatic pocket and wrist watches from 1760; basic design and performance.

R1557 Kocher-Aeschbacher, H**Die geschichte der uhrmacherei in Buren**

Munich: Callwey, 1992, 30 x 22 cm, 136 pp, 117 ill.

History (German).

Limited edition of 500 copies. Text in German.

History of the Buren Watch Company.

R1558 Kochmann, Karl**Clock and watch trademark index - European origin****European clockmaking watchmaking German Austrian Swiss French trademarks and names**

USA: Clockwork Press (USA: Antique Clocks Publishing and Scanlon American Reprints) (California: Antique Clocks Publishing) (USA: S. LaRose), 2001 (1977), 22.5 x 15.0 cm (21.5 x 14.0 cm), 989 pp, ill (967 pp, ill) (655 pp, ill) (240 pp, ill).

Dating, history, identification (English, French, German).

Also printed in 1984 (240 pp, ill), 1988, 1993-4 (revised first edition) and 1996.

Eleven chapters followed by references and an index of names. A comprehensive listing of trade marks used on clocks and watches by companies in Austria, England, France, Germany and Switzerland. These roughly cover the period from 1850 onwards.

The 2001 printing has an additional index of symbols and a revised table of contents.

[Revised first edition, very good] Each chapter has a short trilingual introduction followed by a table of marks giving company name and address, notes, and trade mark. Some entries include company inter-relationships and historical notes and I have indexed these.

Part A, chapters 1-8, covers clocks and watches: Austria (27 pp), Vienna (7 pp, no data), England (90 pp), France (112 pp), Germany (276 pp), Switzerland (259 pp), the Ebauche system (7 pp), and Swiss makers 1880-1927 (2 pp, no data).

Part B (88 pp) concerns electric clocks, and Part C is the bibliography and index.

Although it is unavoidably tedious to search for trademarks similar to one of interest, the search is usually rewarded. The book is a very valuable means for identification, but probably of more use for clocks than watches, and it is the most comprehensive and best trade mark listing. See also Jewelers' Circular "Trade marks of the jewelry and kindred trades".

[2001 edition] This is identical to the previous edition except for some rearrangement of the preliminary pages and the addition of a 22 page symbol index.

R1559 Koeberle, George

Illustrated studies in horology

Ontario: Gary Fox (: George Koeberle), 2007 (1904), 50 pp, ill (44 loose sheets, guide).

Technical (English?).

The reproduction of the 1904 edition has photographs of the cover and title pages, 4 draft sheets and Grade A Diploma watch no. 3A and Grade A Diploma watch no. 4A movements from another edition added.

R1560 Kohler, F

L'histoire du syndicalisme dans l'horlogerie

et la métallurgie de la vallée de Délemont

Délemont: FTMH, 1987, 26 x 18 cm, 263 pp, ill.

History (French).

Les débuts du mouvement syndical et la création de la FOMH (1887-1917); L'entre-deux-guerre (1918-1939); De la FOMH à la FTMH (de 1939 à nos jours).

"Un livre indispensable à quiconque s'intéresse à l'histoire du Jura."

R1561 Kohly, A

Guide pratique du monteur de boîte

et du fabricant d'horlogerie pour déterminer le poids ainsi que pour faciliter la commande et la fabrication des boîtes de montres en or et argent

Bienne: Magron, 1918 (1898), 20 x 13 cm, 35 pp.

(French).

The first edition is titled "Petit guide du monteur de boîtes ...".

Practical guide for the case fitter and horological factory, for determining weight so as to facilitate the organisation and fabrication of watch cases in gold and silver.

R1562 Koller, C

L'industrialisation et l'état au pays de l'horlogerie

contribution à l'histoire économique et sociale d'une région suisse

Switzerland: Éditions Communication jurassienne et européenne, 2003, 610 pp.

History (French).

Industrialisation and the state of the horological lands, a contribution to the economic and social history of a Swiss region.

University of Berne dissertation

R1563 König

Die uhrmacher gehilfenprüfung

Halle: Wilhelm Knapp, 1953, 21 x 15 cm, 104 pp, 24 ill, 1 plate.

Repair, technical (German).

The watchmaker's assistant examination.

R1564 König

Grundlagen zur berechnung der reparaturpreise

im uhrmacherhandwerk

Cassel., 1920, 23 x 16 cm, 16 pp.

Repair (German).

Rudiments of calculating repair prices for handwork.

R1565 König

Richtlinein für die geschäftspraxis des uhrmachers

Halle., 1923, 22 x 16 cm, 72 pp.

Business (German).

Guidelines for the business practice of horology.

R1566 König, G

R1566 König, G

Die uhr

geschichte, technik, stil

Leipzig: Kochler & Amelang, 1991, 22 x 19 cm, 311 pp, ill, 164 plates.

Description, history, technical (German).

The timepiece, history, technique, style. It includes pocket watches.

R1567 König, G

Uhren und uhrmacherei in Berlin

1450 - 1900

Berlin: Gesellschaften für Heimatgeschichte und für Denkmalpflege, 1988, 20.5 x 14.5 cm, 101 pp, 53 ill.

Dating, history, makers (German).

R1568 Kopp, C

Exposition de Vienne 1873

suisse rapport sur le développement de l'industrie horlogère dans la canton de Neuchâtel

Schaffhausen: Baader, 1874, 23.0 x 15.0 cm, 50 pp.

Exhibition (French).

R1569 Korda, M

Marking time

collecting watches and thinking about time

New York: Barnes and Noble, 2004, 20.5 x 13.5 cm, 198 pp, 17 b/w ill.

Collecting (English).

Ten chapters followed by a 10 page glossary of 148 terms (extracted from Ehrhardt & Demesy "Patek Philippe identification and price guide") and index.

The chapters are: The gift of time (35 pages); The marketplace (28 pages); Choosing what to collect, vintage or collectable? (16 pages); Complications (16 pages); The aesthetics of time (14 pages); Who me, collect? (22 pages); Pitfalls and forgeries (18 pages); From the sublime to the ridiculous (14 pages); Ownership (10 pages) and Tools of the trade (10 pages).

[1st edition, fair] I read this book immediately after consuming Fallet "Tissot, the story of a watch company". Like Fallet, it was very difficult to tease out Korda's purpose and like Fallet it turned out to be autobiographical, albeit totally different and with more substance. The main problem is that the style is of a fireside chat or affectionate advice during which Korda ruminates on time, watches and collecting. Consequently, although physically divided into chapters the text meanders around, some topics being frequently revisited as Korda develops his philosophical point of view. And so it is not possible to discuss the book coherently if it is tackled in printed order, and the reviewer and reader must absorb, classify and re-arrange before a picture of Korda's ideas emerges.

The autobiographical nature is central to understanding the book. Except for an explicit 12 page autobiography (in which he outlines his descent from important, famous and wealthy forebears) and a later description of the provenances of his watches, this may not be obvious. But it becomes clear when we realise that nearly all the book presents Korda's personal philosophy and opinions. He does include a little concrete information (about wearing watches), but the vast majority of the book is concerned with attitudes, and facts and understanding are very much pushed to the background. Indeed, although he may be quite competent there is nothing in the book to indicate that he has anything more than the most superficial knowledge of horology. There are three reasons for this view.

First, the only general books Korda mentions are Baillie, Ilbert, & Clutton "Britten's old clocks and watches and their makers", Jaquet & Chapuis "Technique and history of the swiss watch" and Viola & Brunner "Time in gold, wristwatches". The first is a very good introductory book and the second is mediocre; the third I have not read. There is no way that these three books can provide an adequate survey and understanding of horology. Further, he recommends Ehrhardt "American pocket watch identification & price guide" (out of date and inadequate) and two Rolex books which focus on appearance and value rather than the mechanism.

Korda does, frequently and throughout the book, recommend auction catalogues as the best source of information. Of course, he is only referring to the excellent catalogues produced by half a dozen auction houses where the price of nearly every watch has at least four zeros on the end and usually five. But reading these catalogues definitely cannot be the basis of an education. Most have beautiful photographs coupled with terse descriptions which tell you what but give no information on why or how. The best include short company histories and biographies of makers which are useful, but all you will gain are some disjointed fragments of the descriptive history of horology.

Second, the glossary (copied from a book by Ehrhardt) has 148 entries which provide very short definitions of terminology. Unfortunately, such definitions only make you familiar with the words and fail to give any useful understanding. For example, to know what sort of sounds a repeater makes is trivial and gives precisely no information about how, and so why repetition is very complex. Besides being simplistic, at least 15 definitions are wrong, misleading or unintelligible, so I cannot believe someone with a good understanding would include such a poor glossary without at least correcting it.

Third, there are a number of errors which suggest a rather naive education. For example, near the beginning he says "the exact time is so easily and universally available ... digital clocks, computer screens, VCRs, kitchen appliances ...". Perhaps America is dramatically different from the rest of the world but not one of these things show exact time where I live; TV programs and trains usually start late, every

computer I have owned has run slow or fast, and all the quartz clocks in my house are set to different times. Korda also makes some very peculiar statements about the purpose of deck watches, suggesting he has no idea of the significance of longitude. A gross error appears later in the book, in the chapter on forgeries, where Korda mentions over-restoring watches: "Watchmakers, however august and distinguished ... don't waste time polishing to a perfect mirror finish those parts of the watch that you're never going to see or that aren't directly in contact with each other, whereas restorers are apt to polish everything, removing all the tool marks and machining marks left there by the watchmaker". This is simply rubbish and suggests Korda has never looked at pinion ends or seen the superb finish and delicate shapes found under dials. Then he goes on to say "there isn't much outright fraud in the watch business"! There are thousands of people who can contradict these words with much bitterness. Later he writes "there is an old wives' tale that watches generally keep time more accurately if they're in the vertical position, because the very small amount of lubricating oil in the watch tends to drip downward through the works of the watch, then is carried back up again through the works as the gears rotate. This is doubtful ..." Doubtful! It is simply nonsense. Unfortunately I have never come across this theory anywhere in the last 20 years and over 800 books, so I have no idea how Korda was sucked in by it. Likewise he believes gold cased watches "are seldom broken up and melted down" totally going against historical fact.

These errors, by themselves, could be regarded as minor slips and excused. But their existence makes perfect sense in the context of a book devoid of technical and historical information; they confirm the view that Korda has only a superficial knowledge of horology derived from a few books for beginners and the sales pitches in catalogues. What becomes clear is that Korda is good and writes well when explaining his philosophy of watch collecting, and he is mediocre at best when he tries to comment on matters that require more than a novice's background. One glaring example is the chapter on complications. Here various complications, called "small differences", are listed and superficially described before he uses the majority of the chapter to explain how to wear a pocket watch in winter and summer! Later he writes "it is important to make some effort to understand how they work", but it seems Korda considers a few definitions of terms are sufficient. Indeed, his statement that "many people are more interested in what a watch looks like" is the key to this book. (The division into chapters is peculiar, as in this case. The chapter headed "From the sublime to the ridiculous" contains nothing about the sublime or the ridiculous and I have no idea what this heading means.)

But this vague and philosophical approach is partly justified by the types of watches which are the subject of the book. Korda's collection consists of 12 Patek Philippe complicated pocket watches whose value would be several million dollars. And throughout the focus is on the high quality and very expensive watches which are the bread and butter of Antiquorum and the other exclusive auction houses. Such watches are purchased on the basis of quality, rarity and complications, and no-one would attempt to fiddle with one unless he was an exceptionally good watch repairer. So their purchase is necessarily based on the opinions of experts rather than personal investigation of their innards. Having a detailed knowledge of how they work and how they are made is reduced to an academic study without any hope of practical application. So when he writes that auction catalogues "constitute something like a home education course in watch collecting" he is correct as far as such extremely expensive pieces are concerned. And they are also appropriate for collecting wrist watches which cannot be opened. In both cases the collector is limited to an appreciation of external appearance and can only satisfy any urge for technical knowledge by looking at photographs in books and catalogues. As Korda says, "the main thing, in my opinion, is to collect those things that make you happy to wear and look at". But such a view is utterly wrong for other collectors where the opportunity to study the movement exists and is indeed often the primary purpose of owning watches.

Korda does mention collecting less illustrious watches, suitable for the less fortunate and less discerning, but his discussion is not convincing and he seems uncomfortable, as when writing about Swatch watches. I suspect he finds it hard to understand why anyone would collect anything other than the most exalted. This may be caused partly by a lack of appreciation of the pleasures to be had from pulling watches apart and appreciating the design and workmanship, something that can only be achieved vicariously with Patek Philippe complications where even removing the dial to view the cadranature is a very risky task. So when he mentions the possibility of collecting pocket watches made by students at the Swiss Watchmaking School in Le Locle, "all valued between \$700 and \$2000", his reason is that less wealthy people can have a unique and interesting watch. But without some understanding of the movements and how they were manufactured it is not possible to decide if they are ordinary watches or examples of interesting mechanisms.

I am not sure how aware Korda is of this dichotomy. He muses about the need to study the technology of watches, but never comes to grips with this. Which is not surprising as he regards the best resources for the collector are company archives, auction catalogues and sales brochures; clearly understanding is not necessary. He also is unable to make up his mind about the relationship between investing and collecting, oscillating being talking about "good value" and saying "collecting isn't about money, or it shouldn't be". But he is happy to write, regarding Bulova Accutron watches, that "prices have been going steadily up, which means that it may be too late to get on the bandwagon" Consequently, except for warning the amateur about the pitfalls, he never comes to grips with the reality of investments. For example, if you buy a watch at auction for \$100,000 you will actually pay around \$120,000 including the buyer's commission. Then you keep it for 10 or 15 years, during which time you will spend another \$10,000 on insurance and regular servicing. By that time inflation will have halved the value of the dollar and when

you sell it at auction you will pay a 20% or more seller's commission and some sort of government tax on the "paper profit". The result is you have to sell the watch for at least \$350,000 just to break even and anything less than around \$450,000 would represent a poor investment. Viewed this way, the casual remarks made by dealers, authors and Korda about making money start to look decidedly sick.

This ambiguity, of Korda presenting us with contradictory comments in different sections of his book, affects much of what he writes. He notes, correctly, that "hardly anybody looks at the watch on your wrist or in your pocket", but later he implies that he wears his Patek Philippe watches partly so that he can show them to others, or at least the very, very few who are interested and knowledgeable and so will appreciate the difference between his watch and my \$20 quartz watch. He rightly writes that "what's inside the watch is as important, or more important, than what's on the outside", but nowhere does he show the slightest interest in or knowledge of mechanisms. So when he later says "what really matters: focus, commitment to an idea or brand or type of watch, and knowledge" he seems blissfully unaware that he has written extensively on focus and commitment but ignored knowledge.

One comment about this book described it as "for the truly uninitiated novice" and "pretty basic". In a sense this is correct, but a more serious examination reveals a book of some sophistication. Although it is superficial in some respects, Korda's discussion of collecting is thoughtful and stimulating, and it is a pity it is scattered throughout the book. Despite my criticisms, if we view this work as a guide to collecting for people with a million dollars or more to spare, then it has considerable merit. Admittedly the vast majority of the six billion souls on the Earth cannot even contemplate buying such watches, but there are enough millionaires to justify the existence of Patek Philippe, Antiquorum and a book like this one. Collecting at any level includes people who are only concerned with appearances and desirability, and at the exalted level of millionaires such an approach is almost inevitable unless you have the skills of George Daniels. So, for people who collect by external appearance my criticisms are largely irrelevant.

Korda has no idea what causes people to collect. He is aware that everything is collected by someone, but not why some people exhibit this trait and others never have and never will collect anything. This is why he says a lot of watches does not make a collection; he has not read Muensterberger and does not realise that some famous collectors compiled vast numbers of everything in their chosen area. (Joseph Banks is a good example of a collector who amassed every plant he could, but he didn't do anything with them; he employed others to do the boring, hard slog of classification.) But again, in the realm of collecting which concerns Korda, gathering everything available is simply not possible unless you have an infinite amount of money.

But although he doesn't understand motivation, he does understand the process, emphasising the need to have a theme based on desire, pleasure and personal taste; and "order and stability" which I don't understand, but it may be partial awareness of the psychological stresses that Muensterberger believes are the source of collecting behaviour. Indeed, some of the book gives examples of themes; women's watches, early Rolex, Cartier, Swiss, Nouvelle Vague (a joke or a typing error?), diamonds, provenances and complications. He also makes it clear that there are vast numbers of watches available and, even if some patience is required, you can usually get what you want. After all, private collections are continually being sold as well as created and particular watches regularly reappear on the market; so one day you will be able to buy Korda's watches if they are what you desire.

However, I disagree with the view that "watches ... however valuable they may be, are meant to be used, worn, displayed". Later Korda partly contradicts this by correctly pointing out that "we don't own ... but merely hold in trust" and that "the first rule of collecting ought to be do no harm". But then I don't think I could resist wearing a Patek Philippe complication if I had one.

R1570 Kovnic, PB

L'industrie horlogerie dans la Haute-Savoie

Lyon., 1902, 32 pp.

History (French).

Listed in Tardy.

R1571 Krause, AJ

Studien über das verhalten von taschenuhren

Leipzig: Teubner, 1906, 22 x 14 cm, 47 pp.

Technical (German).

Berichte über die Verhandlungen der Königlich Sächsischen Gesellschaft der Wissenschaften zu Leipzig "Über den gang von Glashütter taschenuhren"

R1572 Kreuzer, A

American books

ca 1990.

(German).

There are a number of books by Kreuzer which relate to the American watch industry. David Penny notes that these books were produced with the help of Roy Ehrhardt and "each volume reproduces many original American catalogues and documents". It is likely that they are reprints of Ehrhardt's books, removing or replacing the English text.

These books are:

"Die uhr aus der fabrik, die American Waltham Watch Company, amerikanische taschenuhren band 1" (reprint of Ehrhardt "Waltham pocket watch identification and price guide - serial numbers with descriptions"?).

"Zeit aus zarter hand - die frühen fabriksgrundungen und ihre nachfolgefirmen, band 2".

"Jadem seine uhr, fabriksgrundungen von 1870 - 1879, band 3".

"Sichtbar gemachte zeit, die firmengründungen von 1883 - 1908, band 4".

"Der tagliche begleiter, dollar watches, die geschichte der billiguhr, band 5".

In addition to this 5 volume set Kreuzer has produced:

"US marken" (reprint of part of Ehrhardt "Trade marks - watch cases, pocket watches, precious stones, diamonds"?).

R1573 Kreuzer, A

Armbanduhren

100 jahre armbanduhr, ein uhrentyp und seine geschichte, zeit am handgelenk

von den anfängen bis zur gegenwart

Klagenfurt: Carinthia, 1991 (1988), 29.5 x 22.5 cm, 168 pp, 109 ill.

Description (German).

Apparently this book was originally published as "Armbanduhren, von den anfängen bis zur gegenwart" and later as "Die armbanduhr, zeit am handgelenk", but booksellers are confusing (or confused).

R1574 Kreuzer, A

Der tagliche begleiter, dollar watches

die geschichte der billiguhr, band 5

Austria: Carinthia, 1989, 30 x 23 cm, 120 pp, 42 ill.

History (German).

American dollar watches including Ansonia, Ingersoll, Ingraham, New England. New haven, Waterbury and Westclox.

R1575 Kreuzer, A

Die armbanduhr

geschichte, technik, design

Hamburg: Nikol Verlags (Austria: Carinthia), 2005 (1995), 30 x 20.5 cm, 296 pp, 175 ill, 80 plates.

Description, history, illustration (German).

The history and development of wrist watches from the first examples of the 19th century to the masterworks of today. With a lexicon.

R1576 Kreuzer, A

Die armbanduhr

spezialitäten, extravaganzen und technische steckbriefe

Austria: Carinthia, 1983, 24 x 23 cm, 176 pp, 125 ill.

Description, history, illustration (German).

Special and extravagant wrist watches.

R1577 Kreuzer, A

Die uhr am handgelenk

geschichte der armbanduhr

Austria: Carinthia, 1982, 23 x 23 cm, 192 pp, 150 ill.

History, makers (German).

A history of wrist watches and their makers.

R1578 Kreuzer, A

Die uhr aus der fabrik

die American Waltham Watch Company 1850-1957, Amerikanische taschenuhren band 1

Austria: Carinthia, 1987, 30 x 23 cm, 200 pp, 100 ill, 40 plates.

Dating, identification (German).

Waltham catalogues, production dates, etc.

Includes a reprint of Waltham Watch Co "Serial numbers with descriptions".

R1579 Kreuzer, A

Jedem seine uhr, fabriksgrundungen von 1870 - 1879

Amerikanische taschenuhren band 3

Klagenfurt: Carinthia, 1988, 30 x 23 cm, 168 pp, 100 ill, 15 plates.

(German).

American watch manufacturers including Ball, Columbus, Illinois, Rockford, South Bend, Studebaker, etc.

R1580 Kreuzer, A

Meisterwerke der uhrmacherkunst, armbanduhren

Hamburg: Nikol Verlags, 1998, 29 x 20 cm, 295 pp, ill.

Description, history (German).

"From the cylinder to the Grande Complication, a standard work for collectors and amateurs". With a glossary.

This sounds like "Die armbanduhr - geschichte, technik, design"; maybe it is a later edition?

R1581 Kreuzer, A

Omega designs, feast for the eyes

Omega modelle, augenweide armbanduhr

USA: Schiffer (Austria: Carinthia), 1996 (1994), 28 x 21 cm, 224 pp, 334 ill, 80 plates.

Dating, description, identification, illustration, price guide (English, German).

Separate German and English editions with some confusion over whether the titles are separate books. At least one reprint in 1996-7.

Covering Omega movements from the registration of the name in 1894. Primarily descriptive with some serial number and dating information.

R1582 Kreuzer, A**Omega uhren**

kaleidoskop einer bekannten Schweizer marke

Austria: Carinthia, 1990, 30 x 23 cm, 384 pp, 1000 ill.

Dating, description, identification (German).

Kaleidoscope of Omega, including an extensive catalogue of pocket and wrist watches, calibre and serial number information.

R1583 Kreuzer, A**Patek Philippe, augenweide armbanduhr**

Austria: Carinthia, 1991, 28 x 23 cm, 88 pp, 31 ill.

Description (German).

R1584 Kreuzer, A**Rolex, chronometer fur das handgelenk**

von der oyster bis zur perpetual day-date

Austria: Carinthia, 1996 (1991), 28 x 23 cm, 136 pp, ill, 32 plates (112 pp, ill, 26 plates).

Dating, description, illustration (German).

Rolex, delightful wristwatches, chronometer for the wrist from the Oyster to the Perpetual Day-date.

A 26 page history of Wilsdorf and Rolex, technical details of watches, calibre lists and calibre photographs.

R1585 Kreuzer, A**Schweizer marken**

augenweide armbanduhr

Austria: Carinthia, 1991, 28 x 23 cm, 104 pp, 30 plates.

Makers (German).

Swiss brands, delightful wristwatches.

Swiss manufacturers.

R1586 Kreuzer, A**Sichtbar gemachte zeit**

die firmengrundungen von 1883 - 1908, band 4

Klagenfurt: Carinthia, 1988, 30 x 23 cm, 199 pp, ill.

Description (German).

American watch companies; Aurora, Hamilton, New York Standard, Seth Thomas, etc.

R1587 Kreuzer, A**US marken**

augenweide taschenuhr vom ersten industriellen fabrikat bis zur One-Dollar-Watch

Austria: Carinthia, 1991, 28 x 23 cm, 96 pp, ill.

Makers (German).

American manufacturers from the first to the dollar watch.

R1588 Kreuzer, A**Vacheron Constantin**

eine berühmte Genfer nobelmarke

Austria: Carinthia, 1992, 28 x 23 cm, 80 pp, 36 ill.

Description (German).

R1589 Kreuzer, A**Vintage wrist watches****Faszinierende welt der alten armbanduhren**

die uhr am handgelenk vor 1950

Austria: Carinthia, 1989 (1985), 29.5 x 22.5 cm (24 x 23 cm), 356 pp, 1000 ill, 20 plates (404 pp, ill).

Description, illustration (English, German).

English and German text.

Wristwatches from 1906 to 1955 with illustrations from catalogues.

R1590 Kreuzer, A**Zeit aus zarter hand**

die fruhen fabriksgrundungen und ihre nachfolgefirmer, band 2

Klagenfurt: Carinthia, 1987, 30 x 23 cm, 168 pp, 300 ill, 14 plates.

(German).

The early American manufacturers and their successors; Waltham, Nashua, Howard, Cornell, Melrose, Hampden, Elgin, Marion, etc.

R1591 Kreuzer, R**Zeitgeschichte von Furtwangen**

1880, 8vo, 277 pp.

History (German).

Listed in Robertson "The evolution of clockwork".

History of time in Furtwangen.

- R1592 Krieg, H**
Aus der uhrzeit
 die uhrensammlungen der Kolnischen Museen
 Koln: Stadt Koln, 1987, 24 x 16 cm, 311 pp, 193 ill.
 Catalogue (German).
 The age of clocks, the horological collections of the Koln museums.
All clocks?
- R1593 Krug, G**
Mechanische uhren
 einzelteile, baugruppen, werk und hilfsstoffe
 Berlin: VEB Verlag Technik, 1987, 8vo, 344 pp, ill.
 Technical (German).
 Mechanical timepieces - parts, assemblies, materials
Includes escapements.
- R1594 Kruger, G**
Uhren und zeitmessung
 Bern: Hallwag Press, 1977, 15 x 11 cm, 120 pp, 82 ill.
 Collecting, history (German).
 History of timepieces from its beginning to quartz watches; including a chapter on collecting.
- R1595 Kruger, PJ**
Theoretisch-praktischer unterricht in der uhrmacherkunst
 Quedlinburg:, 1851, 8vo, 126 pp, 31 plates.
 Theory (German).
 Theoretical and practical instruction in horology.
See also Le Normand & Janvier "Nouveau manuel complet de l'horloger". Kruger translated part or all of this work, but I don't know if the title listed here is related; the sources are vague and confusing.
- R1596 Krumm, GA**
Die zugfeder in uhr und laufwerken
 Halle: Zentralverbandes der Deutschen Uhrmacher, 1929, 21 x 15 cm, 74 pp, 17 ill.
 Technical, theory (German).
 The theory and calculation of mainsprings for the use of watch repairers, watch makers and horology schools.
- R1597 Krumm, GA**
Lehrgang für den fachzeichen
 unterricht des uhrmachers und uhrenkonstruktors
 reprint (Leipzig: Wilhelm Diebner), nd (1925), 29 x 22 cm, two volumes: 144 pp, 48 ill and atlas of 8 pp, 54 plates.
 Repair, watch making (German).
 Lessons on technical drawing instruction for clock (and watch) repairers and makers.
- R1598 Krumm, GA**
Leitfaden für den fachunterricht
 an uhrmacher fachschulen und fachklassen sowie zum selbstunterricht
 Berlin: Deutsche Uhrmacher-Zeitung, 1930 (1925), 21 x 16 cm, 8 parts of 623 pp, 317 ill.
 Technical, theory (German).
 See also Tardy.
 Manual for professional instruction in horological schools and classes, and for self instruction.
 Published in parts of which some are:
 Part 2, 72 pp, 40 ill; trains and depthing.
 Part 4, 92 pp, 34 ill; impulse and power transmission.
 Part 6, 70 pp, 14 ill; watch escapements, balance wheels and balance springs.
The other two books by Krumm, listed above, may be parts of this work.
- R1599 Kuehl**
Konstruktions systematik
 bei armbanduhren mit datum
 1978, 21 x 15 cm, 30 pp, 45 ill.
 Technical (German).
 Design of wristwatches with date displays.
- R1600 Kuehl, WH**
Führer durch die gesamte uhrmacher literatur
 Berlin:, 1892, 8vo, 30 pp.
 Bibliography (German).
 Catalogue of books with prices.
- R1601 Kuhn, A**
Die springziffer taschenuhren
 Switzerland: Editions Simonin, 2010, 21 x 15 cm, 124 pp, ill.
 History, makers (German).
 History of the jump-hour pocket watch.

[1st edition, review by Fortunat Mueller-Maerki] Not all pocket watch collectors may know that in the 1870s there was a short fad in Swiss pocket watches: In 1884 the International Watch Company in Schaffhausen acquired the patent which the Salzburg (Austria) watchmaker Joseph Pallweber got in 1882 and 1883 for a jumping digital hour display on a watch dial. They launched such a watch and, over the next few years, over 20,000 such watches were sold by IWC. Of course other brands jumped on the bandwagon as well. That little niche product lasted less than 10 years.

For the first time this little corner of pocket watch history has now been documented in print. The author has identified 36 different movements by 11 different manufacturers; IWC (7 models), Cortebert (6), Gedeon Thommen (4), Aeby & Landry (6), A. Kaiser (3), Durrstein/A.Lange(3), Gurzelen/Louis Brand (2), Wittnauer (2) Minerva (1), Favorite (1) and SADA (1). Each model is illustrated with large clear color images (movement, dial, case) and described on one to two pages. For the majority of models there are movement diagrams and/or reproduction of patent drawings as well. Short illustrated histories of the involved brands round out this publication.

If you own or are interested in this type of pocket watch this is a must have book, even if the German text may be challenging to most American readers, but much of the material is presented in images, so it is worthwhile to get even if you don't read the language. The publisher and author are to be commended for documenting a little known and short lived chapter of horological history with a thorough publication with superb illustrations.

R1602 Kuhn, E**Grundriss vom aufbau der uhr**

Ulm: Wilhelm Kempter, 1949, 21 x 15 cm, 264 pp, 152 ill.

Repair, technical (German).

Outline for timepiece making.

A technical manual for apprentices.

R1603 Kummer, H-J; Dittrich, H**Ludwig Strasser**

ein uhrenfachmann aus Glashütte

Munich: Callwey, 1994, 4to, 193 pp, 175 ill, 13 plates.

History, biography (German).

“Ludwig Strasser served his watchmaker’s apprenticeship in Würzburg. After a brief period in Leipzig with the tower clock manufacturers Zachariä, he returned to Glashütte. In 1875, Ludwig Strasser and Gustav Rohde jointly founded the company “Strasser & Rohde” in Glashütte. Strasser & Rohde produced precision pendulum clocks in the most varied designs, including inverse construction (anchor from below on the escape wheel). Their product range also included marine chronometers and pocket watches.

In 1885, Strasser became the director of the German Watchmaking School in Glashütte, where he had already been teaching theory for a number of years.”

R1604 Kunzi, CA**Doxa 1889-2009**

2009, 24 x 17 cm, 120 pp, ill.

History (English).

The exciting history of Doxa, founded in 1889, 120 years ago, in Le Locle by Georges Ducommun. The book is intended for both the historian and the passionate watch collector.”

R1605 Kurz, O**European clocks and watches in the near east**

London: Warburg Institute, 1975, 26.0 x 17.0 cm, 109 pp, 38 ill, loose errata sheet.

History (English).

Volume 34 in the series “Studies of the Warburg Institute”.

A history of the trade of horological pieces between Turkey and Europe.

An “Introductory chapter” and four numbered chapters: The age of Islamic supremacy (19 pages); The sixteenth century (34 pages); The seventeenth century (11 pages); The eighteenth century (24 pages); The nineteenth century (15 pages).

[1st edition, good] *The Warburg Institute of the University of London is a post-graduate school and exists principally to further the study of the classical tradition, that is of those elements of European thought, literature, art and institutions which derive from the ancient world. “European clocks and watches in the near east” expresses research done in this context, and the book is written for people with the appropriate skills and knowledge. This is obvious from the footnotes and the quotations in Latin and French which have not been translated, fluency with languages being a necessary prerequisite for studying early manuscripts.*

Despite this, the lay person can read the book and make sense of most of it because it is basically descriptive.

The introductory chapter explains the evidence for trade in sundials, clepsydra and astrolabes from Turkey to Europe. Then in the sixteenth century need to curry favour with Sultans and other eastern rulers led to the trade being reversed and it became necessary for horological gifts to be presented at every audience; and hence a tendency to large, opulent clocks rather than watches. Chapter I, which covers this period, is to a large extent a catalogue of manuscript references to such clocks, the descriptions being limited to the cases and the automata.

Chapter II, covering the seventeenth century, includes the establishment of the watchmakers enclave in

Galata (a part of Istanbul) and the development of local watchmaking as well as the import of watches from the west, followed by expansion of gift giving to Persia and India.

Chapter III, the eighteenth century, begins with further information on sundials, discusses the roles of Rousseau and Voltaire, and then examines the trade in English watches, clocks and musical clocks.

Finally, the chapter on the nineteenth century looks at Swiss automata watches, Breguet, cases with enamel landscapes, Edward Prior, and the first public clock in Turkey.

At the end of the book, Kurz writes "European clocks and watches in the near east is a chapter in the history of Western technology and of Eastern mental attitudes". However, the book does not discuss the watches and clocks in detail and, unfortunately, the plates are not really adequate. In addition, I did not gain any understanding of the Eastern mentality, the text describing rather than interpreting. However, it does usefully document information on the trade with Turkey.

R1606 Kurz, P**200 Jahre schwenninger uhren**

1765 - 1965

Schwenningen: Stadtverwaltung, 1965, 22 x 15 cm, 334 pp, 160 ill.

Description, history, makers (German).

R1607 Kurzweil, A**A case of curiosities****Das geheimnis der erfinders**

Germany: Heyne Verlag (New York: Ballantine) (New York: Harcourt Brace Jovanovich), 1995 (1992), 24.0 x 16.0 cm, 358pp.

Novel (English, German).

This book is a biography of Claude Page, starting in 1780 when he had a finger amputated at age 10. Except for a postscript, the story concludes with the French revolution and the destruction of an automaton which was the culmination of his life's work until then. There are passing references to watchmaking and watchmakers.

[1st edition, very good] The first time I tried to read this I only managed a few chapters before I lost interest. The second time I picked up this book I found very interesting, if initially a little ponderous. Which shows that the reader's attitude and mood is as important as the author's writing, both initial opinions being unfair.

Like his second novel, "The grand complication", this is a very well written and engrossing story. Kurzweil successfully takes us into the world of 18th century natural philosophy, when science and its subdivision into distinct branches was just appearing from its undifferentiated and foggy beginnings in astrology, religion and dogma. A time when fascination with the concept of a celestial clockmaker spawned automata and perpetual motion.

But unlike "The grand complication" this story keeps near enough to reality to leave the reader much more satisfied and the eventual outcome is reasonable and in keeping with the tenor of the whole.

I did find the death of Madame Dubois unconvincing (I saw the truth long before Claude did) and the machinery in Claude's attic home was a bit too fanciful. But then I sensed some gentle humour in Kurzweil's writing which gave credibility to the occasional exaggeration and the wonderful scene where the automaton is destroyed. So the book gave me a warm feeling of satisfaction.

R1608 Kurzweil, A**The grand complication**

England: Random House (New York: Hyperion) (New York: Harcourt Brace), 2003 (2001), 24.0 x 17.0 cm, 360 pp.

Novel (English).

A novel about a modern day search for Breguet's Marie Antoinette watch.

[1st edition, fair] A reviewer often has the unpleasant task of criticising something he cannot do himself. I have never written a novel and so the task is difficult for me because, irrespective of my opinions, I have to admire and respect an ability I don't possess. Kurzweil is a good writer, kept me involved and interested (I read this book in one day) and has constructed a feasible plot. But I don't think I will want to read it again.

This is a detective story. A young librarian, Alexander Short, is beguiled into a search for the missing Marie Antoinette watch and most of the book centres on his research and discoveries. For Kurzweil to be credible the watch cannot be found and consequently something else has to replace the usual climactic resolution. This is achieved through a second theme, the detection and discovery that Short's motivator and benefactor, Jesson, is using him as a pawn; the overturning of Jesson's plans provides the successful resolution which is not possible for the main theme.

As the story is narrated by Short, the focus is on bibliographic research, libraries and classification systems. In this respect the plot is both credible and very interesting. But the final resolution fails because it is totally fanciful and unrealistic. Fundamental to the story is that the two main protagonists, and a third who is bought in for the resolution, are all collectors in the mould of the real people described by Muensterberger in "Collecting an unruly passion". Such people cannot destroy the objects of their passion, and the fanciful spy-like dance and theatrical axing of the watch near the end would be treated by the astute Jesson as a farce and hence the ending fails.

The other problem I had with the book was that, although well written, I gained little insight into the characters. For me they were inadequately sketched, their eccentricities detailed but without any sense of

completeness or consistency. To some extent this situation was forced on me by the author, who has Short tell us that he is not an emotional person and he relates events as he sees them. Although this explains and justifies the inadequate characterisation, it leaves me with no understanding of what motivated the people. So it becomes just a gripping intellectual exercise with an unsatisfactory ending.

I have no idea what motivated Kurzweil, nor why the book has a strict tempo of 360 pages containing 60 chapters. But it makes more sense as a film script than a novel, and I suspect it would make better viewing than reading.

R1609 Kutzbach, K

Grundlagen und neuere fortschritte des zahnradherzeugung

nebst 2 anhangen, begriffe und bezeichnungen für stirn und kegelrader

Berlin: VDI, 1925, 25.0 x 17.5 cm, 70 pp, 106 ill.

Technical (German).

Fundamentals and new advances in gear making, with two appendixes: the form and design of crown and bevel gears.

R1610 Kyncl, Radko

Illustriertes lexikon der uhren

Eggolsheim: Dörfler im Nebel-Verlag, 2004, 24.5 x 17 cm, 256 pp, 300 ill.

Dictionary (German).

R1611 Kyncl, Radko

Montres et horloges

Paris: Editions Grund, 2001, 8vo, 258 pp, 316 col ill.

(French).

Illustrated encyclopedia including a glossary, index and bibliography.

R1612 Labarte, J

Description des objets d'art qui composent la collection Debruge Duménil

précédée d'une introduction historique

Paris: Librairie archéologique de Victor Didron, 1847, 24 x 16 cm, x, 858 pp, 5 plates.

Collection (French).

It is available as a Google Book PDF file.

Pages 725-734 are on watches and clocks.

[mediocre] Nine clocks and twenty-one watches are briefly described. Only one, watch in a crucifix case, is illustrated. It is uninteresting unless someone wants to know about the specific watches which were in the collection.

R1613 Labarte, J

Handbook of the arts of the middle ages

London: John Murray, 1855, 21.5 x 13.5 cm, 443 pp, 204 ill.

History (English).

The 1855 English edition is a single volume of 443 pages and is available as a Google Book PDF file.

There is a modern "print on demand" book which is probably this book.

"The book's text is based on the scholarly introduction written by the French art historian Jules Labarte (1797-1880) for the catalogue published in 1847 of the Debruge-Dumenil collection of objets d'art of the mediaeval and renaissance periods (but in this English-language version omitting any specific references to items in that collection), while the illustrations incorporate those used for the Debruge-Dumenil catalogue but are supplemented by additional illustrative material from English sources, most notably the published catalogues of the Londesborough and Bernal collections. Additionally, the translator adds editorial notes of her own for the benefit of her English readership, so the volume is not simply a literal translation of Labarte's original text."

[mediocre] Chapter 12 "Clockwork" has 6 pages with woodcuts of two clocks and two watches; a crucifix and an octagonal watch. It has a brief and inadequate history which, in the light of later knowledge, is wrong in some respects. The information is uninspiring.

The book should be described as poor in terms of the watch information.

R1614 Labarte, J

Histoire des arts industriels

au moyen age et a l'époque de la renaissance

Paris: Vve. A. Morel, 1872 to 1875, 4to, 3 vols, ill (4 vols and 2 albums of 148 plates).

History (French).

General history with a section on horology.

Booksellers are vague but there appear to be two different editions:

1864-1866: 4 vols and 2 albums of 148 plates.

1872-1875: 3 vols, ill.

There is a modern "print on demand" book which is probably "Handbook of the arts of the middle ages".

R1615 Labey

Les difficultés vaincues

nouveau traite d'horlogerie pratique contenant le repassage des montres a roue de rencontre, le résumé des causes d'arrêt dans ces montres, le repassage des montres Lépine et les principes pour l'exécution du cylindre

Rouen: Peron, 1851, 21.0 x 13.0 cm, 61 pp.

Repair (French).

Difficulties overcome, new practical treatise including the finishing of verge watches, summary of the causes of stoppage with these watches, the finishing of Lepine watches and the principles for making a cylinder.

R1616 Lacroix, Paul; Armstrong, W

The arts in the middle ages and the renaissance

Les arts au moyen age et l'époque de la renaissance

London: Virtue & Co, London: Bickers & Son (Paris: Libraire de Firmin Didot Frères), ca 1900 (1871), 4to, 548 pp, 420 ill, 19 plates.

History, illustration (French).

The English revised edition is by Armstrong.

A survey of the arts in the middle ages and the Renaissance which includes some 25 pages on clocks and watches.

Included are sections on textiles, arms & armour, horology, playing cards, stained glass, engraving, sculpture, manuscripts, miniatures, bookbinding, Medieval & Renaissance music & instruments. The other volumes address the costumes, social life, cookery, courtly life, military orders, and much more. Of particular interest is the substantial section in the Sciences et Lettres volume devoted to alchemy, the occult arts, and related subjects.

R1617 Ladiesse, A

Traite pratique de l'échappement a ancre pour montres

suivi de quelques considérations sur le réglage, la façon de conserver l'heure exacte

Toulon: Moulton, 1911, 21.5 x 13.5 cm, 63 pp, ill.

Repair, technical (French).

Practical treatise on the lever escapement for watches, followed by some considerations for adjustment, the way of bringing to exact time.

R1618 Lalande, Jerome F de

A treatise on pitchings

Traite des engrenages

1755.

Technical, theory (English, French).

Published in Lepaute "Traite d'horlogerie" and in translation in Nelthropp "A treatise on watch-work, past and present".

R1619 Lalande, Jerome F de

Jerome Lalande, diary of a trip to England 1763

Journal d'un voyage en angleterre 1763

Australia: Richard Watkins (Paris: Societe d'Ingenierie et de Microfilmage) (Oxford England: The Voltaire Foundation), 2002 (1763), 21.0 x 29.5 cm (24.0 x 16.5 cm), 174 pp, 7 ill (35 mm microfilm with 86 images) (116 pp, 4 plates).

History (French, English).

The original of 1763 is a hand-written manuscript (in the Bibliotheque Mazarine, Paris, No. 4345).

It is available on microfilm from the Societe d'Ingenierie et de Microfilmage in Paris.

The journal was transcribed (with extensive notes) by Monod-Cassidy in 1980.

The 2002 translation by Richard Watkins is distributed as a pdf computer file.

The 1980 transcript has a preface and introduction by Monod-Cassidy followed by the transcript of the journal (92 pages with extensive footnotes) and index. The 4 plates show 8 pages of the manuscript which contain diagrams.

The English translation contains two versions of the translation. The first (54 pages) is based on Monod-Cassidy's transcript and includes her footnotes. This re-arranges the text to produce a readable document and omits a few parts of the diary.

The second (92 pages) has the same order and pagination as the original manuscript and includes all the original text.

The two translations are followed by a postscript containing four appendices. The first is a translation of Monod-Cassidy's article "An astronomer-philosopher, Jerome Lalande" (which is a biography of Lalande) which is followed by a critique by Watkins.

The third appendix is an analysis of the diary's structure which relates to the discussion of Lalande in Andrewes "The quest for longitude". Finally there is a bibliography of Lalande's publications.

[English translation, 2002, fair?] Jerome Le Francois Lalande was a French astronomer who visited England twice, in 1763 and 1788. He was in London in 1763 at the same time as Berthoud and Camus, who went there to examine Harrison's timekeepers on behalf of the French government, and he visited John Ellicott, John Harrison and many other notable people.

The diary consists of daily chronological entries from the 4th of March, when he left Paris, to the 17th of June, when he returned. These entries are followed by notes which include anecdotes, addresses, lists of books, and information about costs, weights and measures.

Lalande's journal is not very useful and only interesting in parts. Many diary entries are too terse, giving mere facts of dates and places without any helpful detail. They lack colour and simply report things seen and heard without Lalande expressing his own opinions. These include the entries relating to his visits to Harrison, which tell us nothing of any value. There is some detail on other technical topics (such as

experiments in electricity and magnetism and details of marine chairs), but they are rather vague and far less informative than works like Rees "The cyclopaedia or universal dictionary of arts, sciences, and literature".

The additional notes, particularly a few of the anecdotes and the information about the cost of living, are more interesting.

Monod-Cassidy and some others believe Lalande was sent to England with Berthoud and Camus to examine Harrison's timekeepers. If so, it is a shame the diary adds so little to our knowledge of the events at that time. However, I disagree with this suggestion and I believe he was little more than a tourist on a business-man's holiday. My postscript to the English translation discusses some aspects of this point. Consequently, I found the diary interesting to read and quite enjoyable, but I think it is simply a personal account and the omission of colour and details often makes it rather dull.

See also Watkins "Berthoud, Harrison and Lalande, a near myth", NAWCC Bulletin, No. 359, December 2005, pp 733-743; also available from my web site).

R1620 Lallier, R**La montre de monsieur de Morny**

1942, 32 pp, 7 ill.

(French).

Tardy notes a limited edition of 100 copies.

A pamphlet, mentioned in Antiquorum "Art of Breguet", which discusses a Breguet 1841 keyless watch.

R1621 Lambelet, C; Coen, L**The world of Vacheron Constantin****L'univers de Vacheron Constantin Genève****Die welt von Vacheron Constantin Genf****El universo de Vacheron Constantin Geneva**

Genève: Scriptor, 1993 (1992), 33 x 24 cm, 415 pp, 1956 ill, 134 plates, slip case.

Description, history (English, French, German, Spanish).

Separate language editions.

Nine chapters:

The world of Vacheron Constantin in the age of enlightenment, history, the watchmaker, science and technology (35 pages).

The 18th century, the mirrors and the masks (29 pages).

The world of Vacheron Constantin in the 19th century (32 pages).

The 19th century, fading enlightenment (36 pages).

The world of Vacheron Constantin in the 20th century, history, the watchmaker, science and technology (29 pages).

The 20th century, duels of the mind (29 pages).

The Vacheron Constantin museum (59 pages).

Portfolio of the 20th and 21st centuries (16 pages).

The archives of Vacheron Constantin (142 pages).

[poor] *The publisher's opinion is: "Extensive history with technical and descriptive information of Vacheron Constantin watches. This lively and interesting book, beautifully and lavishly illustrated, retraces the history of the Vacheron Constantin firm from its beginnings in 1755 to the present day, drawing parallels between historic and cultural events and the company's development. A final section, taken from the Vacheron Constantin archives, illustrates several hundred watch models produced by the firm over the course of its history as well as watch movements and the dates they were in use. Specialists, lovers of fine horology, and the general public alike will find this a fascinating, useful, and enriching book."*

I think I must have read a different book!

This book is a jolly good story which provides a brief general and social history of the times, listing events that have nothing to do with watch making, but which provide colour and background. Unfortunately, there is almost nothing about watches and the book is more an historical novel.

There is a little bit of history relating to Vacheron Constantin, but it isn't worth reading. This is partly explained on page 74 where the authors write, referring to the 19th century, "there is not much news from the Vacherons at that time"! Anyway, it seems the writers did not let facts get in the way. So on page 10, Vacheron's masterpiece (to become a master watchmaker) is described as a repeater which "still exists". Unfortunately the accompanying photograph is not a repeater!

The section "The Vacheron Constantin museum" provides colour photographs of watches in seemingly random order, although pocket watches do come before wrist watches. But there is simply no information at all, other than dates.

The following photographic essays are no better, some having basic information, but most having none at all.

I presume the authors know nothing about watches and watchmaking, so they wrote a book which is, quite frankly, the most irrelevant book I have ever read. Perhaps Lambelet and Coen are historians? I don't know and cannot judge the quality of their writing. But then I am not interested anyway.

If you want to learn general history, then buy a history book by a reputable historian. If you want to learn about Vacheron Constantin, then buy any book so long as it is not this one.

R1622 Lambert, D**Les montres**

les maîtres du temps depuis plus de 500 ans
Haute Savoie: Neva, 2009 (2007), 21 x 19 cm, 104 pp, ill.
Illustration (French).

The first instruments for measuring time; From clock to watch; Evolution of the watch industry; Ambiances; Technical expertise and complexity, the golden hands of watchmakers; The watch, timeless jewel; Diversity of haute horlogerie makers; Glossary; References.

"The content is a bit light, just 2 hours of reading. Fun for anyone who wants to quickly learn some basics of watchmaking: brands, legendary models, crafts ..."

R1623 Lambert, S**Fabrique de machines système américaine**

Switzerland: S. Lambert, ca 1900, 13.5 x 19.5 cm, 3 pp, 74 plates.
Tools, catalogue, watch making (French).

American system machines.

Illustration of the factory followed by 73 plates of machines for watch manufacture. With a table of contents.

[1st edition, fair] I must admit I bought this book under the misapprehension that it provided information about American watchmaking machinery, only to discover that it is just a sales catalogue. The illustrations of the machines are accompanied by short remarks on weight and provided tools. There is little useful information except for people researching Swiss machinery.

R1624 Lancashire Watch Co**Catalogue of the whole of the valuable watch and clockmaker's machine tools**

engineer's machine tools, motive power and fittings
1911, 136 pp.

Catalogue (English).

Catalogue of the nine day sale of the Lancashire Watch Company works in 1911, including 2651 lots.

R1625 Lancashire Watch Co**Lancashire Watch Company, Prescot**

its rise and progress
England: Culshaw & Co., 1905 (1890), 25.5 x 19.5 cm, 159 pp, 50 plates.
History (English).

Said to be published in 1890, 1893 and 1905 but only the 1893 edition has been seen. From the contents of this, all 3 editions might be significantly different.

In four parts:

History of the Lancashire Watch Company (39 pages): Prescot, the home of the Lancashire watch industry; Watchmaking in Prescot in bygone days; The development of the watch industry at Prescot; Establishment of the Lancashire Watch Co, Limited; and Description of the Lancashire Watch factory. Foundation stone laying 1889 (18 pages): Foundation stone laying; The banquet; Workpeople's dinner. The opening ceremony 1890 (19 pages).

The three days' festival 1893 (83 pages): Important presentations; The directors "at home"; List of invitations; Banquet at the factory; The ladies' day at the factory; and Presentation to Mr. Thos P Hewitt.

[1893 printing, fair] The Lancashire Watch Company was established at Prescot in 1889 and lasted until 1910 when it failed. It started by buying up most of the workshops in Prescot. These workshops were based on the traditional cottage system and supplied raw movements to watchmakers throughout England. Thus the Lancashire Watch Company took control of much of the movement manufacture in England. At the same time, the company began buying and making machinery to produce new watches to its own design, the first complete watch being finished about the end of 1892.

Histories of the company can be found in Cutmore "Watches 1850 to 1980" and Smith & Abbott "The Lancashire Watch Company, 1889-1910".

This book has been described as puff with little or no direct horological content. Although basically true, there is some (but not enough) interesting information.

The first part provides a good, descriptive history of Prescot and the establishment of the Lancashire Watch Company. It includes a very good description of the cottage system and of the problems with Swiss imports which led to the Merchandise Marks Act. Although only 39 pages, this part is worth reading.

The remainder of the book consists of transcripts of speeches given at three events in 1889, 1890 and 1893. Naturally they are congratulatory and optimistic, an optimism that was not justified as the company failed in 1910 after only 20 years. On the whole these speeches are of not much interest, but they do contain occasional remarks which are worth reading if one is patient enough to wade through them.

The third event in 1893 marked the production of the first complete watch, which was presented to Lord Derby. That is, it took about 3 years to get mechanised production of the new watch under way. In the mean time, the company had made 300,000 movements. Although not stated clearly, these would be the products of the businesses which had been purchased, and so made using traditional handcraft methods; in which case the figure of 300,000 is probably a gross overstatement. Unfortunately there are endless pages of speeches containing almost no useful information.

There are 50 plates, many of which are portraits of speakers, shareholders and managers. However there

are 23 interesting plates: 5 plates of Prescott and old watchmakers' shops; portraits of John Wycherley (the only one I have seen), Joseph Hewitt, G.M Hewitt, C.F Hewitt, but unfortunately not one of T.P. Hewitt; and 14 views of the factory including the tool room, engine house, joiners' shop, examination room, pinion room (and plates of pinion cutting and polishing machines), case department, and the flat plate department.

As better histories are readily available, there is no point reading this book unless you are specifically researching the Lancashire Watch Company.

[Remark] The book is probably more interesting for the social attitudes that appear. For example, one speaker asserted that "the classes are not against the masses" and ladies could be friendly with workers. However, 6 pages are taken up with a banquet for the lords and ladies, but the workers' dinner is dismissed in a third of a page! It seems lords are 18 times more important than watchmakers.

I cannot resist repeating a remark made about Prescott's vicar, Harry Mitchell, who was one of the prime movers in getting the watch company set up: "At the when (Rev Mitchell) went to London and took with him the great number of stalwart maidens of this district, who in consequence of some legislative proposals, made for the purpose of doing away with a large amount of important labour; when he went up with these stalwart maidens, who took the House of Commons by surprise by their beauty and also by their wonderful physique, he convinced the House of Commons by ocular demonstration that they were not women who were degraded and depraved."

R1626 Landes, David S

Revolution in time

L'heure qu'il est

clocks and the making of the modern world

les horloges, la mesure du temps et la formation du monde moderne

London: Viking and USA: Harvard University Press (New York: Barnes & Noble) (Paris: Editions Gallimard) (USA: Belknap Press Harvard University), 2000 (1983), 24.0 x 16.0 cm, 518 pp, 9 ill, 40 b/w plates, 11 tables (482 pp, 9 ill, 8 colour plates, 32 b/w plates, 11 tables).

History (English, French).

The first edition was reprinted in 1983, 1985 and 1998. The revised second edition was printed in 2000. The French revised translation (628 pp, ill) was published in 1987.

A cultural and economic history of timekeeping in three parts.

Part 1 (Finding time, 68 pages) examines the origin of mechanical clocks and watches.

Part 2 (Keeping time, 106 pages) covers the development of marine chronometers.

Part 3 (Making time, 170 pages) examines the growth and decay of watchmaking industries in England, France, Switzerland and America.

There are 2 appendixes (Escapements, 19 pages, and Tables, 10 pages) followed by end notes (77 pages) and a 14 page index.

[1st edition, excellent] This is an extremely well written, common sense book. Landes bases his analysis on cultural and economic needs, using historical knowledge of social organisation to justify his conclusions, rather than dubious interpretations of specific (and often scant) horological evidence. It is a consistent, riveting account of the circumstances in which horological development took place. The section on marine chronometers is, I feel, more accessible and as good as Andrewes "Quest for longitude". Cipolla "Clocks and culture 1300-1700" wrote "the clock was invented ... to satisfy the human need of measuring time". But Cipolla never seems to examine who needed to measure time and what form of time measurement they required. He skirts this central issue and so his book skirts the whole subject. In contrast, Landes strongly argues this point; whether we agree with his analysis or not we cannot avoid being stimulated and challenged by his reasoning.

[Remark] At the end Landes says "George Daniels has told me that he has invented an escapement that will revive the fortunes and reputation of the mechanical watch". Written too soon after the advent of quartz watches and before the Swatch, Landes appears only indirectly aware of the idea of controlled, planned "limited editions" and his "its hard to love a quartz timepiece" has been partly overthrown. But he does indicate the probable futility of Daniel's position. There will always be a small number of people who will want expensive mechanical watches as collectors' items or status symbols, but the Omega watches with Daniel's escapement cost about US\$6000 in 1999 and I can't see a huge demand for them. (The demand is, however, enough to keep a vibrant if much smaller industry going in Switzerland, producing jewellery and high class timepieces for the many people how are more interested in appearance than accuracy. The sudden and almost total termination of 700 years of mechanical watch development will not be reversed; just as the vinyl record has been totally replaced by the CD.

[2nd edition] The second edition is the same text with the addition of about 68 new paragraphs, 66 new end notes and 8 additional pages on quartz watches. There are also some corrections. It has been reset and the colour illustrations in the first edition have unfortunately been replaced by the same illustrations in black and white.

The book is fundamentally unchanged and the alterations mainly reinforce the sound conceptual framework and respect for historical credibility that marked the first edition. On reading it again I find I am a bit more critical and there are a number of places where I feel Landes argues weakly and unsatisfactorily, but these are generally minor points. So I feel the development in chapter 14 (The ups and downs of international competition) is unclear and a bit misleading, confusing the exclusive work of masters such as Breguet with volume production of ordinary timepieces. But these parts should stimulate

the reader and perhaps promote debate.

There are a few errors. For example, he questions the date of 1744 for Blakey's memoir on pinion wire, but the date is almost certainly correct and this memoir was probably by William Blakey's father. Likewise his remarks on the role of Lalande are unsatisfactory and he repeats the myth that EJ Dent built "Big Ben".

This book remains, for me, one of the best surveys of horology. This is in part because of the stimulating and challenging text, and in part because it gathers together a wealth of source material and presents it coherently.

[Remark] *The catastrophic error by Christie's auction house in dating a marine chronometer, and its consequences, are detailed on pages 180-183 (1st edition) and pages 196-199 (2nd edition). Photographs of the chronometer appear in Bertele "Marine and pocket chronometers".*

R1627 Landrock, H

Alte uhren

Leipzig: Prisma Verlag, 1978 (1971), 21 x 15 cm, 40 pp, 32 plates.

Collection, description (German).

Three printings in 1971, 1974 and 1978.

Description of Landrock's collection of wall clocks, table clocks and pocket watches dating from 1470 to 1880.

R1628 Landrock, H

Alte uhren, neu entdeckt

Berlin: VEB Verlag Technik, 1982, 22 x 20 cm, 160 pp, 67 ill.

Collection, description (German).

The history, mechanisms and music of timepieces from the Landrock collection. Enclosed with the book is a 45 rpm record of the music (useful for those who still have a turntable).

Only clocks?

R1629 Landry, CF

Jura, continent secret

La Chaux-de-Fonds: Haefeli & Co, 1957, 4to, 82 pp, 24 ill.

History (French).

Limited edition of 1000 copies.

Published for the 75th anniversary of Montres Zodiac, Le Locle.

Photographs by F. Perret.

R1630 Lane, J

Coventry apprentices and their masters

1781-1806

Stratford-upon-Avon: The Dugdale Society, 1983, folio, 144 pp.

History, makers (English).

Publications of the Dugdale Society, Volume xxxiii.

Listing of apprentices of all trades, including watch makers.

R1631 Lang, GR; Meis, R

Chronograph

Chronographen armbanduhren

Cronografi da polso

wristwatches to stop time

USA: Schiffer; Munich: Callwey, 1997 (1992), 31.0 x 24.0 cm, 246 pp, 2 pp ads, 2 pp price guide, 97 figs, 570 ill (272 pp, 598 ill, 103 fig).

Description, history, identification, illustration (English, German, Italian).

Separate German, English and Italian editions.

Description and identification of chronographs with a history of the technical development of chronograph mechanisms.

In 8 sections: History (1 page), The precision of chronographs (7 pages), The face of the chronograph (14 pages), The technology of the chronograph (30 pages), The chronograph case (4 pages), An example of repair instructions (9 pages), Illustrations organised by functions (144 pages), Calibre directory (24 pages). There is an index.

[1st edition, very good?] *The second section on precision provides a very technical and mathematical summary of temperature and amplitude compensation. This is a bit peculiar because it relates to all high precision watches and not just chronographs, and so its inclusion in this book is uncomfortable. It is also out-of-place because the rest of the book is purely descriptive with the focus on appearance rather than theory; the general reader and collector would be stunned momentarily before he or she skipped these 7 pages to read the rest. Despite having a mathematical background, my eyes glazed over as I struggled with the incorrect English and occasional errors, and tried to make sense of a too terse description (for example, I have no idea what "movement of direction" means). It is a fascinating topic, but a less academic approach would have helped the reader. This was translated by the same person who translated Bertele "Marine and pocket chronometers" and Horlbeck "The alarm wristwatch", and my remarks on those books apply here. Fortunately the contents of this chapter are irrelevant to the rest of the book.*

Section 3 on dials describes the different indications for various functions such as telemeter, tachometer and pulse. It includes descriptions of other dial indications which do not relate to the chronograph

mechanism, such as time zones, and directional bearing (compass). These are presumably included to assist with the later illustrations.

Section 4 describes and explains the action of chronograph mechanisms, and is really the core chapter of the book. The explanation of actions is at times hard to follow, partly because of the use of patent drawings, but otherwise it is good. The following photographic essay contains excellent illustrations including some superb movement views. However, these photographs should have been cross-referenced to the appropriate descriptions and patents.

Finally, the calibre list with its clear black-and-white illustrations provides a very good summary and identification guide. But again it is not cross-referenced to the photographs and at least one caption is wrong. This lack of cross-referencing supports my feeling that the book is primarily a collection of nice photographs and the rest is "intellectual" padding. For the serious person, Lecoultré "A guide to complicated watches" is very useful and Humbert "The chronograph, its mechanism and repair" is better. But this is a book worth reading.

[Remark] The section on precision illustrates the problem of presenting abstract research in a specific context. It is clear that the work of Guillaume and others had great importance outside horology, which was a side issue. The discussion of graphs Z1 and Z2 (covering temperature ranges from -200 to 1000 degrees), the theoretical study of magnetism and Curie temperatures (inadequately described) lead to solutions of general problems which may or may not apply to horology and wrist watches.

For example, Lang and Meis do not mention the fact that the measurement of time using chronograph wrist watches covers short periods (usually less than an hour and certainly less than twelve hours) and throughout this time the mechanism is in a fairly temperature-stable environment on a wrist. The problems posed in these circumstances are quite different from the problems caused by running a going train over several months in a temperature-unstable environment. De Carle is one of the few people to mention this, noting that the adjustment of automatic wrist watches, where mainspring tension and temperature are almost constant, is quite different to adjusting a marine chronometer; it would be sensible to adjust a wrist watch to blood temperature rather than the two hot/cold points used for other chronometers. Of course, over longer periods the going train of a wrist chronograph experiences considerable temperature variation if it is taken off at times, and the discussion of precision then becomes relevant.

R1632 Langdon, JE

Clock and watchmakers and allied workers in Canada

1700 to 1900

Toronto: Anson-Cartwright, 1976 (1976), 22.5 x 15.0 cm, 195 pp, no ill.

Makers (English).

Four pages of text (preface and introduction) followed by a 180 page list of makers and a 15 page geographical index. Each entry gives name, occupation, location, dates and a key to sources of information.

[1st edition, good] Simply a list of names with no biographical or other information.

R1633 Lange & Söhne

Assembly videos

Germany: Lange & Söhne, ca 2010, 4 WVM videos.

Watch making (Silent).

These videos could be downloaded from <http://www.alange-soehne.com/cms/en/contact-service/downloads.html>

The assembly of the three-quarter plate (8 minutes).

The assembly of the escapement (6 minutes).

The assembly of the winding mechanism (8 minutes).

The assembly of the going train (3 minutes).

[good] Each video shows the assembly of part of a Lange & Söhne movement.

Unfortunately the camera is too far away and it is difficult to see the parts and how they are manipulated. But despite this the videos are worth watching.

[Remark] Downloadable files from the internet can be ephemeral; there today and gone tomorrow. Hopefully Lange & Söhne will keep these videos on their web site for a long time.

R1634 Lange & Söhne

Datograph jigsaw puzzle

Germany: Lange & Sohne, nd, 99 piece jigsaw puzzle in folder.

Miscellany (English).

R1635 Lange & Söhne

Die zeitmacher

Germany: Lange & Sohne, 1998, 90 mins, VHS video tape.

(German).

R1636 Lange & Söhne

History of A. Lange & Söhne

Glashütte, ca 1910, 8vo, 55 pp, 39 ill.

History (German).

Mentioned in Gardner "Catalogue of the Torrens collection", but no title given.

History of the company from 1845 to 1910 with illustrations of products and machinery.

R1637 Lange & Söhne**Technical animations**

ca 2010, 6 MOV files.

Technical (Silent).

These animations could be downloaded from <http://www.alange-soehne.com/cms/en/contact-service/downloads.html>

Six animations, each less than a minute:

Outsize date; Zero reset mechanism; Flyback mechanism; Exactly jumping minute counter; Perpetual calendar; and Moon phase display.

[very good] These animations need to be watched several times in order to appreciate the mechanisms. However, if effort they provide a fascinating insight into Lange & Söhne complications.

[Remark] Downloadable files from the internet can be ephemeral; there today and gone tomorrow. Hopefully Lange & Söhne will keep these animations on their web site for a long time.

R1638 Lange, Walter**The revival of time, memoirs**

Berlin: Econ, 2005, 22.0 x 14.0 cm, 174pp, 16 plates.

Biography, history (English, German).

Three sections: A new beginning in the "wild" East (42 pages); Lange in Saxony - a tradition (80 pages); and In the West (38 pages). The is a 6 page epilogue.

[1st edition, good] This is the autobiography of Walter Lange. He is a descendant of the original Walter Lange and was responsible for the re-creation of the A. Lange & Söhne company which had been closed down by the Russians after World War II.

The first section explains how the new company, Lange Uhren GmbH, was set up in 1990 after the reunification of Germany. The rest of the book is Walter Lange's autobiography. Because he was trained as a watchmaker and was intimately involved with the family business, the book also provides a history of the company.

This is an enjoyable book of marginal relevance to horology, although I expect collectors of Lange watches will find it very desirable. It is written so that anyone could read it and enjoy it, but the consequence is that there is no technical or financial information, and it is purely descriptive.

[Remark] I discovered the existence of this book while browsing the Ebay internet auction site. As it sounded interesting, I wrote to the Lange Watch Company asking about it and where I could get it. A week later a copy arrived by post, sent "with complements". Having read it I was stunned to see the copy on Ebay sell for over \$228. Even if Lange had asked me to buy the book, or if I had purchased it from a book store, I would not expect to pay more than \$50. Shortly after that first example of madness other copies appeared on Ebay and the price declined to \$74, then \$48 and later to \$39, leaving the initial buyer and seller sad and elated respectively!

I could cite several other examples of the unexpected behaviour of auction bidders, although most are, fortunately, less outstanding than this one. Also I am glad that the majority of Ebay customers never think to write to watch companies to see if they can get free copies of books which are, fundamentally, advertising. If they did the companies would become much more reluctant to freely distribute material which costs quite a large amount of advertising budgets. Writing about this behaviour here is no problem, because such people would be very unlikely to get, let alone read this bibliography.

R1639 Langen, J**Leitfaden zum selbst-studium**

fur uhren-besitzer, liebhaber und interessenten

nd, 31 pp, ill.

(German).

Self study manual for timepiece owners, lovers and interested people.

R1640 Lapp and Flershem**Lapp and Flershem 1887-1888**

tools, materials and findings

USA: Greg McCreight (Chicago: Lapp and Flershem), ca 1997 (1888), 10 x 7 inch, 280 pp, ill.

Catalogue, tools (English).

R1641 Laquaine, E**Indication des difficultés pour le réglage des montres**

avec leurs solutions a l'effet d'obtenir une bonne marche

Paris: Mauclere Dufour, 1882, 22.5 x 14.0 cm, 75 pp, 30 ill, 4 plates.

Repair (French).

There may be only 2 plates.

Indication of the difficulties for adjusting watches with their solutions to obtain a good rate.

R1642 Lardner, D**A treatise on the manufactures in metal**

London: Longman, Orme, Brown, Green & Longmans, 1853 (1831), 16.5 x 10.5 cm, 424 pp, ill.

Description (English).

The full title is "A treatise on the progressive improvement and present state of the manufactures in metal".

Three volumes in the Cabinet Cyclopaedia by Dionysius Lardner.

It has various printing dates including 1831, 1833 (volume 2), 1838 (volume 3), 1853 (volume 2), and 1853 (volume 3).

All 3 volumes are available as Google Book PDF files.

Volume 1 (341 pp, ill): Iron and steel. 21 chapters including iron works, smelting, iron founding, anvils, bridges, boilers, rails, blacksmithing, chains, nails, screws, steel, steel alloys, engraving plates, hardening and tempering, grinding, files, edge tools and saws.

Volume 2 (415 pp, ill): Iron and steel. 16 chapters which include cutting instruments, agriculture, military weapons, turning, stoves, printing, mills, weaving, locks, weighing, and wire drawing.

Volume 3 (424 pp, ill): Twenty chapters covering tin, lead, pewter, zinc, britannia metal, type foundry, copper, brass, lacquered brass, lamps and turning, optical instruments, clocks and watches, brass toys, precious metals, plate, buttons and coins.

The section on horology has 28 pages and 12 illustrations.

[ca 1835, fair] The article on clocks and watches in Volume 3 begins by outlining how wheels and pinions are made and then gives a description of an eight-day clock (after the mandatory comments on Franklin's 3-wheeler). These are followed by some remarks on trade in clocks and watches (for 1832 and 1933) and a general description of a verge watch. The article concludes with a description of some escapements, including Delafons and the lever.

A superficial summary, most interesting because of the references to class distinctions.

R1643 Lassauois, J; Lhote, G

The world of watches

Die ganze welt der uhren

L'univers des montres

New York: Chartwell Books, Germany: Neumann & Gobel. Paris: , 1996, 11.5 x 9.5 inch, 144 pp, ill. Illustration (English, German).

Separate English and German editions. No-one can decide on the second author's name.

Colour pictures and descriptions of antique watches and complicated watches by Audemars Piguet, Baume Mercier, Breguet, Breitling, Cartier, Hamilton, IWC, Jaeger-LeCoultre, Longines, Omega, Patek Philippe, Rolex, Swatch, TAG Heuer and Zenith. Over 500 watches illustrated.

It has been described as "intended as a visual thrill".

R1644 Lasser, H

Lasser's list

the Hamilton Watch Company serial number listing

USA: NAWCC, 2009, 8.5 x 5.5 inch, ill.

Identification (English).

A list of Hamilton Watch Company grades and serial numbers with special designations. Including black and white movement photographs.

R1645 Latzarus, L

Beaumarchais

Paris: Libraire Plon, 1930, 20 x 13 cm, 390 pp.

Biography, miscellany (French).

Beaumarchais was Pierre Caron, a watchmaker of some note.

R1646 Latzel, RW

Entwicklung der taschenuhr

für jedermann in Deutschland

Germany: Books on Demand, 2009, 21 x 15 cm, 176 pp, 100 ill.

History (German).

Print on demand.

History of the cheap watch.

"Watches of this type received practically no attention, since they were considered as worthless. On the other hand starting from 1867 the low-priced watch became a giant success, since most of the population could afford a watch. The author of this book describes the development of the watches for everyone - from its beginning in Switzerland, when in 1867 G.F. Roskopf's watch was awarded a medal, through the American Dollar watches up to the production of cheap watches in Germany. In 100 illustrations not only are many models by the companies Thiel (Ruhla) and Haller (Schwenningen) introduced and described, but also some watches with so far uncertain history and/or from so far unknown manufacturers. Additional to the technical development the historical background of the development is shown by watches for the broad mass of the German population and made accessible for the first time to this extent of the public. The many illustrations and descriptions are the result of work over many years and intensive searches, since very few contemporary witnesses and/or documents are available which cover this chapter of the German watch industry."

R1647 Lauris Trading Co

Lauris watchmakers and instrument repairers guide

Sydney: Lauris Trading Company, ca 1980 (ca 1950), 21.5 x 14.0 cm, 64 pp, ill (120 pp, ill) (33 pp, ill).

Catalogue, tools (English).

Australian catalogue of tools and parts.

[10th edition 1964, fair] Included so that there is something Australian in this bibliography!

The first half of the catalogue contains tables for ordering balance staffs, stems, mainsprings and other

material. The remainder covers tools, with the current price list printed on the back cover. Not as comprehensive as other catalogues, but well produced. Taurus took over Lauris and the catalogue declined in later years.

R1648 Laussedat**Etude sur le développement de l'horlogerie**

Paris: Librairie Polytechnique de J. Baudry, ca 1868, 44 pp.

History (French).

Reprint from "Annales du Conservatoire Imperial des Arts et Métiers".

R1649 Lavaivre, J**Réparations d'horlogerie**

de la montre, de la pendule

Paris: Gauthier-Villars, 1905, 8vo, 2 volumes 233 pp, 304 ill and 109 pp, 113 ill.

Repair (French).

Horological repairs, watches and clocks.

R1650 Lavest, R**Elements of watchcraft****Notions élémentaires d'horlogerie****Grundlegende kenntnisse der uhrmacherei**

Bienne: Charles Rohr, 1953 (1935), 21.5 x 15.0 cm, 154 pp, 100 ill (18 pp ads, 118 pp, 64 ill, 11 plates, 12 pp ads) (116 pp, ill) (66 pp, 122 ill, 8 plates).

Description (English, French, German).

German translation by Berner and English translation by R. Grandvoinet.

There appear to have been at least 5 printings in 1935, 1942, 1945, 1949 and 1952.

A short introduction to time and a history of horology (including pendulums!) is followed by a general description of watch components, complications, cases and manufacture. There are very brief notes on other topics.

[3rd edition 1949, fair] Other sources have described this book as "fundamental knowledge for horologists including a short history, escapements, mechanisms, practical work instructions, etc.". It isn't. It is a quite well written, terse and purely descriptive book.

The style and advertisements make me presume it was written for watch retailers and given away by the Swiss industry as promotional material, despite it being substantial. In this light it is quite good; otherwise it is superficial and mediocre.

R1651 Lavest, R**Engrenages d'horlogerie**

Neuchâtel: Technicum Neuchâtelois, 1942, 4to, 19 pp, ill.

Technical (French).

Gears in horology.

R1652 Lavest, R**Les pierres d'horlogerie et le sertissage**

Le Locle: Technicum du Locle, 1928, 4to, 69 pp, 87 ill.

Repair (French).

Jewels of horology and their setting.

R1653 Lavest, R**Notes d'horlogerie**

Neuchâtel: Technicum Neuchâtelois, 1939, 28.5 x 20 cm, 156 pp, 65 ill, 1 blueprint.

Technical (French).

A edition of "Elements of watchcraft"?

Lavest was director of the School of Horology at Le Locle.

R1654 Lavest, R; Pellaton, James C**Cours d'horlogerie technologie**

fabrication mécanique de la montre

Neuchâtel: Technicum Neuchâtelois, 1948 (1928), 4to, three volumes of?, 153 pp, ill, and 100 pp, ill (183 pp, 231 ill).

Technical (French).

Tardy indicates only one volume in the 1928 edition. The 2nd edition of 1937 is 3 vols; part 1 of 1 vol and part 2 of 2 vols.

Course in technical horology, mechanical fabrication of the watch.

Perhaps this is related to Favre-Bulle "Le calibre de montre"?

R1655 Laviolette, J**Le temps**

ses instruments de mesure, leur technique

Besançon: Association Française des Amateurs d'Horlogerie, 2003, 23.5 x 16.5 cm, 216 pp, ill.

History (French).

"From Egyptian horology to the latest electronic achievements, all milestones along the long road of time measurement are described in separate chapters. Many drawings and photographs illustrate and complement the story perfectly."

R1656 Law, R**Collectors' pieces**

clocks and watches

London: Antiquarian Horological Society, 1964, 9.6 x 7.2 inch, 91 pp, ill, 78 plates (86 pp, ill, 78 plates). Catalogue (English).

Printed twice in 1964, the second a revised edition with extra material.

Catalogue of the exhibition held in the Science Museum for the tenth anniversary of the Antiquarian Horological Society. It includes clocks, watches, chronometers and tools.

R1657 Laycock, WS**The lost science of John "Longitude" Harrison**

England: Brant Wright Associates, 1976, 25.5 x 19.0 cm, 159 pp, 144 ill, 11 plates.

History, technical (English).

Limited, numbered edition.

Eleven chapters and six appendices followed by a bibliography and index. The fifteen sections are: John Harrison, The conventional pendulum clock, Description of John Harrison's first accurate clocks, Harrison's special gears, Harrison's method of suspending a clock's pendulum, The grasshopper escapement, The effects of heat and cold on a clock, Harrison's method of correcting the temperature error, The accuracy of Harrison's clocks depends on a proper use of all his unorthodox ideas, Parallels between Harrison's work and that of Huygens, The transmission of force and motion by means of gears, The geometry and mechanics of cycloidal suspension, The mechanics of Harrison's grasshopper escapement, The measurement of thermal expansion, Harrison's adaptation of the sciences of music and astronomy, and Discussion of the building of clocks to Harrison's designs.

[1st edition] This is a very detailed study of the design Harrison's clocks. Other than a discussion of gearing, there is nothing in the book that is relevant to watches.

Another book on the topic (not listed in this bibliography) is David Heskin "Sleeping in oblivion, John 'Longitude' Harrison's forgotten masterpiece" (2nd edition 2008).

R1658 Le Normand, LS**Manuel de l'horloger**

ou guide des ouvriers qui s'occupent a la construction des machines propres a mesurer le temps

Paris: Roret, 1837 (1830), 14 x 9 cm, 328 pp, 9 fld plates (xii, 236 pp, 6 fld plates, 36 pp ads).

(French).

The 1830 edition is available as a Google Book PDF file, but the plates are scanned folded and so useless.

Horologer's manual or guide for workers whose occupation is the construction of time measuring machines.

Introduction (3 pages) and Watches on the old system perfected by Ferdinand Berthoud (4 pages) followed by 15 chapters, vocabulary (20 pages) and appendix (34 pages). The chapters are:

Watches or pocket clocks (41 pages including independent seconds, repetition and alarms); Pendulum clocks (8 pages); Tower clocks (5 pages); Hand work or the execution of the main pieces (23 pages including metals, the fuse, the barrel, stoppages and hand work in general); Gears (9 pages); Escapements (40 pages); Compensation (26 pages); Regulating (24 pages); The equation of time (15 pages); Method for calculating trains (14 pages); Complicated trains (3 pages); Various inventions (22 pages); Tools (38 pages, tools of Vallet); Repair (3 pages); and Description of the plates (7 pages).

The appendix is a notice on astronomy.

See also Le Normand, Janvier and Magnier "Nouveau manuel complet de l'horloger" and Booth "New and complete clock and watchmakers' manual".

R1659 Le Normand, LS; Janvier, L; Magnier, D**Nouveau manuel complet de l'horloger****Handbuch der uhrmacherkunst nach den franzosischen werken von Janvier und Magnier****Neues und vollstandiges handbuch der uhrmacherkunst**

a l'usage des fabricants et des amateurs

Trossingen: Selva-Technik, Paris: (Quendlinburg:) (Leipzig:) (Paris: Manuel Roret), 1981 (1830), 6 x 3.5 inch (18 x 12 cm), 464 pp, 12 fld plates (three volumes 390 pp and 369 pp and atlas of 15 fld plates) (464 pp and atlas of 12 fld plates) (328 pp, 9 fld plates) (336 pp, 6 fld plates).

Repair (French).

Printed as part of the Libraire Encyclopedique de Roret.

6 editions in 1830, 1837, 1850, 1863, 1876 and 1896 with various paginations and bindings.

Said to be originally written by Le Normand as "Manuel de l'horloger ou guide des ouvriers qui s'occupent de la construction des machines propres a mesurer le temps" (regarded as the 1st edition, which see), but Baillie says it was originally written by Janvier. Having not seen it, I can only assume it is the book by Le Normand to which has been added Janvier "Nouveau manuel complet du regulateur des horloges" (the only possible thing by him I know of, which was actually written by Berthoud and is listed under that author). Magnier revised the 3rd edition, LST the 4th and Stahl the 6th.

The 1977 reprint is a limited edition of 500 copies of the French second edition, published in two volumes in 1863 (464 pp, 12 folding plates).

The German edition (2 volumes 272 and 126 pp, 14 plates, 8vo) was translated by Kruger and printed

in 1851; it has been listed in bibliographies under Janvier and Magnier without Le Normand. It was reprinted in 1981. See also Kruger "Theoretisch-praktischer unterricht in der uhrmacherkunst". See also M.L. Booth "New and complete clock and watchmakers' manual". Some illustrations from the 1837 edition are reproduced in T.R. Crom "Horological shop tools 1700 to 1900".

R1660 Le Puzzle**La grande complication jigsaw puzzle**

nd, 1000 piece jigsaw puzzle.

Miscellany (French).

A jigsaw puzzle of the IWC Schaffhausen grand complication watch.

R1661 Le Roy, Julien**Avis concernant les vrais moyens de régler les montres****Anweisung die einfachen**

tant simple qu'a répétition

sowohl als repetiruhren, wohl zu richten und zu gebrauchen

reprint, nd (1719), 24 x 14 cm, 28 pp, 1 plate (8 pp).

(French, German).

First published in French in 1719 with a second edition in 1741, the work was translated into German in 1759 and the modern reprint is of this translation.

Notes on the true way of regulating watches, plain and repeating.

Reviewed in Baillie "Clocks and watches: an historical bibliography".

R1662 Le Roy, Pierre**An improvement in common watches**

London: Sylvanius Urban, 1766 (1763), 20.5 x 13.0 cm, 2 pp, 2 ill.

Technical (English).

First published in 1763 in the Memoires de l'Academie Royale des Sciences. Baillie "Clocks and watches, an historical bibliography" lists publication in Histoire de l'Academie Royale des Sciences in 1766 but does not note the translation (with identical illustrations, but abbreviated?) in the Gentleman's Magazine, August 1766 pp 369-370.

Antiquorum "L'art de l'horlogerie en France" ascribes the invention to Jean Baptiste Le Roy, son of Julien.

A description of the advantages of the inverted fusee by Pierre Le Roy (junior).

[English 1766, good] The problem of pivot friction and pivot hole wear is discussed, pointing out the advantages of equalising the friction of both pivots of an arbor. Le Roy's proposal to invert the fusee, to enable wheels to be placed centrally on the arbors, is then described.

R1663 Le Roy, Pierre**Mémoire sur la meilleure manière de mesure le temps en mer**

(Paris:), 1806 (1770), 9.5 x 7.5 inch, 60 pp, 6 fld plates.

Technical (French, English).

Also published in 1806.

The first description of the detent escapement.

A detailed review is in Baillie "Clocks and watches: an historical bibliography".

A complete translation into English appears in the Horological Journal, volume 2, 1859-60 (which is available as a Google Book pdf file).

R1664 Learned, WB**The watchmakers' and machinists' hand book**

or beginners' guide

USA: Adams-Brown (Chicago: Geo Hazlitt & Co), 1970 (1897), 21.5 x 14.0 cm (15.5 x 12.0 cm), 40 pp, 1 ill (59 pp, 2 ill).

Repair, technical (English).

The 1970 edition is reset with a new contents page laid in. There may be another reprint dated 1974.

"Containing a few simple rules and explanations on the relation of wheels to pinions with methods of figuring the same".

A short tract on how to calculate the size of watch wheels and pinions with some remarks on measuring tools. It concludes with a 2 page essay What is a watch? exhorting repairers to use good oil.

[1st edition, fair?] After a few pages of definitions and general remarks on gearing, the majority of the book consists of examples of how to calculate wheel and pinion sizes by following simple arithmetic rules. The only interesting bits are the remarks on addenda factors.

Learned worked at Waltham and was superintendent at the United States at Marion and E. Howard watch companies.

R1665 Lebon, E**Etudes historiques**

morales et statistiques sur l'horlogerie en Franche-Comté

Besançon: A. Bulle, 1860, 22.0 x 14.0 cm, 347 pp, tables.

History (French).

Historical studies, outcomes and statistics of horology in the Franche-Comte. A detailed history of the Besançon factory including numerous extracts from original documents and separate chapters on

Megevand and Auzieres.

In 4 parts: Horology in the Franche-Comte 1790 to 1813 (194 pages); Between 1813 and 1836 (28 pages); Between 1836 and 1859 (35 pages); and Economic, moral, educational and business aspects (82 pages).

R1666 Lecoultre, Francois**A guide to complicated watches****Les montres compliquées****Komplizierte taschenuhren**

Neuchâtel: A. Simonin (Bienne: Charles Rohr Editions Horlogères), 1993 (1943), 21.0 x 14.0 cm, 257 pp, 57 ill (217 pp, 55 ill, 2 ill) (ads, 220 pp, 55 ill, 3 ill, ads).

Repair, tools (English, French, German).

There are actually 55 illustrations in the text (numbered 1-18, 18bis, and 19-54) and some illustrations in the advertising appendix depending on the printing.

Separate language editions in several printings. First published in 1943 and the English second edition in 1952 (not marked as such). The 1985 printing is a facsimile reprint of the 2nd edition with fewer advertisements.

A detailed, descriptive survey of complicated watches:

Chronographs (70 pages): Independent seconds, Jumping seconds, Chronographs, Simplified chronographs, Split-seconds chronographs, Minute recording mechanisms, Double-button chronograph, and Hour recorder.

Repeaters (74 pages): Repeating watches; Old repeating watches; Modern quarter repeaters, Simplified repeater, Half-quarter repeaters, Breguet half-quarter repeater; Five-minute repeaters, and Minute repeaters.

Clock watches (22 pages).

Calendar watches (28 pages): Simple calendar mechanisms, Continuous-type perpetual calendar, Instantaneous perpetual calendar, and Perpetual retrograde calendar.

Equation watches (4 pages).

Followed by an advertising appendix describing a Buttes chronograph and the glucydr balance.

[2nd edition, excellent] A very clear and comprehensive description of complications. There are a few remarks on examination and adjusting, but the book is primarily explanatory and does not cover repair; although it describes how to make a moon phase disc and a repeater hour snail.

There are a few places where I feel the text is vague (in particular the explanation of repeater snails and the surprise piece), but it is the best survey of complicated watch mechanisms that I have read.

R1667 Lecoultre, Francois**Le chronographie et ses perfectionnements**

étude mathématique du coeur dans le chronographe

Genève: LE Privat (Lausanne: Journal Suisse d'Horlogerie), 1908 (1894), 24 x 16 cm, 15 pp, 18 ill, (15 pp, 5 fld plates) (12 pp, 4 plates).

(French).

Offprint from the Journal Suisse d'Horlogerie. Editions in 1894, 1896 and 1908.

The chronograph and its perfection, mathematical study of the chronograph heart cam.

See also Grossmann and Grossmann "Lessons in horology".

R1668 Ledermann, B**Du rôle de l'état dans la réorganisation de l'industrie horlogère suisse**

La Chaux-de-Fonds: Fédération Horlogerie Suisse, 1941, 21 x 15 cm, 189 pp.

History, watch making (French).

The role of the state in the reorganisation of the Swiss horology industry.

Thesis for the School of Commerce and Economics, Neuchatel.

R1669 Lee, JR**Clock watchmaker course**

Georgia: State Department of Education, 1951, 11 x 8.5 inch, 90 pp, ill.

Repair (English).

R1670 Legg, E**Clock and watchmakers of Buckinghamshire**

England: Bradwell Abbey Field Centre., 1975, 39 pp, 5 ill.

Makers (English).

R1671 Legg, E**Clock and watchmakers of Kettering**

England: Word Merchant, 2002 (2001), 8 x 6 inch, 24 pp (19 pp).

Makers (English).

An introduction on watch and clock making in Kettering followed by a list of 47 makers.

R1672 Lehnert-Leven, C**Uhren in Trier**

geschichte, gedichte und bestände des museums

Trier: Simeonstift, 1992, 29 x 21 cm, 323 pp, 198 ill.

Collection, description (German).

Horology in Trier, history, poetry and the state of the museums.

R1673 Lehotzky, L**Mechanische uhren mit fachzeichen****Uhrenkunde mit fachzeichen****Beilage vor uhrenkunde mit fachzeichen**

Berlin: Michael Stern (Vienna: R. Bohmann Industrie und Fachverlag) (Wein and Heidelberg: R. Bohmann Industrie und Fachverlag), 1960 (nd), 24.0 x 17.5 cm and 23.5 x 16.5 cm, CD Rom (2 vols, 244 and 48 pp, 272 ill) (2 vols, 235 pp, 240 ill, 24 tables and ?).

Technical (German).

At least 3 editions, the second in 1949 titled "Uhrenkunde mit fachzeichen" and the third in 1960 titled "Mechanische uhren mit fachzeichen". Written as a textbook for the Karlstein horological school.

The 1960/61 printing is reproduced on CD Rom, see Stern "Horology CDs", CD 8.

Horology with technical drawing, covering both clocks and watches.

In 6 parts: Escapements (90 pages, 3 clock escapements followed by the lever, cylinder, duplex, and chronometer escapements); Motive power (16 pages); Gears (38 pages); Time trains (20 pages); Striking work (for clocks, 26 pages); and Regulators (48 pages, pendulums, balance springs and balances).

[2nd edition, 1949, good?] *Primarily a technical drawing text (detailing how to design and draw clock and watch components) with some theory.*

The second volume supplement "Beilage vor uhrenkunde mit fachzeichen" of 48 pp contains illustrations that form an integral part of the main text.

R1674 Lehotzky, L**Technische grundlagen der mechanischen uhren****von der turm bis zur armbanduhr**

Berlin: Historische Uhrenbücher, 2006 (ca 1960), 412 pp, 572 ill, 47 tables.

Technical (German).

Technology of mechanical timepieces from the tower clock to the wristwatch; escapements, driving energy, wheels, going trains, striking work, the regulator, automatic and calendar mechanisms, and adjusting.

Textbook on the technical basis of mechanical timekeepers, escapements, and theory, written by the teacher and director of the Austrian National Horological Academy in Karlstein.

R1675 Leibe, F; Wachsmann, J**Watches****a collector's guide**

Great Britain: Miller's Collector's Guide, 1999, 21.0 x 15.0 cm, 64 pp, ill.

Collecting, price guide (English).

21 two or four page chapters followed by a glossary, references and index.

The book begins with an introduction to collecting and a general description of watches. Then the chapters examine, in chronological order, an aspect of watches, each covering a period of about 50 years. This is done by describing and valuing 4 or 5 illustrated watches. There are tips for collector's throughout and a sensible selection of book references.

[1st edition, fair] *This book suffers from limitations caused by its brevity. The illustrations often do not show aspects of the watches being discussed and there is too much information inadequately explained, which would leave many enquiring readers mystified. Also there are one or two glaring errors (such as ascribing automatic watches to Thomas Prest). The tips for collectors are good if often repeated.*

However, the introduction includes "any would-be collector would do well to spend at least six months reading round the subject ...". If followed, this sensible advice, coupled with the good bibliography, would mean the reader would soon discard this book in favour of other, much better ones.

My overall impression is of a sophisticated advertising booklet, but with educational value which could be useful to the beginner.

R1676 Leiter, A; Dorner, AH**Die uhr****zeitmesser und schmuck in fünf jahrhunderten**

Pforzheim: Reichert, 1967, 23 x 22 cm, 358 pp, 151 ill, 27 plates.

History, catalogue (English, German).

The text is in German but there is supposed to be a separate English translation.

History of clocks and watches based on an exhibition at Pforzheim.

[Review by Edwin Battison] *This handsome catalog is of an outstanding temporary collection assembled and shown at the Art Museum in Pforzheim from the 10th of June to the 16th of July 1967.*

With the exception of a brief introduction and an eight-page illustrated account of the historical development of timekeeping there is no text as such.

A thoughtful and unusual concern with the tools used in the making of clocks and watches by craft methods has prompted the inclusion of four pages of drawings of the standard tools which were universally used for such a long time by craftsmen in the field.

These are succeeded by a brief bibliography, chiefly in German, and a list of participating collectors and museums. There is also an alphabetical index to the makers and makers' marks represented in the collection. This completes the first twenty-three pages of the book.

The remaining three hundred and forty-five pages are generally divided so that the left page has a

description in German and the facing right hand page showing the object. In the case of particularly outstanding objects this arrangement is departed from. There are twenty-three color plates of the richest and highest quality imaginable in which representative pieces from various segments of the collection are shown against colorful contrasting backgrounds. Next to handling the actual pieces and being able to see them at many different angles there is perhaps no more satisfactory way of viewing them than through the medium of the superb color or other plates in this catalog. The black and white plates naturally suffer by comparison but still average to be of a very high quality. Frequently the device of a reflected image in a mirror is used to extend the range of view available in a single plate.

The subjects covered range from the earliest forms of domestic clocks through those with astronomical indications, unusual forms, crystal cased and richly enameled watches, a carved wooden watch holder, chatelaine, skeleton, automaton, musical, form, extremely thin, and wrist watches are included. Clocks range from a Japanese pillar clock back through those of the Renaissance and from simple painted wooden cases to the most exquisitely modeled gilt brass examples. In short, this collection has tremendous range and quality and the catalog itself is of matching calibre. It should be in the library of every collector or fancier of fine early clocks and watches. It captures and preserves for all time the essence of what was a great though fleeting assembly of some of the world's great clocks and watches. The world of scholarship and the collecting fraternity owe a great debt of appreciation to Herr Horst Reichert whose idealism and dedication to the subject led him to finance this publication.

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R1677 Leiter, A; Dorner, AH

Enamel timepieces

Email uhren

kostbarkeiten unter den taschenuhren

Germany: Werbe Verlag, 1977, 23 x 22 cm, 279 pp, 100 plates.

Description, history, makers, technical (English, German).

Text in English and German.

The technique and history of enamel painting.

R1678 Leonardi, L; Ribolini, G

The pocket watch

L'orologio da tasca

Montres de gousset

Taschenuhren

San Francisco: Chronicle Books (Milan: BE-MA Editrice, Milan: Itinerari D'immagini), 1994 (1988), 16 x 13.5 cm, 143 pp, 117 plates.

Description (English, French, German, Italian).

English/Italian and English/German parallel text editions.

"Full colour illustrations of over 60 rare and valuable timepieces dating back to the seventeenth century."

R1679 Leonardi, L; Ribolini, G

The wrist watch

L'orologio da polso

Milan: BE-MA Editrice, Milan: Itinerari D'immagini, 1991 (1986), 16 x 13.5 cm, 143 pp, 93 plates.

Description (English, Italian).

English and Italian text.

Wrist watches from 1910 to 1970.

"A small dual language (Italian & English) book that celebrates the finest in wristwatches. About sixty fabulous wristwatches are present in a text that briefly describes the features of the watch and its importance in the history of wristwatch design. Each wristwatch is pictured in a high quality color photograph. Essentially a nice little table book that won't take up much space. Excellent little carry along book to fill time at an auction or any other function which has a bit of down time."

R1680 Lepaute, Jean Andre

Traite d'horlogerie

contenant tout ce qui est nécessaire pour bien connaitre et pour régler les pendules et les montres, La description des pièces d'Horlogerie les plus utiles, des répétitions, des équations, des Pendules à une roue, etc. celle du nouvel échappement, un Traité des engrenages. Augmenté de la Description d'une nouvelle Pendule Policamératique.

Bologna: Forni (Bologna: Forni) (Paris: Sampson) (Paris: Jaques Chardon) (Paris:), 1980 (1755), 24.5 x 18.0 cm (9.5 x 7.5 inch), xxviii, 308 pp, 22 pp tables, index, 12 pp, 4 pp, 17 fld plates (308 pp, 22 pp tables, 17 fld plates).

Technical (French).

Printed in 1755, 1760 and 1767 (with 16 additional pages).

The 1975 reprint is a 500 copy limited edition facsimile of the 1767 edition; it was reprinted in 1980. "... la description des pieces d'horlogerie les plus utiles, de repetitions, des equations, des pendules a une roue, etc, celle du nouvelle echappement, un traite des engrenages".

Treatise on horology containing all that is necessary for good knowledge of and for adjusting clocks and watches, the description of the parts of timepieces, repeaters, equation clocks, pendulum clocks with one wheel, with a new escapement and a treatise on gears.

Details of the contents are given in Baillie "Clocks and watches: an historical bibliography".

[facsimile reprint] *The book contains two chapters written by Lalande: a treatise on pitchings and remarks on the calculation of trains; the former appears in translation in Nelthropp "A treatise on watch-work, past and present". A good description of Lepaute's escapement was published in the Gentleman's Magazine, August 1754 pp 359-360.*

R1681 Leroy, Léon

Collection Léon Leroy

mouvements, portraits, livres et documents

Paris: H. Chayette, 1982, 27.5 x 21.5 cm, 116 pp, ill.

Bibliography, collection, catalogue, price guide (French).

There is a separate price estimate sheet.

Auction catalogue of 588 lots including watch movements, engravings, books and manuscripts with 518 lots of books and pamphlets.

[1st edition, good] *An interesting and useful bibliography together with a few interesting movements and portraits.*

With the exception of a bilingual introduction, the text is in French; but this is almost totally irrelevant.

R1682 Leroy, Léon

Montre ultra compliquée

Paris:, 1900, 8vo, 32 pp, 2 plates.

Description (French).

A description of the Leroy complicated watch.

R1683 Levenberg, J

Russian wrist watches

Russische uhren

pocket watches, stop watches, on board clocks and chronometers

USA: Schiffer, Munich: Callwey, 1997 (1994), 25.0 x 18.0 cm, several volumes, ill.

Description, identification, price guide (English, German).

A series of collectors guides to Russian watches and clocks published with several titles. Volume 1 has separate German and English editions. Volume 8 has parallel text and the other volumes may also be bilingual.

Volume 1: "Russische armbanduhren und taschenuhren, stoppuhren, borduhren, marinechronometer", 1994, 24 x 20 cm, 96 pp, 550 ill (reprinted in 1995). Nearly all wrist watches.

"Russian wrist watches, pocket watches, stop watches, deck watches and marine chronometers", 1995, 96 pp, 505 ill; translation of Vol 1?

Volume 2: "Russische armbanduhren und taschenuhren, stoppuhren, borduhren, marinechronometer", 1995, 24 x 20 cm, 96 pp, 40 ill.

Volume 5: "Uhren aus Russland", 1994, 30 x 21 cm, 62 pp, 550 ill. This is "Sammlerkatalog Nr. 5" and there may be no Volumes 3 and 4.

Volume 6: "Uhren aus Russland", 1995, 30 x 21 cm, 82 pp, 600 ill. This is "Sammlerkatalog Nr. 6".

Volume 7: "Uhren aus Russland", 1996, 30 x 21 cm, 130 pp, 500 ill. This is "Sammlerkatalog Nr. 7".

Volume 8: "Russische uhren", 1997, 4to, 125 pp, ill, parallel German and English text. About 500 timepieces from 1940 to 1997.

Volume 1 has an introduction followed by 14 sections: Poljot wristwatches, Auctions, Wostok wristwatches, Slava wristwatches, Rakete, Pobeda & Sarja wristwatches, Miscellaneous wristwatches, Movements, Case backs, Stop watches, divers' watches & pocket chronographs, Deck & board watches, Observation watches, Marine & airplane chronometers, and Eight-day anchor chronometers. There is an appendix with translations of cyrillic inscriptions and a price guide.

[volume 1, English, mediocre] *The majority of this book consists of small colour photographs of wrist watch dials (20 on each right hand page) with very brief captions giving the calibre number, name, jewellery and some other remarks. There is one page of movement photographs and 2 pages of watch backs in the same format. Only 11 pocket watches are mentioned.*

In addition there are very brief comments on Poljot (the First Moscow Watch Factory), Wostok, Slava and Raketa companies, and a description of an 8-day chronometer with a remontoire.

Overall the book is very disappointing. There is almost nothing to be learned from it and unless you want to collect one of every variant of the wrist watches illustrated the endless photographs of dials are just a dull catalogue of Russian design.

[Remark] *Over the years I have become increasingly annoyed by "keep collectors ignorant" books like this one. But actually it and many other such books are not for collectors; they are for people who think they can make money by investing in watches, for amateur investors. Levenberg admits this in his introduction which talks of making money and "you will not find boring descriptions of movements". Collectors don't sell (except to improve their collections). And, hopefully, collectors desire a far more penetrating understanding of watches than a mere admiration of their dials.*

I admit wrist watch collectors are seriously hampered. Whereas I can open my pocket watches and examine their movements whenever I like, getting into wrist watch cases is difficult and cannot be done on the spur of the moment. So, to some extent wrist watch collectors are limited to the external appearance. But such a limitation in no way absolves the collector from studying the history and mechanics of timepieces. Sometimes I think books like this are produced by professional dealers as advertising aids. They always

begin by showing the amateur how he or she can sometimes make amazing profits by buying and selling watches, carefully ignoring the fundamental reality that it is impossible to buy from a dealer and make a profit. Indeed, it is extremely hard to profit no matter where you buy unless you are clever and knowledgeable enough to use the same techniques that dealers employ. And that means becoming a dealer yourself, which is not possible for most of us considering that it is near enough to a full-time occupation. There are two problems with investing that are always ignored by dealers and writers of price guides.

First, dealers need to make a profit of at least 100% to cover costs and make enough money to put food on the table. So if you buy a watch from a dealer or off the Internet you cannot sell it back without making a substantial loss.

Second, most of any apparent profit amateurs make is swallowed up by inflation. For example, at the moment I am selling some watches for about 50% more than I paid for them. But inflation during the years between buying and selling have devaluated the dollar so much that all I am doing is getting my money back and making no profit at all. As an amateur I can crow about a few great deals I have done, but I don't talk about the bad buys which well and truly offset the few excellent ones.

So I pity the amateur who imagines a tiny bit of knowledge and total lack of understanding of market forces is all that is needed to make a killing.

R1684 Levin, L; Levin, S

Practical benchwork for horologists

USA: Arlington Book Co (California: Louis Levin & Son) (California: Horology), 1991 (1938), 23.5 x 16.0 cm, 377 pp, 475 ill and plates (345 pp, 438 ill and plates).

Repair, tools (English, Japanese).

There are 8 editions to 1988 and at least 1 reprint (Arlington, 1991). Tardy notes a Japanese translation.

The first edition has eight chapters: Tools and their uses (127 pages); Repair problems (128 pages); Adjusting (28 pages); The watch rate recorder (13 pages); Watch performance (6 pages); Mechanical drawing (11 pages); and The lever escapement (20 pages). There is a 6 page appendix giving mathematical information and tempering colours.

The third edition (1944) is basically the same except the chapter on The watch rate recorder has been expanded to 19 pages, and a new chapter Jewel bearings (27 pages) added after it.

[1st edition, very good] *The first two chapters occupy two-thirds of the book. The chapter on tools deals primarily with the lathe and gives an excellent overview of attachments and their use, including detailed instructions for screw and gear cutting. As well there are complete specifications for making screw cutting and filing attachments (which I suspect is the raison d'être for the book). The second chapter contains very clear, precise descriptions of many repair processes. These are presented as individual problems and the book does not give an overview of watch repair, but this does not detract from its value. Both chapters are illustrated by excellent photographs and drawings.*

The remainder of the book is more abstract and has a different character. There is a clear but technical study of adjustment, including the design and use of timing machines. This is followed by an introduction to drawing prefacing the final chapter on drawing lever escapements.

It is a very good book. Professional with a very clear discussion of lathes and repair work, and it deserves to be read and referenced repeatedly.

[3rd edition] *The 3rd edition is the same as the first except for some minor changes to the text and illustrations and two major additions; a long, detailed chapter on making jewels for watches by machinery (not of much practical use but fascinating to read) and a practical example of timing machine use.*

R1685 Lewis, LM; Lee, M

Better watchmaking faster!

Better watch repairing faster!

Weatherford USA: Southwestern State College, 1950, 22.5 x 16.0 cm, 306 pp, ill.

Repair (English).

The cover gives the title as "Better watch repairing faster!" and the title page reads "Better watchmaking faster!".

A detailed study of how to analyse a lever escapement using watch timing machine traces produced by the Watchmaster watch rate recorder.

[1st edition, good?] *A brief introduction, defining the lever escapement and listing its faults, is followed by a general discussion of 12 types of fault and the typical timing machine traces they produce. The remainder of the book (220 pages) provides 12 series of traces, each series showing one specified fault together with other defects. These are given with specifications of the known faults and possible interpretations of the traces.*

There is no information on watch repairing and the book is only concerned with diagnosis.

An interesting collection of material on timing machine use. But I find it difficult to see how I could draw the conclusions that I am expected to. It often appears that very similar traces are used to describe different conditions and deduce different diagnoses. And as with other books which mention Charles Purdom, there is a vague feeling of something mystical rather than good science. Without undertaking a very careful study of all the traces I am unsure if it is sensible or fantastic. However, as timing machine information is rather uncommon I think there might be some value in it.

[Remark] *Most of watchmaking and repair is based on definite procedures, which can be clearly explained by step-by-step, cookery-book style instructions. It is also fairly easy to go from such practical*

skills to a good understanding of the underlying principles.

However, this is not the case with watch adjusting and balance-escapement faults. Although the general principles of balance-escapement behaviour is simple enough, the accuracy of a watch depends on the finest of details, details that are not well understood and which interact in ways which make predicting the consequences of changes nearly impossible. Consequently, adjusting is very much a practical art requiring an innate sense of what to do, a sensitivity that is very difficult to impart to other people.

The timing machine offered a way around this difficulty. It has the potential to reduce the art and mystery of adjusting to a clearly defined diagnostic process. Examine the traces produced by a watch on a timing machine, look up the matching diagnostic chart, and there you will find a clear explanation of the observed behaviour. Then it is a simple step to fix escapement errors and adjust the watch. But unfortunately it is not that simple.

De Carle "Practical watch adjusting and springing" gives a simple example. But first it should be noted that most of his illustrations of timing machine traces have been taken from Defossez "The interpretation of timing machine traces" without acknowledgement and some have been turned upside-down. (It may be that both authors use illustrations from some other, unnamed source, possibly a Vibrograf manual.) The example is a trace which shows an escapement knocking, clearly described by Defossez (figure 25): "If the amplitude of the balance is excessive, the impulse pin will encounter the outside of the lever fork at the extremity of its swing ...". In contrast, de Carle says of his upside-down version of this trace (figure 179): "The escapement is knocking the banking ...". Such a crass error makes me wonder if de Carle actually understood what he was writing about. (This is not impossible. De Carle trained under the English apprenticeship system and his best book, "With the watchmaker at the bench", is based on this method of teaching. It is possible that he did not have much experience with timing machines.)

A more interesting example is a trace showing one clean line and one straight, but scattered line. De Carle (figure 175) notes that such a trace can be caused by "the impulse pin does not strike the notch at the same point on each vibration of the balance due to a bent pivot, loose impulse pin or loose jewel hole, etc. Also, one of the pallet stones mislocks or one of the stones is worn". In contrast, Defossez says of this trace (figure 21): "... a damaged pallet stone or one that is rough ... (or it) may be due to other defects ... if there is insufficient draw on one pallet the lever fork will not be held over against its banking pin, and this may cause intermittent rubbing of the guard pin against the roller. If there is excessive clearance at the pivots of the escape wheel or lever ... the same is true if the jewel holes or end-stones are not in perfect condition." De Carle offers us 5 different causes for this trace and suggests there are more. Defossez adds 3 more causes and so there are at least 8 faults that can produce this type of trace. As these 8 faults encompass every part of the balance-escapement system I do not see how anyone can consider it a useful diagnostic tool.

The situation is even more complicated. That trace shows two lines, which is normal because most watches are slightly out of beat. Consequently, it indicates which side of the escapement is at fault. However, if a watch is in beat the two lines are superimposed and the trace will show a single, scattered line. How is this to be interpreted? For example, if the fault is a rough pallet stone then we no longer know which side is causing the problem. Also, the trace shows an asymmetric fault which must be caused by an asymmetric component such as a pallet stone. In view of this, do all of the diagnostic suggestions make sense? Surely a loose impulse pin would affect both lines? In which case it cannot cause such a trace.

Lewis and Lee provide more startling examples. At the beginning of the book they provide a set of "master sheets" showing a variety of faults. One of the charts under the heading "magnetism" has a caption which states "This watch was magnetised although it is not indicated by the lines on this chart". So we have a diagnostic trace for magnetism that does not show the fault! A few pages later a chart is given for "R banking pin too close" but the caption does not mention banking pins and the only fault listed is bad teeth on the escape wheel.

The majority of the book by Lewis and Lee consists of sets of charts illustrating particular faults. The first thing that becomes obvious, when leafing through the them, is that many do not show the faults mentioned. Indeed, some very nice traces indicating a watch in good order have errors associated with them that clearly cannot be detected from the traces. The second thing is that the vast majority of the traces are associated with several known errors and several possible errors. And, by leafing through the book, there are several cases of very similar traces being associated with different diagnoses.

All of these ambiguities come from one basic problem: What does a timing machine show?

A timing machine is very simple. All it does is listen to the sounds, the "ticks", made by the escapement and display the elapsed time between successive ticks. One set of ticks measures the time taken for the balance to swing clockwise from the at-rest point (when the escapement is tripped) and back to that point. The other set of interleaved ticks measure the time taken for the reverse, anticlockwise swing. A sequence of such ticks produce the printed trace.

However, a "tick" is not a simple sound. It is composed of a number of noises that occur very close together. De Carle provides a diagram of an escapement to illustrate the sources of these noises, which is identical to that in the instruction manual for the Tickoprint timing machine. He then provides an oscilloscope trace of the sounds, which is identical to that in Defossez and both are, presumably, taken from a Vibrograf manual. There are three, clear groups of sounds:

A: The impulse pin striking the lever. Associated with this is the unlocking and recoil of the escape wheel.

B: An escape wheel tooth acting on the impulse face of a pallet. It is interesting that all of the books I have read make this statement even though it is incorrect. After all, pallet stones and escape wheel teeth

are meant to be lightly oiled, in which case this action should be very quiet. However, the books have overlooked a loud sound; that of the impulse pin being hit from behind. The impulse pin pushes the lever until the escape wheel is unlocked. At that point the escape wheel moves the lever rapidly so that can push the impulse pin and so impulse the balance wheel. Thus, sound B commences with the impulse pin being struck from behind.

C: An escape wheel tooth hits the locking face of a pallet stone forcing the lever against a banking pin. In fact there is a fourth, weak sound between B and C which nobody mentions. This is presumably made by a pallet sliding over the impulse face of an escape wheel tooth.

Of these sounds, the last is the loudest, but either A or B can be the next loudest sound.

Which sound is detected by a timing machine depends on the amplification adjustment. Using a low "volume", the timing machine will not hear A and B and it will be triggered by C. Raising the volume will cause it to detect and display A or B. Lewis and Lee, and de Carle, state that the amplification of the timing machine should be set high enough (or even at its maximum) so that the trace displays the unlocking sound A. That is, the time taken for the balance to execute a half-cycle. (In fact it is less. Half a cycle is the time from the balance being in its at-rest position to when it is next in its at-rest position. Because the impulse pin hits the lever before this point the time measured is slightly less than half a cycle.) Lewis and Lee mention sounds A and C in passing but they do not explain the structure of a tick; as they insist that the volume control is set at the maximum, sounds B and C are irrelevant to them.

Now, if a balance-escapement system were perfectly isochronous then the time taken by these half cycles would be identical and the timing machine would always display a straight line irrespective of any faults. That is, it is essential that a watch is not isochronous for the machine to work; but fortunately this is the normal state of affairs.

If one half cycle is always executed in less time than the other, then the trace must consist of two lines side-by-side. This is normally an indication of the watch being out of beat. If the impulse pin is not centered in the at-rest position, then the balance will travel a slightly shorter distance on one side before the impulse pin strikes the lever fork. However, double lines are caused in other ways. For example, if one banking pin is set too far out, the lever will rest further over on that side and the impulse pin will hit it sooner than if the banking pin had been adjusted correctly. These are asymmetric effects which cause one half of a cycle to be consistently different from the other half.

An interesting example of these points is a trace showing escape wheel defects; out of round and a faulty tooth. Defossez (figures 19 and 20) points out that "to observe a defect of this kind it is essential that the sound C (activates the timing machine); for this purpose the amplifier gain should be reduced to a minimum." But is this correct? If such a defect causes a change in power to the balance, then the necessary lack of isochronism will cause the fault to show up in a trace based on the unlocking sound A. Examining sound C can only make a difference if it can be demonstrated that the fault does not affect the balance's amplitude. De Carle gives these same two traces (figures 176 and 177) but fails to mention the need to lower the gain (in line with his blanket statement that the gain must always be set at or near maximum). Lewis and Lee do the same. They may well be right.

There is no doubt that the timing machine is a very useful tool. But most books (and timing machine manuals) provide inadequate explanations of its use, and too often its output is given diagnostic qualities that go well beyond the tool's actual capabilities.

R1686 Lewis, MR

The antique enamelled watch

USA: MR Lewis, 1975, 26.0 x 18.0 cm, xxvi and 92 pp, 85 plates, slip case.

Description, history, illustration (English).

Limited edition.

A brief history and description of enamelling and enamellers (11 pages), followed by descriptions and illustrations of the cases of 74 watches.

[1st edition, fair] The book provides an adequate introduction to enamel cases. This explains the various techniques, biographies of some French watchmakers, and a short history of case enamelling.

The following illustrations are good, but the accompanying descriptions are quite superficial, providing little more than bald statements about the cases and vague comments on the movements.

Apparently written by a collector of beautiful objects who didn't study the subject in much depth. It is an attractive rather than useful book.

R1687 Lewis, WT

Friction, lubrication and the lubricants in horology

not stated (Chicago: Geo. Hazlitt & Co.), nd (1896), 21.0 x 13.5 cm, 95 pp, 15 ill, 12 tables.

Repair (English).

The date and publisher of the reprint is not stated, but it appears to be circa 1995. It is also available as a print-on-demand book.

Five chapters: Lubricants in horology, their source and refinement (11 pages); Elementary physics relating to friction and lubrication (7 pages); Friction, its nature and theory (13 pages); Application of the law of friction and lubrication in horology (17 pages); and The properties and relative values of lubricants in horology (35 pages).

[reprint, very good] Chapter 1 summarises the sources and manufacture of different oils of potential use in horology. Chapters 2 and 3 summarise the relevant knowledge in physics and friction, presenting both by simple explanations and commenting on their relevance to horology.

Chapter 4 then applies this knowledge to watches (with some remarks about clocks). The desirable shape and proportions of pivots, shoulders and holes are examined and then each watch pivot, from the barrel to the pendant, is discussed and their individual requirements and problems analysed. Methods of applying oil to ordinary and capped holes are given.

Chapter 5 summarises the properties of different oils and then details tests carried out on oils from American oil makers; action on metals, gumming and drying, viscosity, and effect of temperature. The chapter concludes with a table of the oils used by American watch and clock makers.

Lewis has written a fascinating book on a topic largely ignored by other writers. He has taken a clear, simple approach and provided an excellent explanation of oil requirements and use. Although his analysis of specific oils is no longer of practical value, it is very interesting to see the types of oils employed at that time. But despite being dated, this book is definitely worth reading. The basic requirements and methods have changed little even if the manufacture and design of oils has progressed.

R1688 Lhote, G**Montres de stars**

Paris: Michel Lafon, 2001, 31 x 26 cm, 155 pp, ill.

Illustration (French).

Lhote has also published "Parfums de stars" and "Cuir de stars".

R1689 Lhote, G; Lassauois, J**Remonter le temps****Die zeit und ihre schlüssel**

2004, 24 plates.

Illustration (French, German).

Collection of watch keys.

R1690 Liao, P; Qin, X; Lang, X**Clocks and watches of the Qing dynasty**

from the collection in the forbidden city

China: Foreign Languages Press, 2002, 8vo, 207 pp, 154 col plates.

Illustration (English).

"The Beijing Palace Museum, on the grounds of the former Forbidden City, has in its collection some of the most valuable clocks and watches manufactured during the 18th and 19th centuries - they are not only timepieces but also objects of superb craftsmanship. This book introduces more than 150 clocks and watches from the collection. They are masterpieces from all over the world - Britain, France, Switzerland, Italy, the United States, Japan, and China. Each illustration is accompanied by an introduction written by specialists from the Palace Museum, describing the design, structure and special characteristics of each object."

See also China "Clock and watch in imperial palace of Beijing".

R1691 Liegeart, A**Petit guide d'ajustage et de tournage**

Dijon., 1909, 84 pp, 160 ill.

Repair (French).

Handbook of cutting and turning.

"A l'usage des élèves des écoles pratiques d'industrie et des candidats aux écoles nationales d'arts et métiers."

Probably nothing to do with horology. But Torrens had it!

R1692 Liengme, MJ**Le sens de la mesure**

l'émergence d'un discours historique centré sur l'industrie horlogère neuchâteloise

Neuchâtel: Institut d'histoire, Université de Neuchâtel, 1994, 130 pp, ill.

History (French).

Cahiers de l'institut d'histoire No 2

R1693 Liman, LF**Cours pratique d'horlogerie**

a l'usage des fabricants et des rhabilleurs

Besançon: Marion, Morel & Cie, 1881, 22.0 x 14.5 cm, 183 pp, few ill.

Repair (French).

Presumably a later edition of "Nouveau traite d'horlogerie avec planches a l'usage des fabricants et des rhabilleurs".

R1694 Liman, LF**Histoire d'un horloger**

Besançon: LF Liman, 1863, 18.0 x 10.5 cm, 70 pp.

History, biography? (French).

R1695 Liman, LF**Nouveau cours d'horlogerie****Neues lehrbuch der uhrmacherkunst**

avec planches a l'usage des fabricants et des rhabilleurs

Paris: De Liman, 1860 (1854), 8vo, 285 pp, 1 fld plate.

Repair, watch making (French, German).

German translation by Burk in two editions 1864 and 1895.

Other sources give the first edition title as "Nouveau traite ...".

New horological treatise with plates for the use of makers and repairers.

One catalogue, presumably quoting the preface, says "Liman justifies his book from a novel socio-economic viewpoint. Dismayed by the growth of factory piecework and the consequent demise of the master horologist, he hopes to instruct the factory watchmaker in the whole of the art; so, when unemployed, the worker is ready to go off and set himself up as a 'proper' watchmaker."

R1696 Liman, LF

Petit traite de remontoir au pendent

fabricant d'horlogerie a Besançon

Besançon: LF Liman, 1866, 18.5 x 12.0 cm, 43 pp, 2 ill, frontis.

Technical (French).

Small treatise on the keyless mechanism.

R1697 Liman, LF

Traite du rhabillage

et de la fabrication de l'horlogerie actuelle, roues de rencontre, lepines, cylindres

Besançon:, 1864 (1861), 436 pp.

Repair (French).

Treatise on the repair and construction of present day timepieces, verges, lepines, cylinders.

R1698 Lindenberger, Jan

Collecting Garfield

an unauthorised handbook and price guide

USA: Schiffer, ca 2000, 9 x 6.4 inch, 144 pp, 396 ill.

Price guide (English).

"Filled with fun and interesting facts."

Lindenberger has also written "Rugrats collectables, an unauthorised guide". I don't think the rugrats existed in the mechanical watch era, but there may be a Garfield mechanical.

R1699 Linder, P

At the heart of an industrial vocation

Au coeur d'une vocation industrielle

Longines watch movements (1832-2007)

les mouvements de montre de la maison Longines (1832-2007)

Saint-Imier: Editions Des Longines, 2007, 30.5 x 30.5 cm, 621 pp, ill.

History, identification (English, French).

Published to celebrate the 175th anniversary of Longines.

A summary of all the watch calibres produced together with a technical analysis of the evolution of the watch movement during the different phases of organisation within the Swiss watch industry.

In 6 parts: Introduction (27 pages); Comptoir movements (10 pages); Mechanical movements (498 pages); Chronograph movements (46 pages); Quartz movements (21 pages); and Postscript (1 page). The bulk of the book, sections 2 to 5 inclusive, consists of information on probably every calibre produced by Longines. Each watch is given 2 pages which usually consist of basic information about the calibre and photographs of it. In a few instances photographs were not available and reproductions of catalogues are substituted.

The main parts of the book are followed by: List of Longines movements (2 pages); List of other movements used by Longines (2 pages); References (4 pages); and Sources (1 page).

[Remark, good?] The book begins with a very brief history of Longines, which is amplified somewhat by further historical remarks in the following descriptions of the calibres. These descriptions often contain irrelevant illustrations, and often the photographs do not show the salient features; they are, as usual, the standard external views of dials and movements which often leave the relevant parts hidden from view.

To justify the 575 pages of calibre descriptions, Linder suggests that their examination can give insight into the changing manufacturing methods used by Longines and "this focus on movement manufacture provides the justification for a history of the calibres developed by Longines". He goes on to write: "the history of the calibres ... may shed light on the human, financial, commercial or technical dimensions surrounding their making", and the book is not "a course in watch making technology" but a catalogue taking a "comparative" approach.

The problem with this is that Linder fails. For example, he states that "the production method developed by Longines was a compromise between the advantages of mechanization and the know-how born of a century of traditional craftsmanship. This balance can be seen in ... the 20L". But how? There is no explanation of how the 20L calibre shows such features and, as far as I can see, no way in which it could do this. It is a movement and it is impossible to see and distinguish machine and hand-made components. This criticism applies to all the calibre descriptions; there is nothing in them that can be ascribed to changes in manufacturing methods with enough certainty to be valid.

This is actually not surprising. Linder wrote that the calibres "may shed light", not "will shed light". In reality he never gets beyond "may" and he never makes direct, specific statements, simply because he cannot do so. So the stated purpose of the book remains a vague and unfulfilled desire, where the historical notes try (and usually fail) to relate the movements to Linder's "thesis", failing mainly because nowhere

does he specifically point to features that indicate machine as opposed to etablissage manufacture, and his remarks are always vague and guarded. Indeed, at times Linder's comments appear to be fanciful guesses. But perhaps his other book provides the necessary information that is so obviously lacking here? What we have left is a massive catalogue of movements which serves little purpose except for the reader you wants to see a photograph and description of a watch he owns.

[Remark] I tried several times to buy this book through the Australian agent for Longines, but I never got a reply from them. Having read it, I don't mind not having a copy.

R1700 Linder, P

De l'atelier a l'usine

l'horlogerie a Saint-Imier (1865-1918), histoire d'un district industriel
2008, 314 pp, ill.
History (French).

R1701 Linnard, W

Cardiff clocks

a comprehensive account of watch and clock makers in Cardiff, the valleys and the vale of Glamorgan
Cardiff: Merton Priory Press, 1999, 80, 44 pp, 11 b/w ill 8 col ill.
Makers (English).

A comprehensive account of watch and clockmakers in Cardiff, the Valleys, and the Vale of Glamorgan. Select bibliography. List of makers.

The book includes a 44 page facsimile catalogue and price list issued by Howell Morgan of Blaengarw, circa 1900.

R1702 Linnartz, J

Das fachzeichnen des uhrmachers

ein leitfaden für den zeichenunterricht an fortbildungeschulen sowie zum selbstunterricht
Dusseldorf: Knapp Verlag (Halle: Wilhelm Knapp), 1978 (1907), 20.5 x 15.0 cm, 115 pp, 50 ill (99 pp, 31 plates) (93 pp, ill) (29 pp, 28 ill).
Technical (German).

This book has been produced in at least 11 printings (including 1907, 1914, 1921, 1929, 1938 and 1949) and apparently reprinted in 1966 and 1978 (see Brinkmann "Die uhrmacherschule").

Technical drawing for horologists, a manual for drawing instruction in finishing schools or for self instruction.

Three chapters and an appendix covering general information, basic drawing and drawing construction.

[8th & 9th printing 1951, fair] The preliminary material covers measurement and basic drawing (including screws, staffs, stems and jewels). This is followed by a number of short sections consisting of a drawing and a couple of pages of text; including cycloidal gears and watch escapements (pin lever, cylinder, lever, spring detent and pivoted detent).

It is a school text book intended for use in conjunction with lectures and exercises. I don't think it is of much use separated from that context.

R1703 Linz, J

Westclox wind-up

USA: Schiffer, 2003, 11 x 8.5 inch, 256 pp, 797 ill.
Identification (English).

Volume 1 of a two-volume history of the Westclox Company. The second volume (Westclox Electric) has 240 pages and 729 illustrations, mostly in color.

Three sections: Overview (56 pages containing Introduction; Overview of Westclox and General Time; Advertising and marketing; Innovations in spring wound timekeeping; and Selected designs and designers); Clock gallery (131 pages); Watch gallery (56 pages); After hours (8 pages including Bibliography; Factors that affect values; Index to model names; and Index to model numbers).

Over 790 photographs of clocks and watches with values.

[1st edition review by Bill Keller] These two separate volumes are being reviewed as one since together they present essentially the total history of one of America's most recognizable clock firms. One has to doubt that there is any better known alarm clock name throughout the world than "Big Ben," the name given by this company to its most prolific seller. The first Big Ben was made by the then Western Clock Co. in 1906, and the name was seen on both its spring-driven and electric products. Western and its successor companies used the name for almost a century. So well known was the "Big Ben" that other models such as the "Baby Ben," the "Pocket Ben," and the "Wrist Ben" appeared, benefiting from their more famous predecessor's prominence.

Westclox, as the company is perhaps best known, had its beginnings as the United Clock Co. It was started by Charles Stahlberg who developed an improved process for manufacturing clock parts, a casting process in which multiple parts were moulded together using a molten metal similar to type metal. Regrettably, as chronicled in these volumes, Mr. Stahlberg, although a most inventive person, was perhaps not too good a salesman or possibly lacked business acumen. As a result, the original company failed and F. W. Matthiessen, a LaSalle, IL, businessman who was in the metals business, purchased the firm and renamed it the Western Clock Manufacturing Co., later to become the Western Clock Co., and finally Westclox.

Jim Linz, and/or the publisher, have seen fit to divide this interesting company's story into two well-documented and well-illustrated volumes based to a large extent on its highly regarded employee

magazine, *Tick Talk*. Information found in this publication, begun in 1913, has been supplemented by numerous interviews with former employees and hundreds of figures of various clock models from catalogs and advertising pieces. The use of covers and illustrations from *Tick Talk* plus photos of a number of employees of the firm add an interesting personal touch. This was a company with considerable concern for its employees. From employee accounts, there was a real attempt to make the workers feel like family, and the company was a leader in offering employee perks such as sickness benefits, an annuity program, and company housing, some years before these things became fairly common.

Although there is much about the Westclox management and employees, by far the largest portion of the two volumes is used to show the many varied products of the firm. Not only are its many Big and Baby Ben models shown, but also a variety of alarms and timepieces, both wind-up and electric, made by the company are shown. Included among these are car clocks, travel clocks, bicycle clocks, pocket watches, and wristwatches. Most of the illustrations in this section are in color and there seems, to this reviewer, to be an emphasis on their design aspects.

Regrettably, while emphasis on case design is fine, other aspects of interest to collectors might well have been useful. Although many patents are shown and discussed and a section on "Movements," in the *Wind-Up* book is included, it contains no detailed information on them, how the cast parts were made, or how the firm's use of repair modules for its major products enabled repair people to quickly and easily repair broken springs. These are all aspects that this reviewer feels would have added to what is a most interesting and informative volume. These omissions notwithstanding, we would recommend both these books to all alarm clock collectors, particularly those with a special interest in Big Bens and the many other alarms produced by this company during its century of life. Those with an interest in reasonably priced pocket and wristwatches can also find much of interest. For those "electric nuts" we would recommend the *Electric* book, although it, too, could have benefited from more detailed information (other than patent drawings) on the movements used and made by the firm.

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R1704 Lonnais, F Le

The Prentice-Hall book of time

The Orion book of time

Le temps

London: Prentice-Hall, New York: Orion Books (Paris: Delpire), 1963 (1959), 8.5 x 7.5 inch, 110 pp, 50 ill. (English, French).

The English translation appears to have been published in 1959, 1960, 1962 and 1963.

The history of time measurement and the mathematical and physical study of time through the latest modifications of the theory of relativity.

The idea of time in ancient and modern history; Development of timekeeping devices; Advent of the mechanical clock; Atomic clocks; Quantum theory and space-time.

R1705 Lippincott, Kristen; Eco, Umberto

The story of time

London: Merrell Holberton, 1999, 28 x 24.5 cm, 304 pp, ill, slip case.

History (English).

Produced in association with the National Maritime Museum.

"The Story of Time is a unique multi-disciplinary, cross-cultural exploration of every aspect of time across the Earth, from the earliest civilizations to the beginning of the third millennium. With the original contributions from an outstanding cast of international authors, it questions people's perceptions of time and reflects the many ways in which cultures around the world have responded to time, measured time and expressed their understanding of time."

R1706 Lipton, BH

Aim for a job in watchmaking

New York: Richards Rosen Press, 1967, 22.0 x 15.0 cm, 126 pp, 8 ill.

Employment (English).

A volume in the "Aim high vocational series".

Nine chapters: A brief history, The pursuit of watchmaking, How to become a watchmaker, The watchmaker as businessman, The Joseph Bulova School of Watchmaking, Watchmaking as a vocation for the disabled, Stories of personal success, Employment outlook, and Summary.

[1st edition, fair] Lipton was the Director of the Bulova School of Watchmaking and a leader in providing services for the disabled. The Bulova school was established after World War II to train disabled veterans and later admitted disabled civilians and a few able-bodied people.

This book provides a very short history of horology, explains what is involved in watch repair, why school training is to be preferred to other training methods, the need for business skills and the prospects for employment. Because of Lipton's background, the book focuses on rehabilitation of disabled veterans, but it is generally applicable. Except for one stunning error (suggesting watch dials were first used at the end of the 19th century) the basic information is adequate.

The main point of interest in this book is the description of the Bulova school and its purpose.

- R1707 Littrow, L von**
Über die einrichtung und behandlung
 von chronometer, pendel und federuhren
 1845 (1843), 28 pp, 9 ill (26 pp).
 (German).
 Robertson "The evolution of clockwork" lists "Miscellen uber uhren" (1845, 28 pp, 9 ill) and Mercer "The life and letters of Edward John Dent" gives "Über die einrichtung und behandlung von chronometer ..." (1843, 26 pp). These may be the same work.
Is this the German translation of Dent "An abstract from two lectures on the construction and management of chronometers"?
- R1708 Lloyd, HA**
The origin of the fusee
 London: Society of Antiquaries, 1951, 4to, 4 pp, 2 ill, 3 plates.
 History (English).
 Offprint from the Antiquaries Journal, 1951.
- R1709 Locke, John**
Your pocket watch
 the owners' guide to mechanical pocket watches
 England: Brabourne Books, ca 2004, 20.0 x 14.5 cm, 34 pp, 66 ill.
 Description (English).
 Undated.
 Ten sections: Introduction, Timeline for pocket watches, How pocket watches work, Operation, Pocket watch faults, Maintenance, Complicated pocket watches, Examples of European pocket watch movements, and Examples of American watch movements.
*[1st edition, fair] This is a brief description of pocket watches for the ignorant watch owner, the person who comes across "grandfather's watch" in a drawer and wonders what to do with it. It gives some basic information about how watches work, how to use them and common faults.
 Locke does a reasonable job of this task, but the book is too short and perhaps too vague in some places.*
- R1710 Loeske, M**
Die chronographen und stoppuhren
 für besondere zwecke
 Berlin: Deutschen Uhrmacher-Zeitung, 1921, 23 x 15 cm, 36 pp, 44 ill.
 Description (German).
 Chronographs and stop watches for specific purposes.
- R1711 Loeske, M**
Die gesamte literatur
 uber uhrmacherei und zeitmesskunde
 Bautzen: Emil Hubner, 1897, 16mo, 128 pp.
 Bibliography (German).
 Complete literature on horology and time measurement.
- R1712 Loeske, M**
Die uhrensammlung Marfels
The Marfels collection
 Berlin: Deutschen Uhrmacher-Zeitung, 1924 (ca 1913), 28 x 23 cm, 10 colour plates.
 Collection (German).
 Also given as 8 plates.
 Tardy lists two works "Die uhrensammlung Marfels" and "Die sammlung Marfels, zwolf kleinodien der uhrmacherkunst" (1926).
- R1713 Loeske, M**
Praktisches hilfsbuch für uhrmacher
 Anweisungen und abhandlungen fur werkstatt, und laden sowie fur die geschäftliche und die gewerbliche praxis des uhrmachers
 Berlin: Carl Marfels, 1910, 22.0 x 14.5 cm, 199 pp, 22 ill.
 Tools (German).
 Practical handbook for horologists; instructions and methods for workshops.
- R1714 Lohberg, R**
1000 montres, technique, précision, élégance
1000 Uhren, technik, prazision, eleganz
 : Terres, 2008, 30 x 23 cm, 336 pp, ill.
 Illustration (French, German).
*[1st edition] "Upon reading this, the heart of all lovers of watches begin to beat a little faster. More and more people are passionate about watches and are willing to invest in these timeless beauties, these instruments of technical perfection and design, and even start a small collection. Let yourself go into the fascinating world of wristwatches: extravagant models made to order, jewelry and watches sports watches, chronographs.
 "This reference presents over 1000 wristwatches and provides a portrait of the legendary watchmakers. An introduction to the history of time measurement and watches and a comprehensive glossary of*

techniques and equipment complete this essential guide."

R1715 Longines Watch Co**How to repair a Longines automatic watch****Comment rhabiller une montre automatique Longines**

Saint Imier: Longines Watch Company, 1954 (1949), 20.0 x 14.5 cm, 16 pp, ill, 1 plate.

Repair (English, French).

An overview of the automatic mechanism followed by instructions on disassembly, cleaning and replacement of parts, assembly, and lubrication. The plate has photographs of parts.

[1954, fair] Unlike "How to repair a Longines watch" this booklet is specifically about the Longines caliber 19A. I found it a bit difficult to follow (especially as the diagrams are too small), but it is written on the assumption you have a 19A on the bench to repair; in which case the diagrams are probably perfectly adequate.

The booklet is of little interest unless you are repairing this particular watch.

R1716 Longines Watch Co**How to repair a Longines watch****Comment rhabiller une montre Longines**

New York and La Chaux-de-Fonds: Longines Watch Company, Longines-Wittnauer Watch Co (Switzerland: Haefeli & Co), 1949 (1947), 21.0 x 15.0 cm, 35 pp, 50 ill.

Repair (English, French).

This and "How to repair a Longines automatic watch" may be confused by book sellers. The French edition (33, 6 pp) is dated 1947 and the English 1949.

A number of short chapters on cleaning and oiling, and replacing mainsprings, wheels, winding stems, friction jewels, balance staffs, balance springs, hands, and crystals.

[1st edition, mediocre] A clear if rather superficial description of basic watch repair which, despite the title, is applicable to any brand of watch. Although it is quite good there are much better books covering the topics.

Presumably it was originally given away to watchmakers.

R1717 Loomes, Brian**The early clockmakers of Great Britain**

London: NAG Press, 1981, 8vo, 608 pp, ill.

History, makers (English).

A comprehensive directory of clockmakers working before 1700 with a list of 5,000 makers. It also contains details of the Clockmakers Company of London and the apprenticeship system.

R1718 Loomes, Brian**Watchmakers and clockmakers of the world**

volume 2

Essex: NAG Press, 1992 (1976), 22.0 x 14.0 cm, 299 pp.

Dating, makers (English).

This volume gives over 35,000 names, dates and places (primarily English and European), together with additions and corrections to Volume 1 (Baillie "Watchmakers and clockmakers of the world Volume 1"). It mainly covers the period 1825 to 1880.

[2nd edition, excellent] The two volumes Baillie and Loomes are the basic and indispensable references for non-American "makers", those people who signed watches and clocks.

See also Loomes & Baillie "Watchmakers and clockmakers of the world, complete 21st century edition".

R1719 Loomes, Brian; Baillie, GH**Watchmakers and clockmakers of the world**

complete 21st century edition

England: Robert Hale, 2006, 8.75 x 5.75 inch, 873 pp.

Makers (English).

Loomes had not been able to revise Baillie's "Watchmakers and clockmakers of the world Volume 1" due to copyright issues, and so he published volume 2. However, upon resolving these issues he combined volumes 1 and 2 to produce the 21st century edition. It adds a further 25,000 entries to those contained in volumes 1 and 2 and has the advantage of the entries being in a single work. There are more entries for British clockmakers than any other region and thus there may be some bias in the contents.

R1720 Lorch Schmidt & Co**Trade price list, lathes and other tools**

Berlin: Michael Stern (Germany: Lorch Schmidt), ca 1900, 9 x 6 inch, 99 pp, ill.

Catalogue (English).

Some catalogues are reproduced on CD Rom, see Stern "Horology CDs", CD 7.

Catalogue of watchmakers lathes, other lathes, accessories, staking sets and other tools. Fully illustrated with extensive descriptions.

R1721 Loring, J**Tiffany timepieces**

USA: Harry N. Abrams, 2004, 23 x 23 cm, 312 pp, 250 col ill, slip case.

Illustration (English).

"A really charming book, with a superb slip case, which has a cut-out on the front, depicting the innards of a watch, and also on the back, showing a Tiffany watch. A sumptuous volume which surveys the

development of these glorious timepieces since Tiffany's inception 150 years ago, discussing the role Tiffany has played in making the watch a collector's piece and fashion accessory".

Loring has produced several "Tiffany" books: "Tiffany parties", "New Tiffany table patterns", "New Tiffany table settings", "New Tiffany taste", "Tiffany wedding". etc.

R1722 Loseby, ET**Loseby's improvements in timekeepers**

London:, ca 1852, 8vo, 16 pp, 6 plates.

Technical (English).

Undated, but commonly given as 1852.

This pamphlet describes Loseby's mercury compensation balance for chronometers using curved thermometer tubes. With it he overcame the middle temperature error and took first place in Greenwich trials in 6 of the 8 years 1845-52.

See also Farmer & Loseby "An account of the improvements in chronometers, watches and clocks, by ET Loseby".

R1723 Lossier, L**Étude sur la théorie du réglage des montres****Das regulieren der uhren****Study of the theory of adjustment of watches**

suivie d'indications et d'exemples pratiques

in den lagen in theorie un praxis

Genève: Journal Suisse d'Horlogerie; Bautzen:, 1907 (1890), 23.0 x 15.0 cm, 185 pp, 65 ill, 3 fld plates (135 pp, 2 plates).

Repair, technical, theory (French, German).

The German translation of 1892 and 1895 (228 pp, 48 ill, 3 fld plates) is by Loeske.

"D'après le mémoire de J Grossmann, directeur de l'école d'horlogerie du Locle".

The theory and practice of adjusting watches in positions.

Five chapters: The laws of the balance and balance-spring (21 pages); External influences independent of the balance and balance-spring (28 pages); Influence of friction (24 pages); Disturbances of the balance and balance-spring (37 pages, including the theory of Phillips); and Summary with practical advice (33 pages).

The second edition adds a 6th chapter on temperature regulation (28 pages) and a note on metric units by Guillaume (3 pages).

[2nd edition] An English translation by Walker and Barber was published in the Horological Journal, (1893 to 1896), but I don't think it has been printed as a book.

R1724 Lossier, L**Études des échappements**

cours a l'école de Besançon

Besançon:, nd, 4to, 143 pp.

Technical (French).

Listed in Tardy.

Study of escapements, course at the Besançon school.

R1725 Lossier, L**Theorie du réglage des montres**

etude complementaire

Geneve: Journal Suisse d'Horlogerie, 1893, 22 pp, 11 ill.

Technical, theory (French).

Additional notes to "Étude sur la theorie du réglage des montres", presumably incorporated in the second edition of that work.

R1726 Lübke, A**Das grosse uhrenbuch****Die uhr**

von der sonnenuhr zur atomuhr

Tübingen: Wasmuth Verlag (Dusseldorf: VDI Verlag), 1977 (1958), 27 x 19 cm, 431 pp, 630 ill (441 pp, 476 ill, 79 figs, slip case?).

Description, history (German).

"Die uhr" was published in 1958 and "Das grosse uhrenbuch ..." was published in 1977. The may be two different books rather than different editions of the same book.

Alle uhrenarten, auch astronomische, turm- und kathedraluhren. Formen und bauelemente der räderuhren, uhrhemmungen etc.

Probably only clocks, but I am not sure if it is a big-timepiece book or a big timepiece-book.

R1727 Lucchina, G; Jenkins, BR**The origin and evolution of the watchmakers' staking tool**

USA: National Association of Watch and Clock Collectors, 1978, 9 x 6 inch, 22 pp, 17 ill.

History (English).

Reprinted from the NAWCC Bulletin, No. 196, October 1978, pages 475-496?.

[1st edition, very good] This is a well written and interesting history of the staking tool which, according to the authors, was first designed and made in the 1870s in America. There is one fleeting mention of

Boley, but otherwise non-American staking tools are ignored.

A slightly abbreviated version of this article (with some different illustrations) appears as the first part of Lucchina & Perkins "The watchmakers' staking tool".

[Remark] *The focus on American tools may be misleading. Crom, "Horological and other shop tools", reproduces two early staking tools. First, a Swiss Faure Freres catalogue which he dates to circa 1860 and which shows two staking tools, one of which appears to have a rotating die. Second, an undated mid-nineteenth century colour plate of a staking tool with a rotating die. Although these do not conclusively show a European origin, they cast enough doubt to demand further investigation.*

R1728 Lucchina, G; Perkins, A

The watchmakers' staking tool

Lebanon, USA: Roger S. Wood, Kendrick and Davis, 2009 (1987), 23.5 x 16.0 cm, 91 pp, 27 pp catalogue, ill.

Repair, tools (English).

Reprinted in 2009.

In two parts.

Part 1 is an essay on the history of the staking tool and the Kendrick & Davis company, written by Lucchina; 14 pages, 15 ills.

Part 2 is a 75 page detailed description of the use of the staking tool written by Perkins; basically a series of diagrams with explanatory text. There are 14 sections: Punches; Stumps; Roller table remover, balance staff remover and friction jewel attachment; The die plate, frame and closing pivot holes; Closing holes (barrels, hands and hairspring collets), adjusting endshake; Removing, staking and closing holes in roller tables; Removing and replacing balance staffs and friction pallet arbors, replacing hairsprings; Tightening, removing and replacing canon pinions; Removing and staking watch train wheels and pinions; Peeing and stretching guard pins, pallet forks, solid banking, balance wheel arm, escape wheel spoke, set lever, and springs; Removing and replacing regulator keys and various pins; Replacing watch hands; closing case sleeves, removing and replacing alarm clock balance staffs and hairsprings, removing broken pins, making timing washers; Removing and replacing friction style jewel settings; and Removing and replacing friction jewels using the K & D friction jewel attachment.

The book concludes with a current (circa 1986) catalogue of K & D tools (25 pages).

See also Kendrick & Davis "Staking tools and how to use them".

[1st edition, excellent] *Part 1 is an adaptation of Lucchina & Jenkins "The origin and evolution of the watchmakers' staking tool", which see. It is a well written and interesting summary of the history of the staking tool which, according to the author, was first designed and made in the 1870s in America. There is no mention of non-American staking tools.*

Despite the information being oriented to Kendrick and Davis products and one or two contentious suggestions, Part 2 is an excellent description of how to use one of the most important of all tools. The text is clear and illustrated by superb diagrams, so that the reader will have no trouble learning about this very versatile and essential tool.

The appended catalogue appears to be a later edition of Kendrick & Davis "K&D staking tools and how to use them".

R1729 Ludwig; Fries

Handbuch der uhrmacher

mit geschichte der taschenuhren

Frankfurt., 1891, 8vo, 66 pp, 14 plates.

History (German).

Handbook for the watchmaker, with a history of the pocket watch.

R1730 Ludwig, R; Cremers, A

Die schönsten uhren

Ulm: Ebner Verlag, 1997 (1988), 31 x 23.5 cm.

Illustration (German).

Published in 1988 (184 pp), 1991 (224 pp), 1992 (223 pp), 1994 (193 pp), 1995 (215 pp), 1996 (246 pp) and 1997 (215 pp).

"Lavishly produced picture book of wrist-watches - the annual trade puff".

R1731 Lunardi, H

600 jahre Nurnberger uhren

Vienna: Braumüller Verlag, 1974, 21 x 15 cm, 211 pp, 125 ill.

History (German).

Historical study of watch and clock making in the Nurnberg region.

R1732 Lusberg, B

Urmagere og ure i Danmark

med en kort fremstilling af urets og tidsforkyndelsens historie

Copenhagen:, 1908, 10 x 8 inch, 289 pp, 12 plates.

(Danish).

Baillie gives the author as Liisberg.

Danish horology.

Gardner in "Catalogue of the Torrens collection" simply says "very scarce and desirable". But I don't know whether he referring to the price or the contents.

- R1733 Luthmer**
Graveurarbeiten an taschenuhrwerken
 nd.
 Description (German).
 Engraving in pocket watch work.
- R1734 Ly, Tran Duy**
Ansonia clocks and watches
 Arlington: Arlington Book Co., 1998 (1989), 11 x 8.5 inch, 752 pp, 3061 ill.
 Price guide (English).
 The first edition, "Ansonia clocks", contained only clocks.
- R1735 Ly, Tran Duy**
Ingraham clocks and watches
 Arlington: Arlington Book Co., 1998, 11 x 8.5 inch, 384 pp, 1269 ill.
 Price guide (English).
 The book contains: collecting clocks and watches (13 pages), history of Ingraham (20 pages by Bailey), early clocks (44 pages by Spittler), black mantel clocks (10 pages by Bailey), reproductions of Ingraham catalogue illustrations (with a 13 page section on Ingraham pocket and wristwatches), and index.
Primarily clocks, but with some material on watches.
- R1736 Ly, Tran Duy**
New Haven clocks and watches
 Arlington: Arlington Book Co., 1997, 11 x 8.5 inch, 520 pp, 2200 ill.
 Identification, price guide (English).
- R1737 Ly, Tran Duy**
Ulysse Nardin chronometers, pocket and wrist watches
 with price guide
 Arlington: Arlington Book Co., 1988, 11 x 8.25 inch, 20 pp, b/w ill.
 Price guide, catalogue (English).
 Price guide with extracts from (French language?) catalogues.
[Review by Marvin Whitney] This reprint is of a catalog entitled "Chronometric Ulysse Nardin" published in 1920 by Bigalke & Eckert Co., New York City, sole agents for Ulysse Nardin in the United States, with the addition of a 1988 price guide by Tran Duy Ly.
Ulysse Nardin, the son of Leonard, a remarkable watchmaker founded the firm in 1846. Thanks to his remarkable qualities as a watchmaker, he was accorded the highest awards at numerous expositions. In 1876, he suddenly died, and the responsibility of running the firm fell on the shoulders of son Paul D., who had not yet turned 20 years old. Two months after his father's death, Paul, an adjuster, was awarded the gold medal at the International Competition of Adjusting Chronometers, held at Geneva. His success brought him world-wide publicity. Soon Paul stated producing marine chronometers which made the name of Ulysse Nardin famous throughout the world.
The United States Naval Observatory first began purchasing torpedo boat watches (deck watch / pocket chronometer) from Nardin in 1906 and marine chronometers in 1913, a practice that was continued until the Nazis sealed off the Swiss borders in 1942. Many of the models shown in this reprint are of those purchased by the U.S. Navy. Trial records indicate high performance with very few rejects.
Through the years, Nardin's instruments continued to win more than their share of observatory competitive awards for excellence at Neuchatel and Geneva. Because of their high performance, not only in foreign competition but during chronometer trials at the Naval Observatory, the U.S. Navy selected the Nardin marine chronometer as the model to be prototyped by the Hamilton Watch Company in 1940. Hence, Hamilton defied tradition, developing modern production equipment which produced an instrument whose overall performance far exceeded that of any ever made. This was a sterling tribute, not only to Hamilton's engineers and craftsmen, but likewise to those of the Nardin Company.
In the past few years, there has been a remarkable growth in the interest in chronometers and chronometer type watches. This catalog is representative of navigational timepieces of that era, and should be of interest to those who are interested in the science of chronometry. As with any price guide, the prices herein are fairly representative for the reader to use as a reference base.
(Reprinted by permission. NAWCC Bulletin No. 257, ©1988 by the National Association of Watch and Clock Collectors, Inc.)
- R1738 Lyon; Scott**
Evolution of the timepiece
 Chicago:, 1895.
 History (English).
 Brearley "Time telling through the ages" says it was printed in Ohio in 1896.
- R1739 Macey, SL**
Time, a bibliographic guide
 New York: Garland, 1991, 8vo, 426 pp, 1 ill, index.
 Bibliography (English).
 A general bibliography of time, including journal articles, which covers works post 1900.
[1st edition, mediocre] References are grouped by subject; biology, horology, law, music, physics, etc. The horology section is somewhat superficial, a necessary consequence of the broad scope of the book.

Consequently it has little value in this context.

Macey has also published "Encyclopedia of time" containing time related articles (New York: Garland, 1994, 10.5 x 7.5 inch, 699 pp, 53 plates). It also covers a wide range of subjects with horology forming only a small part.

R1740 MacTaggart, P; MacTaggart, A
Practical gilding

Welwyn: , 1984, 8vo, 74 pp, few figs.

Repair (English).

Descriptions and explanations of the materials, equipment and traditional, professional methods of oil and water gilding are clearly set out in a manner that can be understood both by craftsmen and those who wish to understand and apply these methods today

Nothing to do with watches, although it might be relevant to clock cases.

R1741 Maddison, FR; Turner, AJ
Museum of the History of Science

catalogue 2, watches

Oxford: University of Oxford Press, 1973, 8vo, 91 pp, ill.

Collection, description, history (English).

Catalogue of watches in the Museum of the History of Science, Oxford.

R1742 Magdeleine, Pierre de Sainte Marie

Traitt d'horlogiographie

Contenant Plusieurs Manières de construire, sur toutes surfaces, toutes sortes de horaires: & autres cercles de la sphère. Avec quelques Instrumens pour la mesme pratique, & pour connoistre les heures durant la nuit & l'heure du flus & reflux de la mer. Plus la méthode de couper, en pierre ou en bois, les corps réguliers & autres Polyèdres, par le cube & par le cylindre. Reueu, corrige & augmente en cette troisième édition, de plusieurs propositions & figures.

Paris: Antoine Dezallier (Lyon: Leonard Plaignard) (Paris: Jean Dupuis) (Paris: Nicolas l'Anglois) (Paris: Melchior Tavernier), 1701 (1641), 15.5 x 10.5 cm, 294 pp, frontis, 72 plates (2 fld) (294 pp, frontis, 72 plates (2 fld)) (240 pp, 60 plates (2 fld)).

Sun dials (French, English).

Five editions in 1641, 1646, 1657 (3rd edition), 1665 (3rd edition), 1691 and 1701. Leroy suggests the first edition had 61 plates (3 folding).

The 1657 printing is given as xvi, 312 pp (page numbers 81-100 omitted, page numbers 259-260 repeated), 72 plates (71 and 72 on one folding leaf).

The pagination of my 3rd edition (1665) is frontis, x, iv (table of contents), 1-80, 101-240, 231, 242-312, blank, plates 1-41, 44, 43, 42, 45-68, 70, 69, 71-72; some plates contain tables. The contents page of my copy and another copy indicate that pp 81-100 did not exist in this edition, so it actually has 292 pp. The first edition also has misnumbered pages; actually 236 pp numbered 1-98, 103-240.

Ten chapters describing, without mathematics, the construction of all sorts of sun dials and including sections on moon and nocturnal dials, signs of the zodiac, latitude and longitude (with a table based on the Canary Islands), tides, etc.

[3rd edition 1665] This book contains nothing at all about mechanical timepieces. It is listed because it is not mentioned in other horological bibliographies, except the Leroy collection.

A crude translation of the title is "Treatise on dialling containing several methods of construction, on surfaces, of all sorts of horary lines and other circles of the sphere. With some instruction for practical (measurement) and for showing successive hours and the hour of the ebb and flow of the sea. With a method for cutting, in stone or wood, regular bodies and various polyhedrons, including the cube and the cylinder. Bringing together, correcting and augmenting in this third edition the many propositions and figures."

[Remark] On at least one occasion a copy has been sold cheaply because the book seller checked the pagination and thought it was incomplete.

R1743 Maigne, W; Mathey, O

Nouveau manuel complet de dorure, argenture et nickelage

sur métaux a feu trempé, a la feuille, au pinceau, au pauce et par la méthode électro-métallurgique

Paris: Manuel Roret, 1921 (1880), 15.5 x 9.5 cm, 456 pp, 36 ill (456 pp, 36 ill) (416 pp, 36 ill).

Technical (French).

Tardy also notes another (earlier?) title "Dorure et argenture sur métaux, application a l'horlogerie".

Revised by Villon and Petit.

Nickel plating, silvering and gilding.

A new edition expanded and corrected by A.M. Villon and G. Petit.

R1744 Mallet, Robert

The record of the international exhibition 1862

Glasgow, Edinburgh, London: William Mackenzie, 1862, 28.5 x 23.0 cm, 592 pp, 776 ill, 23 plates (8 fld). Description, history (English).

This exhibition was held in London.

The book begins with a 64 page history of exhibitions and details of the 1862 exhibition building. The remainder contains descriptions and illustrations of exhibits including historical and technical information. There are six and a half pages on horology written by W. Hislop, the honorary secretary of

the BHI.

[1st edition, good] Although short, Hislop's contribution is interesting. He begins with some critical remarks on English clocks ("visions of their form and design haunt us as we write") and the Jurors' Awards (where he openly suggests bias against rivals "damned with faint praise"). Later he admires a clock made by a Mr Hislop and I am not entirely sure how impartial his remarks are.

The remainder consists of a few notes on each sub-class mentioning items he considers worthy of attention; clocks, chronometers (6 ill, new compensation balance designs), watches (5 ill, keyless work for fusee watches and chronographs) and tools (including an interesting comment on standardised hole jewels being produced by Brooks: "Mr Brooks has elaborated his system for the especial purpose of facilitating the repairs of watches at a distance from the seat of manufacture"). It is a pity Hislop didn't write 20 or 30 pages. He has aroused my curiosity in a way Britten (in Bevan "British manufacturing industries") and Tripplin "Watch and clock making in 1889" never did.

There is also a section on engineering tools, by Mallet, which begins with an interesting history of the origin of modern tools in clockmaking.

[Remark] I have also looked at a book on the 1851 (Crystal Palace) exhibition. This does not deserve a separate entry, so I will comment on it here.

The book is "The illustrated exhibitor, a tribute to the world's industrial jubilee comprising sketches, by pen and pencil, of the principle objects in the great exhibition of the industry of all nations" (London: John Cassell, 1851, large 8vo, 556 and xlv pp, ill, plates), published in parts during the exhibition. It contains an anonymous 7-page note on horology with a vague history (largely quoted from Grafton "Horology, or a popular sketch of clock and watch making") and half a page on watches containing nothing interesting. Elsewhere in the book there are much more interesting pieces; including steel making, file manufacture and Dent's dipeidoscope.

R1745 Mamet, D

Bar mitzvah

Boston: Little Brown & Bullfinch Press, 1999, 10 x 12 inch, 45 pp, ill.

Prose (children) (English).

A lesson about life and what it means to be a good Jew given by an old man in whose hands an antique watch reveals "something of man's relation to God". A mysterious journey from the intricacies of watchmaking as the old man shares his understanding of life's struggles and happiness.

David Mamet, a Pulitzer Prize winner, is a playwright, novelist and screenwriter.

R1746 Mann, H

Portrat einer taschenuhr

kleine uhrenkunde fur liebhaber

Munich: Callwey, 1986 (1981), 25 x 19 cm, 72 pp, 36 ill, 6 plates.

History, technical (German).

3 printings.

Details of complicated pocket watches made by IWC Schaffhausen with a little history. It includes the calibre 972.

R1747 Mannoni, Edith

Montres anciennes

l'amateur d'art

Paris: Ch. Massin, ca 1984, 31.5 x 24 cm, 63 pp, 124 ill.

History (French).

A brief history of pocket watches.

R1748 Manuel Del Rio, PF

Arte de relojes de ruedas

para torre sala y falbriquera

reprint (Madrid:), 1991 (1759), 8 x 5.5 inch, two volumes, 360 and 198 pp, 13 fld plates.

Repair (Spanish).

Volume 1 of the 1798 edition is available as a Google Book PDF file, but only 1 plate of 13 and it is scanned folded and so useless.

Part of the "Tempvs Fvgit" series?

"The art of clocks and watches, turret, house and pocket, in two volumes, with 13 plates in which are shown various devices and clockmaking tools, with simple instructions by which all skilful persons may become proficient clockmakers without a master. Including also repeaters; calculations for all kinds of clocks from the 24-hour clock to the year clock; the various ailments to which old clocks are subject, with medicines for curing them; many of which can be remedied by the owners without the need of a clockmaker."

Volume 1 is on clocks and volume 2 on watches.

Reviewed in Baillie "Clocks and watches: an historical bibliography" who says it is "quite inadequate in detail". Some tools from this book are illustrated in T.R. Crom "Horological shop tools 1700 to 1900".

R1749 Manx Museum

Loan exhibition of old clocks and watches

Douglas: Manx Museum, 1927.

Exhibition (English).

Listed in Tardy.

R1750 **Marchand, G**

R1750 **Marchand, G**

Histoire d'une montre

Paris: , ca 1880, 235 pp, a few ill.

Prose (children) (French).

History of a watch.

A novel for children "of an improving nature".

R1751 **Marfels, C**

Uhrmacher handbuch

ein ratgeber für fachgenossen

Berlin: Hempel & Co, 1904, 23 x 16 cm, 137 pp, 2 ill, 35 plates.

Collecting, collection (German).

Watchmaker handbook, advice for professional colleagues.

History of time measurement, determining the age of watches, descriptions and illustrations of watches from the Marfels collection (25 plates), laws (purchase, work and lease contracts), practical hints for watchmakers, advertisements of watch companies for 1904 including Omega, Longines, Furtwangler, Junghans and Glashütte.

R1752 **Marfels, C**

Von den zeitmessern des altertums

bis zur modernen prazisions-uhr

Neckargemund: Carl Marfels, 1925, 24 x 15 cm, 32 pp, 17 ill, 12 plates.

History (German).

From the timekeepers of the ancients to the modern chronometer.

R1753 **Marfels, S**

Taschenuhren früherer jahrhunderte

1897, 40 pp, ill.

Illustration (German).

Depicts and provides details of a range of ornate pocket watches from the 17th century.

R1754 **Marguerat, A**

Guide des horlogers

contenant un cours abrège sur le rhabillage

Genève: A. de Chateaufvieux, 1857 (1837), 8vo, 126 pp.

Repair (French).

Horological guide including a brief course on repair.

Gardner "Catalogue of the Torrens collections" notes that Baillie (in the unpublished volume 2 of his bibliography) says this is a copy of a chapter from Perron "Essai sur l'histoire abregee de l'horlogerie". There are 75 pages of tables.

R1755 **Marigny, Marquis de**

Traite d'horlogerie

contenant tout ce qui est nécessaire pour bien connoitre et pour régler les pendules et les montres

Paris:, 1775 (1755), 4to, 308 pp, 17 fld plates.

Technical (French).

[Remark] This is Lepaute "Traite d'horlogerie". I have no idea why a bookseller listed Lepaute's book under this name.

R1756 **Marmottan, P**

Abraham Louis Breguet

Abraham Louis Breguet

his genius his fame his work

une grande marque d'horlogerie française sous Napoléon

Paris:, 1923, 35 pp, 2 plates.

History (French, English?).

English and French text. Also said to be 72pp.

Limited edition of 310 copies.

R1757 **Marozzi, D; Toselli, G**

Longines

Italy: Edizioni Giada, 1990, 30.0 x 22.0 cm, 337 pp, 450 ill, loose price guide.

Description, history, price guide, technical (English, French, Italian).

Text in English, French and Italian with Italian price guide.

An introduction of 4 pages followed by six sections: 125 years of Longines (26 pages); Advertising in the past (16 pages); The calibers (10 pages); Longines and aviation (42 pages); The watches (216 pages); and Some intriguing models (63 pages).

[1st edition, mediocre] This is a photographic essay. The first 4 sections contain the equivalent of 8 pages of text in English (and the same amount in French and Italian). There is no history of the company (the first section catalogues prizes and awards), but there are explanations of how Longines navigation watches are used. The remainder of the book consists of high quality colour photographs with short captions, and, except for about 6 illustrations, all are dial views. The illustrations in the last 2 sections (the photo essay) are arranged roughly in chronological order from 1873 to about 1970 (and consequently all are mechanical).

As a "coffee table" book it is very good. The minimal, uninformative text does not distract the viewer from the excellent photographs of watches, which must encompass nearly every style made by Longines.

[Remark] I would not have said more, but I read the text, only to discover the authors have "shot themselves in the foot". In the introduction they state that the focus of the book is on collectors, value for money and "style and beauty". This is nicely emphasised in the section on calibers, which is "dedicated in particular to the most expert enthusiasts" and which offers information on dating. So far, so good. The text is a vague, flowery adoration of Longines which creates a warm feeling and the comfort of knowing that one is not alone in loving Longines.

But unfortunately the authors imply more, their language suggesting serious analysis but never delivering. This is delightfully illustrated in the section on advertising, where they write "we still think that a written text can only be improved by advertising images if there is a reasoned argument and appraisal which goes beyond the merely decorative aspect and the gap-filling purpose to which they are often relegated. Advertising images ... may take on deeply interesting significance if appraised and presented in an organic way." But the text meanders on in the same vein and the 20 or so illustrations are presented without any attempt to appraise them, organically or otherwise.

Replace the word "advertising" by "watches" or "Longines" and the result is the same; there is a need for analysis which the authors studiously avoid. The book is, despite their implied denial, fundamentally gap-filling, displaying objects whose horological basis is irrelevant for the collector who is not interested in time, just status and form. Indeed, the only thing that distinguishes one watch maker from another in the eyes of such collectors is the name; books about Rolex, Patek-Philippe and other makers are only different in that the adoration is directed at a different company.

It is interesting to compare this book with Dowling and Hess "The best of times - Rolex wristwatches an unauthorised history". Both have nearly identical aims, but the latter is greatly superior, because Dowling and Hess treat the reader as an intelligent person who wants to have some understanding of what he or she collects.

Longines is an important company and deserves to be treated more seriously.

R1758 Marperger, PJ

Horologiographia

oder beschreibung der eintheilung und abmessung der zeit, sonderlich des Tages und der Nacht-Stunden, und zwar jener bey hellen Sonnen-Schein durch die Sonnen-Zeiger ... auch durch künstliche Machinas, Uhrwerke und Glocken

Munich: Callwey, 1977 (1723), 17 x 11 cm, 288 pp, frontis.

(German).

Sundials or description of the classification and measurement of time.

Baillie, in "Clocks and watches: an historical bibliography", states "After a chapter on dialling, the book deals with bells and clocks." However, another reviewer indicates it contains some material on the use and care of pocket watches.

R1759 Marquis, H

The art of dressing time

Comment habiller le temps

a century of watch styling from Juvenia

Switzerland: Juvenia Montres SA, 1995, 4to, 118 pp, ill.

Description (English, German, French, Italian).

Limited edition of 700 copies. English/German or French/Italian text.

R1760 Marquis, R

Manuel de l'horlogerie et du mécanicien amateur

1892, 324 pp.

Repair, technical (French).

I have only found a reference to this in Pertuch "Horological books and pamphlets in the Franklin Institute library". It is probably the 3rd edition of Graffigny "Manuel de l'horlogerie et du mecanicien amateur" which see.

R1761 Marryat, H

Watches

volume 1, 16th and 17th centuries Henlein to Tompion

London: H Marryat, 1938, 22 x 14.5 cm, 98 pp, 132 b/w plates, 2 figs.

Description, collection (English).

Printed in a limited edition. A planned second volume was never published.

Description of 70 watches in the author's collection:

Introduction (4 pages, 1 plate of sundials).

The sixteenth century (14 pages, 6 watches).

Watchmaking in the seventeenth century (78 pages). This is divided into 9 sections: Crystal and similar watches (15 watches); Form watches (2 watches); Astronomical watches (4 watches); Enamelled watches (9 watches, in two sections); Filigree watches (2 watches); Early balance spring watches (6 watches); Early minute watches (12 watches); Tompion watches (7 watches); and Quare and early repeating watches (6 watches).

The verge escapement (2 pages).

[1st edition, good] Marryat wrote "Many beautiful pieces of work ... fell into my hands for a few

shillings.” Sadly the days of such collecting have largely passed and most of us can only admire similar watches in books and museums.

The descriptions tend to focus on particular aspects of the 70 watches (two or three of which are not illustrated) and the photographs are only adequate. But despite the limitations it is an interesting book. As noted by Marryat, the book was produced to help his friends understand his hobby.

R1762 Marsh, Edward A**History**

Australia: Richard Watkins, 2006 (1921), 11 x 8 inch, 31 pp, no ill (63 pp, no ill).

History (English).

Typescript forming the whole of Waltham Watch Co., Volume RC-2, Baker Library, Harvard Business School. It has been published as a pdf file in 2006.

The author and date are based on internal evidence.

A foreword and an incomplete preface followed by a history of the Waltham Watch Company.

[1st edition, very good] *Unlike “History of early watchmaking in America”, Marsh wrote this history to be published as a book, including a foreword and preface, and indicating where illustrations were to be inserted. However the project was never completed and the text is incomplete.*

The first few pages are an inadequate and incomplete history of early horology; they can be ignored.

The remainder is an interesting and useful history of the Waltham Watch Company which includes some information that I have not read elsewhere. This part is of considerable value, being written by a person who, as a master mechanic, was intimately involved in the development of the company and its manufacturing methods.

R1763 Marsh, Edward A**History of early watchmaking in America**

Australia: Richard Watkins, 2006 (1890), 11 x 8 inch, (19 pp, no ill) 40 pp, no ill.

History (English).

Typescript forming part of Waltham Watch Co., Volume RC-1, Baker Library, Harvard Business School. Volume RC-1 also includes two notes by D.F. Appleton (one dated 1900), a letter by E. Tracy dated 1886, and a hand-written note by C. Moore (?) dated 1938.

The history was published in D.H. Hurd “History of Middlesex County, Massachusetts” in 1890, and in “The Keystone” (Nov and Dec 1892 and Jan - April 1893). The letter by E. Tracy was published, in a slightly different form, in the NAWCC Bulletin, April 1949, whole number 28.

The complete text of Volume RC-1 was published as a pdf file in 2006.

A history of the Waltham Watch Company to 1888.

[1st edition, good] *Although interesting, the vast majority of the information in this history has appeared elsewhere, in other books and in articles; presumably derived from the printing in Hurd “History of Middlesex County, Massachusetts”.*

The only part that I have not read before concerns the employment of disabled returned servicemen from the American civil war; and that, although very interesting, is not significant.

R1764 Marsh, Edward A**Information concerning a few points in the construction of a pocket watch**

USA: Adams Brown Co (Waltham: Waltham Watch Company), nd (1890), 21.5 x 13.5 cm, 43 pp, 21 ill.

Description (English).

The reprint is an undated, limited edition facsimile.

“also an announcement of a safeguard against one of the dangers to which it is exposed”.

The book begins with description of the mechanism of a watch and the lever escapement. This is followed by a discussion of the effects of magnetism and temperature on timing and the compensation balance. It concludes with remarks about Waltham non-magnetic watches.

[1st edition reprint, fair] *Evidently this is the transcript of a speech given by Marsh, with references to the projection of illustrations and demonstrations. It is a sales talk or press release for non-magnetic watches, but they are inadequately considered on the last couple of pages.*

Well written, interesting puff.

R1765 Marsh, Edward A**The evolution of automatic machinery****Watches by automatic machinery at Waltham**

as applied to the manufacture of watches

USA: Adams Brown Co (Chicago: George Hazlitt), 1968 (1896), 19.5 x 13.5 cm, 150 pp, 69 ill, 4 portraits.

Description, history, watch making (English).

The limited edition reprint is titled “Watches by automatic machinery at Waltham”. It has a preface by Fried and the first page of the original introduction by Marsh is a loose insert in my copy.

It is available as a Google Book PDF file (USA only?).

Nine chapters describing automatic tools used at Waltham with some discussion of their development. The tools covered are plate turning, staff and pinion making, teeth cutting, screw making, bimetallic balance making, balance springs and balance spring vibrators.

[1st edition reprint, good] *Marsh provides a descriptive and largely superficial look at automatic tools and their evolution. For the most part he does little more than outline general functions and provides not very useful illustrations. In a few places he gives a bit of detail and makes some interesting remarks on the philosophy of tool design, particularly his “circularity” approach.*

Unfortunately, by the time Marsh arrived at Waltham the early machines had been destroyed or extensively modified; and so there is little in this book that relates to the seminal work in the factory. It is a valuable book nonetheless, being one of the few to say anything at all about tooling, but I feel it would have been better if he had described fewer tools in more detail.

In contrast, see Tarasov "Technology of watch production" which is much better.

R1766 Marsh, Edward A**The original american watch plant**

it's planting, growth, development and fruit

Massachusetts: Waltham Watch Company, 1909, 15.0 x 23.0 cm, 22 pp, 13 ill.

History (English).

The title page reads "The original American watchmaking plant ; with a brief account of its origin and growth, some of its offshoots. Also some mention of the quality and quantity of its fruit".

After a brief introduction, the booklet gives a history of Waltham illustrated by photographs of the buildings, a few movements and two portraits (Dennison and Church).

[1st edition, good] Although this is primarily a nice bit off puff, apparently given away by retailers, it is also an interesting history of Waltham. Marsh expands upon the horticulture analogy in his foreword, but fortunately he barely mentions it in the body of the book and we are saved from further embarrassment.

The book is too short to be of much significance, but it is enjoyable, well written and worth reading.

R1767 Marsh, Edward A**Workers together**

a story of pleasant conditions in an exacting industrial establishment

Massachusetts: Waltham Watch Company, 1916, 8vo, 14 pp, 21 plates.

History (English).

R1768 Marshall, C & E**Professional watchmakers' handy manual**

the complete up to date reference of watch material

USA: C & E Marshall Co, 1966 (1949), 8vo, ill (376 pp, ill) (174 pp, ill).

Repair (English).

Several editions and supplements.

Listings of watch makers, watch parts, etc.

R1769 Martens, JH**Beschreibung der hemmung der hoeren uhrmacherkunst**

anleitung zur anfertigung dieser hemmungen und die kunst edelsteine zur jeglichen gebrauche für uhren zu bearbeiten

Leipzig: (Furtwangen: , La Chaux de Fonds: J.H. Martens), 2007 (1858), 8vo, 272 pp, atlas of 24 plates. (German).

Description of the escapements of higher horology, instruction on making these escapements and the art of making jewels for every worn out timepiece.

R1770 Martens, JH**Beschreibung der neuen freien chronometer-hemmung mit ruhecylinder**

und schutz gegen unzeitgemasser auslosung

Berlin: (Freiburg:), 2007 (1858), 23 x 15 cm, 60 pp, 5 fld plates (46 pp, 1 fld plate).

Description, technical (German).

Printed in 1858, 1875 and 1891.

Gardner "Catalogue of the Torrens collection" lists "Chronometer-hemmung mit ruhecylinder und schutz gegen unzeitgemasser auslosung" (46 pp, 4 folding plates) as a separate work, but I presume it is the same (or a different edition).

Another source suggests 11 pages (numbered 49-59), 1 table.

There is a modern reprint.

Description of a new chronometer escapement with resting cylinder.

R1771 Marti, L**A region in time**

a socio-economic history of the swiss valley of St Imier and the surrounding area 1700-2007

St Imier: Editions des Longines, 2007, 30.5 x 31.0 cm, 383 pp, ill.

History (English, French).

Published for the 175th anniversary of Longines Watch Company.

Foreword (1 pages); Introduction (10 pages); followed by 4 chapters:

The beginning of industry in the Erguel 1700-1814 (66 pages): The century of industrialisation; The industrial development of the Erguel; Watchmaking; New social problems arise.

Watchmaking as the dominant industry 1815-1914 (108 pages): The characteristics of the watchmaking industry; The emergence of the factories; The products and trade; Lobbying by the watchmaking faction; Alternatives to watchmaking?; The pattern of social relations.

The golden age of the watch factories 1915-1970 (100 pages): Watchmaking in the 1920s and 1930s; The coming of the cartels and nationalisation; The factories take the lead; Chronometry, micromechanics, chocolate. pasta or press-studs.

Radical transformation 1971-2007 (56 pages): The difficult years; Rebuilding the fabric of regional industry; New prospects.

Conclusion (8 pages); Appendix (17 pages, Regional watch manufacturers 1851-2005); References (4 pages); Sources (2 pages). There is no index.

*[1st edition, excellent] This book is a professional, well researched history of a small but very influential region in Switzerland, centred on the Longines company. Much of the evidence available is fragmentary and Marti also makes extensive use of anecdotal accounts. As a result she has written a descriptive account from which an understanding of the evolution and organisation of watchmaking slowly emerges. The picture she paints is fascinating. We see that, with rare exceptions, the Swiss never did follow the model of the American factory, where the entire watch was made under one roof. Instead the system of *établissage* was extended and adapted to large-scale production, with manufacturers outsourcing components and services from a large network of small workshops and companies, even to the extent of some use of individual home workers. So even in the middle to late 20th century the Swiss industry was made up of a large number of very small firms, and even the big factories like Longines were small and employed only a few hundred workers.*

Taking a descriptive approach has its problems. For example, Marti describes employer-worker relationships including the establishment benefit funds and societies. But she does not provide any background on Swiss culture and political structures. As a result, we have an inadequate understanding of the social context and cannot fully appreciate why these developed in the way they did. In addition, the various crises, other than the quartz crisis, are glossed over and the effect of American competition is almost completely ignored. Again we learn what happened but not why. Indeed, this is in no sense a socio-economic history as we are told nothing about social and economic structures and developments. In addition, the sources, which presumably provide much of the necessary background, are inaccessible for the English reader, being almost entirely French language books and articles.

Despite these limitations, the book succeeds in giving the reader an understanding of the Swiss watch industry which no other book I have read manages to do.

R1772 Martin, JL

Swiss historical watches

Montres historiques suisses

Historische uhren der schweiz

Lausanne: JL Martin, 1980, 8vo, 6 volumes.

Description (French, German).

6 supplements to "Montres de tir suisses", forming volumes 2 to 7 of that book:

Volume 2: 92 pp, ill, 1980, limited edition of 450 copies. Illustrations of 90 watches with French and German text.

Volume 3: 216 pp, ill, 1984, limited edition of 500 copies.

Volume 4: 129 pp, 1991, limited edition of 500 copies.

Volume 5: 179 pp, 1997, limited edition of 400 copies.

Volume 6: Montres de Tir du Canton de Vaud, 128 pp. 2004, limited edition of 450 copies.

Volume 7: 40 pp, 2006, limited edition of 200 copies.

See also Gardy "Les montres de tir au point de vue historique, décoratif".

[Review by Fortunat Mueller-Maerki] Occasionally, collectors of high grade Swiss pocket watches stumble on a watch that seems to have been cased in a special case made for a commemorative occasion. While uncommon even in Switzerland, they are rarely seen outside that country and information on them is virtually impossible to find. The case often shows a shooting or marksmen related theme, or some allegorical scene. Many of them have engraved inscriptions in German or French which mean little to the international collector.

These watches were originally prize-watches awarded for superior marksmanship. To understand their significance one must understand the military defense system of Switzerland. For centuries, all able bodied males in Switzerland were part of the Swiss Militia Army, a defense force organized much like the US National Guard. Service involved some basic training in one's youth and periodic participation in a few weeks of training camp, initially yearly while being in one's 20s, and gradually decreasing in frequency to once a decade in one's 50s, but once-a-soldier you were automatically part of the ready reserves until you were 60 years old. Training time was short and too valuable to be wasted on practicing basic marksmanship. The government therefore decreed by law that all male citizens were required to belong to the local rifle club and annually pass a rigorous exam in marksmanship administered by these clubs; failing the exam in any one year would result in 3 days of extra military service that year.

No wonder the rifle clubs were focal points of local life, and good marksmanship became a precondition for being a respected citizen. Starting in the mid-1800s (and continuing for most of the 20th century) the annual national shooting competitions - the "Eidgenössisches Schützenfest" or "Tir Fédéral" - were major civic and patriotic events, even the local and regional preliminary tournaments were notable occasions. The winner, the "Schützenkönig" (the "King of marksmen") was a national celebrity. And for a period of well over one hundred years the preferred prize for the winners in the many categories was a fine pocket watch, typically in a commemorative case created for the occasion and often engraved with the name of the winner. Movements came from many makers, including such well known brands as Longines and Omega, and were typically of superior quality.

Starting in the late 19th century it became clear that soldiers also needed to be physically fit, and participation in the local gymnastic societies became a popular patriotic pastime as well, leading to regional and national gymnastic competitions, complete with determining a statewide and nationwide

"King of gymnasts". And again, specially commissioned, embossed and engraved watches were the preferred award.

It is not surprising that only few of these prize watches circulated in the marketplace, as they were family heirlooms passed down to younger generations as proof of the virtues of ones elders. But eventually some Swiss horological collectors discovered this fascinating niche made up of high-grade, sometimes unique, watches, where each one told a story.

By 1980, one of these collectors, a gentleman from Lausanne named Jean Martin, felt the urge to document whatever "Swiss shooting watches" he had been able to identify and published a small quatrilingual (French/German/Italian/English) guide to this specialized niche with illustrations of 234 prize watches. As time went on, additional volumes followed (now also including prize watches for gymnasts). Eventually, the author included other commemorative watches of historic significance in his research, and reaching a cumulative count of 800 different watches by the end of volume 7. Each watch is illustrated (usually both case and dial), movement makers are identified, as are often the case makers, designers and/or engravers.

I am lucky enough to have assembled over the decades a complete set of all seven volumes of the series, Few collectors will want or really need them, but if you happen to stumble on one of these rare Swiss prize watches it is certainly helpful to know that this series of specialized books does exist.

R1773 Martin, JL**Swiss shooting watches 1836-1939****Montres de tir suisses****Schutzenuhren der schweiz****Orologi di tiro svizzeri**

Lausanne: L'Abbaye du Livre, 1976, 22.5 x 15.5 cm, 132 pp, 470 b/w ill.

Dating, identification, price guide (French, German, Italian).

Limited edition of 1500 copies with 70 copies numbered and specially bound.

A catalogue of watches awarded as prizes in Swiss cantonal shooting competitions.

A preface and foreword followed by the catalogue, list of abbreviations and bibliography. Except for 2 pages, all catalogue pages illustrate two watches, each watch having dial and case-back black-and-white photographs. Two pages have 4 illustrations of one watch (a repeater). The captions give canton, date, movement maker, case maker, case size, metal and weight, and references to source documents. Some illustrations are blank when no photographs were available.

The catalogue is organised by canton and the captions are in the language of the canton; French, German or Italian.

At the end of the catalogue there are illustrations of 12 watches from Austria, Argentina, Germany, France and Italy.

See also Gardy "Les montres de tir au point de vue historique, décoratif".

[1st edition, fair] For background to Swiss shooting watches see the review of Martin "Swiss historical watches".

First, the suggestion made by some book sellers that this book has English text is grossly misleading. There is a half-page foreword in English, which is uninformative, and the rest of the book is in the cantonal languages (French, German or Italian).

As far as the catalogue is concerned the language is irrelevant because the captions just give dates, names and other factual information which is fairly easy to understand; although it did take me a while to realise part of the caption contained references to journals and other sources. Where no photograph is available the text merely says so. But the preface by Roland Carrera, the only significant text in the book, has not been translated and is only given in French. It provides a little information, noting that the main interest of these watches lies in the case decoration.

Even though this book is probably only of interest to Swiss citizens it provides valuable documentation of this specialised area. However, even Swiss collectors would most likely be disappointed because the photographs are mediocre.

R1774 Martin, John**Mechanicus and Flaveus**

or the watch spiritualised

1763, 8vo.

Miscellany (English).

Robertson gives the date as 1773.

A dialogue relating the relationship between watches and religion.

Wood "Curiosities of clocks and watches" contains a fairly long extract from this work.

See also Paley "Natural theology".

R1775 Martin, L**L'industrie horlogère dans le département du Doubs**

et particulièrement a Besançon depuis 1850

Besançon: Imprimerie du Progres, 1900.

History (French).

The horology industry in Doubs and particularly at Besançon.

R1776 Martin, T

R1776 Martin, T

The circle of the mechanical arts

containing practical treatises on the various manual arts, trades, & manufactures

London: J. Bumpus (London: Richard Rees), 1818 (1813), 4to, 618 pp, 39 plates (616 pp, 36 plates).

Description, tools, watch making (English, German).

The horological section has been translated into German by Poppe (which see).

The 1813 edition is available as a Google Book PDF file.

A general technical encyclopedia including descriptions of enamelling, file making, turning and watch and clock making.

The first edition has 33 pages and 2 plates on clocks and watches.

[1st edition, good] In the section on clocks and watches, the first 21 pages and 1 1/2 plates cover watches. This includes a discussion of the work of Hooke, description of a verge watch and verge escapement, compensation balances, isochronism, the cylinder escapement, fusee maintaining power, repeater and striking watches, trades in watchmaking, watchmaker's tools, and watch finishing.

The most interesting part is the description of verge watch finishing; taking a movement in the grey and planting the wheels, adjusting the fusee and making the escapement. This provides a very good insight into the methods used at the beginning of the nineteenth century.

Some plates are reproduced in T.R. Crom "Horological shop tools 1700 to 1900".

Thomas Martin was the pseudonym of John Farey, a civil engineer who supplied drawings for several encyclopaedias.

R1777 Martinek, Z; Rehor, J

Mechanische uhren**Zaklady hodinarstvi**

lehrbuch für die berufsbildung

Berlin: VEB Verlag Technik (Prague:), 1996 (1964), 22 x 15 cm, 112 pp, 111 ill (108 pp, 110 ill).

Description, technical (German, Polish).

Several printings including 1984.

Mechanical timepieces, textbook for professional development.

Fundamentals of horology

R1778 Mascetti, Daniela; Triossi, Amanda

Bulgari

Milan: Leonardo, London: Abbeville Press, 1996, 34 x 25.5 cm, 255 pp, ill, slip case.

Illustration (English, Italian).

Jewellery and wrist watches, showing creations and their owners. Including historic photographs and early advertisements.

R1779 Maschke, E

Die Pforzheimer schmuck und uhrenindustrie

Pforzheim: E. Maschke, 1966, 29 x 21 cm, 344 pp, 44 plates.

History (German).

Industrial history of jewellery and horology in Pforzheim.

R1780 Mason, B

Clock and watchmaking in Colchester, England

London: Country Life, 1969, 4to, 436 pp, 373 b&w ill, slip case.

Collection, history, makers (English).

A history of provincial clockmaking from the fifteenth to the nineteenth centuries in the oldest recorded town in Great Britain.

Illustrated by the collection of the author, but with only a few watches.

R1781 Mason, LC

Using the small lathe

England: Kings Langley, Argus Books, Model Aeronautical Press, 1988 (1963), 8 x 5.75 inch.

Tools (English).

Several printings including 1963, 1973, 1978, 1985 and 1988 with various publishers.

A first lathe; Chucking, driving and turning; Parting problems; Holding the job; The tailstock and drilling; Boring work; Fine finish; Form tools, cutters, mills; Milling operations; Screws; Art of dividing; Benefits of calibration; Work in the round; Drilling spindles and collets; Filing and knurling; Gears, worms, bevels; Coils, spins, spinning; The next lathe.

Mason has also written "Building a small lathe" and "Making the most of your lathe".

R1782 Masters, JN

Amusing reminiscences of Victorian times and of today

England: J. N. Masters, 1921, 8vo, 201 pp, ill.

History (English).

Local history including a few pages on a country watchmaker's shop.

Masters was a watchmaker and mayor of Rye.

R1783 Masters, JN**Second book of reminiscences**

England: J. N. Masters, 1925, 194 pp, ill.

History, miscellany (English).

Local history with horological anecdotes.

R1784 Mather, HH**Clock and watch makers of Nottinghamshire**

Nottingham: Friends of Nottingham Museum, 1979, 8vo, 93 pp, 15 plates.

Makers (English).

A list of 512 makers.

R1785 Mathey, L & A**Time and timekeepers**

a brief sketch of the rise and progress of the horological art

New York: L. & A. Mathey, 1877, 8vo, 20 pp, 5 ill, 1 table.

History (English).

A brief history of L & A Mathey, an American company.

R1786 Matthay, GA et al**Horamatic**

montres a remontage automatique de 1770 a 1978

Le Locle: Musée d'Horlogerie, Château des Monts, ca 1979, 21.0 x 15.0 cm, 100 pp, 173 ill, 2 col plates.

Exhibition, history, technical (French).

Limited edition of 2000 copies. Undated, but given as 1978 or 1979.

The fourth part of a history of horology produced by the Musée d'Horlogerie.

Eight sections by different authors: Introduction (3 pages, G. A. Matthay); Principle stages in the evolution of the automatic wrist watch (2 pages); The watch which saw your life (4 pages, J.-C. Beuchat); The time of Abraham-Louis Perrelet (7 pages, E. Jobin); From pocket to wrist (11 pages, P. Dubois); Original designs (6 pages, P. Béguin); Manufacturers anecdotes and memories (9 pages, G. Dubois, H. Kocher, H. Stamm, and A. Maire); and Industrial repercussions (4 pages, R. Carrera).

Each section has accompanying photographs of movements and there are a few diagrams.

[1st edition, good?] This small book provides a history and study of automatic wrist watches.

"The watch which saw your life", written at the advent of electronic watches, imagines a world where automatic watches are unknown and then rediscovered. It uses this ploy to describe the basic principles of such a watch.

"The time of Abraham-Louis Perrelet" begins with a fanciful biography of Perrelet, followed by very brief summaries of the roles of Breguet, Recordon and others in the development of automatic watches. There is no mention of Hubert Sarton, presumably because the authors relied on the original French edition of Chapuis and Jaquet's book (which see).

The following sections are considerably better, providing a good survey of the development of automatic wrist watches and their mechanisms. Unfortunately the photographs are generally too small and fail to show the features being discussed. There are a few diagrams, but they are not explained and, consequently are obscure.

Overall, the book is interesting, but much better surveys exist, and so it is more a book collector's item than a useful text.

R1787 Matthews, M**Engine turning 1680-1980**

the tools and technique

England: M Matthews, 1984, folio, 179 pp, 92 ill, 10 plates (2 tipped in).

Tools (English).

Limited edition of 600 copies with 100 copies bound in leather.

The rose engine; The straight-line engine (including the story of the making of the penny black postage stamp); The epicycloid or geometric chuck; G. Plant & Son the last manufacturers in England of engine turning machines; J. Fountain & Sons; Engine turners; Bibliography.

R1788 Matthews, M**Four generations of watchcase making**

England: BD Video Productions, 1999, 75 minutes, video tape.

Repair, watch making (English).

Video of Martin Matthews demonstrating and explaining case making techniques.

A 10 minute introduction is followed by making a silver outer case (for an 18th century verge pair case) and a gold bow for a consular case.

[Review by Phil Priestley] It is not every day that one gets to see a video of a master craftsman at work, but it is a bonus when the subject matter is one dear to the reviewer's heart. This new 1-1/4 -hour video tells the story of watchcase maker Martin Matthews and his forebears who worked in Clerkenwell, London, England, during the last two centuries. Martin provides most of the commentary.

The first part is a profile of the remaining family member, Martin Matthews, who is still making new cases and repairing old ones in his home south of London. At the start are shots of various Clerkenwell addresses and portraits of forebears followed by a shot of NAWCC Supplement #20, "Watch Case Makers of England 1720-1920", with a few pages of case maker marks, including his grandfather's and great-

grandfather's marks - the latter trained by Louis Comptesse.

Martin started as an apprentice to his father at the usual age of 15 years and learned all aspects of the trade. At the start of the century, the watch trade was split into about 120 different activities and case makers did not have to make bows, pendants and springs, but Martin explains that all these trades have now disappeared and that he has to make all the ancillary parts himself.

The technical part of the film starts with a review of the complications of a demi-hunter watch case with its large number of joints. Some of the cases on watches in his private collection were also examined. The remainder of the video is devoted to the making of a new silver outer case for an eighteenth century pair-case watch, which has lost its outer part. It includes the use of tools and techniques of a by-gone age. Martin further explains the use of the draw bar machine and shows the making of a bow. The art of engine-turning is also touched upon but this is a completely different subject (covered in a rare book by Martin Matthews, "Engine Turning 1680-1980, The Tools and Techniques", 1984).

The reviewer can recommend this video without reservation. It may be of interest to mention that over the years Martin has trained an American craftsman and more recently an Englishman now living in Neuchatel, Switzerland.

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R1789 Mauch, C; Mauch, H
Horological dictionary
Horologisches lexikon

Germany: Universitas Verlag Tübingen, 1984, 21.5 x 15.5 cm, two volumes, 357 and 338 pp, no ill.
 Dictionary (English, German).

Volume 1 is a German-English dictionary and volume 2 an English-German dictionary. Each has about 12,000 entries, including some phrases.

[1st edition, very good] This is purely a translation tool, but one which I have found very useful.

Each entry is a single line giving the word or phrase in the other language. There is no other information except for necessary contextual clarification, such as guide (manual) and guide (rounding up tool). French words for which there are English equivalents are included and the gender of German nouns is given. Related areas such as tools, art and electronics are covered.

The preface says the book "includes all the important expressions for the oldest and most modern timepieces and their parts", although I have sometimes failed to find a word.

R1790 Maurice, G
Discours sur l'histoire de la mesure du temps

Genève:, 1831, 8vo, 35 pp.

History (French).

Listed in Tardy.

R1791 Maurice, K
Die deutsche raderuhr

zur kunst und technik des mechanischen zeitmessers

Munich: Beck, 1976, folio, 2 vols, 322 pp, 177 ill, 18 plates and 125 pp, 400 plates with 1443 ill, slip case.
 History (German).

German clockwork, the art and technique of mechanical time measurement in Germany.

History of clockwork.

Possibly only a little on watches.

R1792 Maurice, K; Mayr, O
The clockwork universe
Die welt als uhr

german clocks and automata 1550-1650

Munich: Bayern National Museum, USA: Neale Watson Publications, 1980, 4to, 314 pp, 75 ill, figs, 120 plates.

Catalogue, history (English, German).

Separate German and English editions.

Catalogue of an exhibition held in Munich and then at the Smithsonian Institute containing significant text, much of it in English.

Apparently all clocks with no watches. But it includes a discussion of German horological development and guilds.

I do not know if the English and German printings differ.

R1793 May & Son
Jewelers' supplies

catalogue of tools, materials, findings for watchmakers, clockmakers, jewelers and kindred trades
 1928, 4to, 800 pp, ill.

Tools (English).

R1794 May, WE
How the chronometer went to sea

England: Antiquarian Horological Society, 1976, 4to, 27 pp, 12 ill.

History (English).

Offprint from Antiquarian Horology.

“An interesting account of the early use of chronometers by the Royal Navy and the East India Company and the East India Company; a study of the development, use, and makers of chronometers in the history of British navigation.”

R1795 Mayaud, JL; Henry, Ph**Horlogeries, le temps de l'histoire**

Actes du seminaire du Groupe franco suisse de recherches en histoire de l'horgerie et micro mecanique, Neuchâtel-Besançon, 1993 -1994

France: Université de Besançon, 1995, 8vo, 276 pp.

History (French).

Annales littéraires de l'Université de Besançon, No 10.

R1796 Mazloum, C**The art of erotic jewellery**

Rome: Gremese International, 1995, 4to, 187 pp, plates.

(English).

Eight chapters: Representational art (36 pages); The abstract (38 pages); The symbolic (22 pages); The philosopher (14 pages); The poetic (16 pages); Sensual gemstones (12 pages); Other forms of eroticism (20 pages); and Libertine watches (6 pages).

There are 4 appendices (8 pages): Galleries and jewellers; Museums; Trade press; and The world's finest creators.

R1797 McCarthy, JR**A matter of time**

the story of the watch

New York: Harper & Bros., 1947, 20.5 x 14.5 cm, 230 pp, 32 ill.

History, watch making (English).

Four sections (each with four chapters): The calculation of time (32 pages, stars, sundials, sand glasses, clepsydra and calendars); The clock (64 pages, gravity, pendulums, clockmakers and anecdotal information); Portable timepieces (58 pages, watches, watchmakers, the chronometer and anecdotal information); and The making of the modern watch (50 pages, style, adjustment, and how watches are made). The last section is based on the Gruen Watch Company.

[1st edition, poor] This book should not have been written, let alone published.

Throughout McCarthy is confused, clearly lacking any understanding of horology, and he peppers his text with startling errors of fact. For example, he writes about temporary hours instead of temporal hours, tries to explain fundamental concepts (such as the motion of the Earth and escapements) without diagrams and fails abysmally, states that Dent founded his firm in 1790 (the year of his birth), and says Henlein invented the verge escapement.

Not only is he confused, but he is confusing because he mentions many aspects of horology out of context and without explanation. Thus, early in the book he specifies wheel teeth and pinion leaf counts unexpectedly and in a way that is both meaningless and unintelligible. Later he tries and fails to explain watch jewellery.

Finally, despite the title, only half the book is about watches, and two large sections are descriptive catalogues of collections reminiscent of Wood "Curiosities of clocks and watches" and Britten "Former clock and watchmakers and their work". I presume these sections are "fillers" as they are pointless otherwise.

I have to presume that McCarthy was a journalist who knew absolutely nothing about horology and was probably asked by Gruen to write a book. Although not explicitly stated, he wrote for novices, people with no knowledge of horology who have a passing interest; it is obvious that it is not a book for the more experienced, as anyone with a reasonable knowledge of horology would cringe at the absurdities and errors.

So, McCarthy, knowing nothing, read and paraphrased a few books and was given a quick tour of a watch factory. Naturally, as he read carelessly and observed inadequately, the result was doomed.

The book could have been saved from damnation if McCarthy had provided a useful description of the Gruen factories, but he was unable to do more than give a superficial and mystifying overview. The most fascinating part of it is the description of how Gruen cleaned watches by hand, including much detail; but I find it hard to believe that a watch company used such methods circa 1947.

[Remark] In addition to the Henlein myth, McCarthy cites the Nuremberg egg myth. Like Bruton in "The history of clocks and watches" McCarthy demonstrates an inability to think and happily makes a statement that is obviously ludicrous.

R1798 McDermott, K**Timex**

a company and its community 1854-1998

1999, 11.5 x 8 inch, 248 pp, ill.

History (English).

A history of Timex from Chauncey Jerome onwards.

[Review by Jim Michaels] At first glance, you may say "A book on Timex?" But this is so much more than just a book on the Timex Company.

Starting with Chauncey Jerome in the first part of the 1800s, to the revolutionary Timex Indiglo, this book takes you on a horological tour of nearly 150 years of the clock and watch manufacturing that is as

American as apple pie.

Benedict & Burnham, Waterbury Clock and Watch Company, Ingersoll, U.S. Time, and Timex are all lavishly illustrated in this high quality, 248 page, hard back book. As a collector of watches and clocks, I found the numerous pictures of old advertisements, the people involved, and the actual products most interesting. But the scope of this book reaches much farther than that; it is also a study of mass marketing and production.

"Takes a licking and keeps on ticking." If you don't know where that saying came from you must have been in a coma for the last 40 years. John Cameron Swayze and his Timex torture tests had to have been the most brilliant advertising campaign ever. This book relates how this came about and some interesting and humorous notes, including the last one with the memorable elephant that crushed a Timex watch, after which Swayze said, "It worked in rehearsal."

The book finishes with where Timex has been and where it is going. This book will appeal to almost anyone who has ever owned a Timex, and that is just about everyone.

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R1799 McDuffie, T**The fly cutter, making and using**

England: Watch and Clock Book Society, nd, 4to, 17 pp, ill.

Repair, tools (English).

R1800 McGinley, P**Wonderful time**

New York: Lippincott, 1966, 4to, 47 pp, ill.

Miscellany (English).

"14 humorous poems by a Pulitzer Prize winning poet. In delightful poems about clocks and other timepieces, their shapes and sounds, about shadows in the sun, about the passage of time, she asks the question - What is Time?"

R1801 McGraw, WR et al**German clock and watch industry**

London: H. M. Stationery Office, 1945, 87 pp.

History (English).

CIOS Target No. 9/423.

The authors of the report are: W. R. McGraw, R. W. Lee, F. Lux, D. J. Hawthorne, R. H. Whitehead, W. A. Jackson, F. Silberman, F. L. Crossley, R. Lenoir, R. T. Nutter and E. Moghi-Levkine.

Purpose of investigation, Personnel of team. General details of journey. List of firms visited. General observations. Detailed observations: Education and training; Administrative and Commercial Aspects. Engineering (including materials, production methods and layout, machine tools and assembly of clocks, watches electric clocks and jewels). Specialist component firms. Research and future development. Summary.

"The purpose of the investigation was to examine the structure and technique of the German Clock and Watch Industry, particularly in the Black Forest district."

See also Desmond "German clock and watch industry".

R1802 McKay, C**J. Smith & Sons of Clerkenwell**

England: Pierhead Publications, 2001, folio, 72 pp, ill.

Makers (English).

Facsimiles of: "Visit to a Clerkenwell Clock Factory", an article from the Illustrated London News 1851; Catalogue circa 1880; Catalogue circa 1910; Fragment of a piece of trade literature; and an advertisement.

Only clocks?

R1803 McKenna, J**Clockmakers and watchmakers in central England**

England: Mayfield Books, 2002, 368 pp, ill.

Makers (English).

Makers working in Birmingham, Coventry, Warwickshire, Worcestershire and Staffordshire. Also includes the Coventry watch trade, Birmingham painted dials, and Subsidiary watch and clock trades, such as watch key makers, case makers etc., Uttoxeter clock case makers, Appendix of makers by town, and Clock and watch trademarks.

R1804 McKenna, J**Watch and clockmakers of Birmingham**

1547-1900

1988, 96 pp, ill.

Makers (English).

In the series "Watch and clockmakers of the british isles" for which only two books were produced.

R1805 McKenna, J**Watch and clockmakers of Warwickshire**

1436-1900

Birmingham: Pendulum Press, 1988, 56 pp, ill.

Makers (English).

In the series "Watch and clockmakers of the British Isles" for which only two books were produced.

R1806 McMahan, S

The practical guide to modern watch oiling

USA: S. McMahan, 1995, 21.5 x 14.0 cm, 25 pp, ill.

Repair (English).

Brief history of horological lubricants; Tools; Mainspring and barrel; Barrel arbor; Gear train; Center wheel; Third and fourth wheels; Escape wheel; Balance (non-shock); Balance (shock systems); Escapement; Dial train; Calendar mechanism; Winding and setting mechanism.

[1st edition, very good] A simple, clear description of how to oil watches and what oils to use. Very good.

R1807 Meaume, A

Grosseur exacte des pignons

employés en horlogerie d'après les données mathématiques

Paris: Amedee Meaume, ca 1880, 19 x 13 cm, 3 pp, 8 plates.

Technical (French).

R1808 Megnin, G

Naissance, développement et situation actuelle

de l'industrie horlogère à Besançon

Besançon: 1909, 4to, 300 pp.

History (French).

Origin, development and current situation of the Besançon horological industry.

R1809 Mehlretter, JM

Die noblen aus der Schweiz

besondere armbanduhren aus der grossen zeit der mechanischen uhren

Germany: Heel Verlag, 2006, 31 x 23 cm, 207 pp, 300 ill.

Makers, description (German).

Audemars Piquet, IWC, Jaeger-LeCoultre, Patek Philippe, Rolex, Vacheron & Constantin

"With extensive technical information and brilliant, evocative images of each watch, the watch lover receives an entry into the world of special Swiss watches. The interest in classic Swiss watches has risen steadily in recent years at international auctions and watches exchanges, as well as the increasing offers on the Internet, open the collecting of the watch enthusiast today as used to seem almost inconceivable. This book deals with six notable Swiss watch manufacturers, who can rightly be described as the most significant."

R1810 Meibers, R

The Fitchburg watch

history of a masterpiece

Massachusetts: Martin & Lawrence Press, 2002, 22.5 x 14.5 cm, 207 pp, 16 b/w ill.

History (English).

Eight chapters: Selchow's discovery (of the Fitchburg watch, 16 pages); The second revolution (the American system of manufacture, 32 pages); Before the factories (early methods of watch production, 12 pages); An American watch for everyone (watch mass production in America, 24 pages); An industrial centre carved from the wilderness (development of Fitchburg, Massachusetts, 28 pages); Men of their time (biographies of the men who started the Fitchburg watch company, 36 pages); The watch company of Fitchburg (history of the Fitchburg watch company, 26 pages); and The Fitchburg watch (examination of the only known watch made in Fitchburg, 18 pages).

With a bibliography and index.

[1st edition, good] In case you get the wrong impression, let me start by saying I enjoyed this book. It is an interesting, well written account centred on a unique watch, and definitely worth reading. However, it is also a social history of Fitchburg (which I had never heard of), a watch that might have been a prototype and a company that never existed! Don't expect any significant insights, but that is true of many books and it is certainly not a reason to avoid this one.

Meibers begins with the entertaining story of how a nice watch was discovered bearing the inscription "Union Watch Co Fitchburg". This watch is obviously derived from the United States Watch Company of Marion, but evidence (somewhat shaky) is provided to show that it was made in Fitchburg and not Marion and so is the sole surviving watch from the Fitchburg Watch Company.

As more than half the book (106 pages) examines the social and industrial development of a minor city, and the watch (other than its uniqueness) has no particular virtues, Meibers places this fragment of American history in the broader context of the industrial revolution. The first half of the book (84 pages) provides a somewhat superficial but basically valid explanation of industrialisation and a general history of watchmaking in America. At times this is more entertaining than thoughtful, and occasionally annoying simplifications occur (as when suggesting lathes were used to make fusees and screws in the 18th century and dating the first watch from Henlein in 1509). But these do not detract from what is a good introduction to the progress of industrialisation.

The second half centres on biographies of Fitchburg and four of its leading lights: Henry Lowe (watchmaker and superintendent at Marion), Silvanus Sawyer (mechanic, horticulturist and financier of Marion), William Learned (superintendent at Marion) and Thomas Palmer (dentist and supporter of the Fitchburg venture). Much interesting information about these people and Fitchburg is given, interleaved

with a little about the attempt to form a watch company using machinery acquired from the defunct Marion enterprise.

Meibers is a bit too pro America for my taste, ignoring the rest of the world after 1850, but he provides a fascinating story which is well researched. If nothing else, he proves that how well someone writes is at least as important as the significance of the subject (if not more so).

[The watch] As the watch was the excuse for writing this book, what can be said about it some 125 years after its creation? Meibers sums it up when he says it is "the only single 'mass-produced' watch ever made". Its importance lies more in its uniqueness and existence than in its significance. In this sense the title of the book is ambiguous. To me a "masterpiece" is something very special and important, but really the watch is probably a "master piece", a prototype. More importantly, the justification for the story (not that it actually needs one) is that the watch was made in Fitchburg by the Fitchburg Watch Company. Was it? I can't possibly tell from so far away and having never handled it, but the arguments presented by Meibers are a bit too vague for my liking.

The main point is that the watch is significantly different from those produced at Marion and so it is assumed that it was not made there. However, there seem to be some timing difficulties. The Fitchburg venture was first proposed in early April 1875 and in April and June there are mentions of "designs for the new watch" and that it was to be "similar to the best watch made by the US Watch Company of Marion". But Meibers states that "in April of 1875 Lowe brought his family back to Fitchburg ..." without clarifying where Lowe himself lived between the closing of Marion in mid 1874 and April 1875. Neither Muir & Kraus "Marion" nor Meibers clarify this point which is fundamental, for there can be not too much doubt that Lowe designed the watch for Fitchburg. If Lowe did not return until April 1875 and the "designs" were a prototype then that watch was almost certainly made in Marion; even if the designs were drawings there probably wasn't enough time for Lowe to make a watch between April 1875 and his death shortly afterwards. Further the inscription "Union Watch Co" is not satisfactorily explained. But both problems disappear if the watch was made between mid 1874 and April 1875 when Lowe was presumably in Marion and the name of the Fitchburg company had not been decided.

Not that it matters. Either way the watch can legitimately be seen as the prototype for Fitchburg and the story is worth reading.

R1811 Meis, Reinhard

A Lange & Söhne, the watchmakers of Dresden

A Lange & Söhne, eine uhrmacher dynastie aus Dresden

Geneve: Antiquorum, 1998 (1997), 28 x 25 cm, 384 pp, 826 ill, 155 plates.

History, illustration, technical (German, English).

The English edition was printed in 1998.

The development of the horology industry in Sachsen: Lange, Lange & Söhne and Lange-Uhren. With appendices of patents and specifications.

R1812 Meis, Reinhard

Das tourbillon

Le tourbillon

faszination der uhrentechnik

Munich: Laterna Magica, Zurich: Ineichen, 1993 (1986), 28.5 x 24.5 cm (30 x 24 cm), 398 pp, 125 ill, 497 plates (352 pp, 256 ill, 500 plates).

History, illustration, makers, technical (French, German).

Separate language editions.

Historical and technical study of tourbillon pocket and wrist watches and their makers. Details of rotary escapements, karussells, educational models, patents, etc.

[2nd edition review by Henry B. Fried] This book could possibly be the most comprehensive ever written on watches with revolving escapements, termed by its inventor Breguet as the "tourbillon." Prof. Reinhard Meis has authored many books, all of which reflect his thoroughness of study and coverage.

Das Tourbillon is divided into many sections, including: theory and formulas of the timekeeping elements in timekeepers, particularly balances, hairsprings of all types and compensating devices such as fusees, and power sources of all types. All are illustrated with the author's professional drawings. These include his schematic black and white drawings of Arnold's and Breguet's various escapements used in early tourbillons.

Through the years, many very able watchmakers made watches with tourbillon-mounted escapements. In this book are the many designs of the delicate patterns of each well-known maker. This, then, becomes an excellent guide to the identity of each of these makers' tourbillons. Swiss, French, German and English Bonniksen's karrussells and others using his system are covered in a six-page section.

The Waterbury rotary watch is included since, in this American forerunner of the Ingersoll dollar watch, the whole movement revolves within its case. In 1904, Loichot of Charquemont (Doubs) created a simple tourbillon exposed through the lower half of the dial. This type is better known in the U.S.A. as the "Mobilis" type. Other similar types of moderately priced tourbillon pocket watches by Loinzghi in Switzerland, Louis and Fallet, Courvoisier of La Chaux-de-Fonds and Moser produced these cheap versions of the exposed revolving escapement in the very early part of this century. Each is shown in quite good cross-sectional and flat view drawings by the author.

The largest section of this book is devoted to 250 pages of colored, page-sized photos of different tourbillons, dating from Breguet's earliest models to modern-day examples. Many of these by well-known makers are

shown in detailed views.

Modern wristwatches with tourbillon-mounted escapements include, among others, those by Gerald Genta, Allan Roth, Miller, I.W.C., Jaeger LeCoultre, Chinese, Hong Kong versions by Kiu Tai Yu, Patek Philippe, and Lip of Besançon. Watches with "Flying Tourbillons," that is, those without any pivoting support for the balance bridge, typical of the latter-day German design, are shown in their own section. Karrusels by Kullberg, Thornloe, Langford, Durrant, Patek Philippe, Russel and Son, Better, Frodsham, Rossiter, and Lange are included with photographs as well as some line drawings. Teaching models of the tourbillon system used in horological schools are pictured as well. Carriage clocks and mantel clocks employing the tourbillon-mounted escapements, more for visual rather than technological reasons, are similarly covered. The inside book covers show 20 precise drawings by Meis of various types of tourbillon frames and their identifying makers.

Aside from its comprehensive photographic and illustrative coverage, this book is very well organized. An excellent cross-index includes names, prizes or awards, makers and photographic sources and bibliographical sources. For anyone owning a tourbillon or interested in these photogenic and practical applications to eliminate the edge position errors, this book should be a "must." Despite its German language text, the photos and illustrations are adequate in themselves to provide hard-to-find information. (Reprinted by permission. Bulletin No. 296 ©1995 by the National Association of Watch and Clock Collectors, Inc.)

R1813 Meis, Reinhard

Die alte uhr

geschichte, technik, stil

Braunschweig: Klinkhardt & Biermann, 1978, 24 x 21 cm, two volumes 336 pp, 474 ill and 308 pp, 579 ill, 16 plates.

Description, history, technical (German).

Historical and technical study of a wide range of timepieces and related items.

Two volumes. Volume 1 includes the history and technical development of timepieces, describing 19 watch escapements and complications. Volume 2 covers the classification of clocks and watches, including verge watches, automata, precision watches, watch stands and keys.

Konig "Die uhr, geschichte, technik, stil" sounds like part of this, but I have no information about the relationship, if any. A one volume "edition" of Meis has been listed, which might be Konig or simply an incomplete set. Perhaps Konig wrote volume 2.

R1814 Meis, Reinhard

IWC uhren

die Schaffhauser und ihre geschichte

Austria: Carinthia (Munich: Laterna Magica), 1996 (1985), 30 x 22 cm, 168 pp, 300 ill.

History, identification (German).

The preface has a history of IWC from its formation in 1868; F.A. Jones to Hans Ernst Homberger.

Five chapters: Die älteren kaliber 1-51 (the earlier calibres); Die neueren kaliber 52-98/982 (the later calibres); Die gehäusedekorationen; Schuetzenuhren; and Dienst und beobachtungsuhren.

Mainly pocket-watches, but there is an addendum with some wrist-watches including Porsche-Design watches.

R1815 Meis, Reinhard

Pocket watches

Taschenuhren

from the pendant watch to the tourbillon

von der halsuhr zum tourbillon

USA: Schiffer Publishing (Munich: Callwey), 1999 (1979), 31.0 x 23.5 cm (29 x 26 cm), 397 pp, ill, price guide (316 pp, 158 figs, 905 ill, 10 colour plates, loose price guide) (306 pp, 905 ill, 170 plates).

Dating, description, history, identification, technical (English, German).

Revised German editions were published in 1990 and 1999.

The English 1st edition begins with a 54 page technical overview in 6 sections: Development of the pocket watch movement (3 pages); Escapements (20 pages on returning and resting, anchor, free anchor, chronometer, tourbillon and carousel escapements, with photographs of 10 escapement models); Striking movements in pocket watches (5 pages on repeaters and automatic striking); Dial indications (4 pages on calendar, equation indications and chronographs); Winding (2 pages on keyless and self-winding); and Development of the case and dial (10 pages).

This is followed by footnotes, bibliography and the captions for the colour plates.

The main body is a pictorial survey of mainly black and white photographs organised by date and subdivided by type: Renaissance 1150-1660 (22 pages); 1650-1790 (31 pages); 1790-1850 (109 pages); Pocket watches with crown winding 1860-1930 (26 pages); Complex movements (52 pages); and Tourbillons (16 pages).

There is a 2 page index in small type.

[1st English edition 1987, excellent] Meis has produced a very informative work where the text is an integral, necessary part and the illustrations not just a convenient collection of photographs. Every part of the book has a purpose in developing an understanding of pocket watch evolution. Most importantly, the explanation and illustration of mechanisms is both excellent and a refreshing change from books that ignore the fundamental purpose of the watch.

The very good, crisp photographs are a mix of cases and movements, carefully chosen and with captions that outline the salient points. Included are some "common" watches, the type that a poor collector like myself might have a chance of obtaining.

This is a companion volume to Kahlert "Wristwatches: history of a century's development". It is interesting to compare these two books. Kahlert's book, although good, has a feel about it of being assembled for publication rather than education. For me, the two are poles apart and Meis is much better.

R1816 Menny, K

Die funktion der uhr**Die uhr und ihre mechanik**

ein buch für sammler und liebhaber mechanischer uhren

Munich: Callwey, Germany: Schaefer Th., 2003 (1989), 8vo, 105 pp, 21 ill.

Technical (German).

Two different titles, but both with 105 pages and I assume they are the one book.

Printed in 1989, 1994 and 2003.

Zeit und Zeitmessung. Bauteile von Uhren. Gangregler. Hemmungen. Zeiger- und Kalenderwerke. Schlagwerke und Weckeinrichtungen. Aufzugsysteme von Kleinuhren. Reparaturen.

R1817 Mercer, Tony

Chronometer makers of the world

with extensive list of makers and craftsmen

England: Robert Hale, NAG Press, 2004 (1991), 22.5 x 14.5 cm (22 x 14 cm), 301 pp, 81 ill, 11 col ill (291 pp, 73 ill, 10 plates).

Dating, history, identification, makers (English).

Eight short chapters (64 pages), pictorial guide to international chronometers (26 pages), a list of makers (171 pages) and appendices (chronology of the Greenwich Observatory, lists of craftsmen who made parts of chronometers, and a note relating to E.J. Dent employing Richard Gee).

The 8 chapters are: History of the word chronometer, Identification marks and dating, Origins of the detent escapement, The purpose of a chronometer, John Harrison, The British Admiralty plan of 1805, Two great names of the nautical sciences, and Mercer chronometer serial numbers.

The list of chronometer makers and craftsmen gives addresses, working dates and serial numbers. Some entries include short biographies.

The revised edition has a few corrections in the list of makers and 10 extra pages at the end: chronometer frame makers (1 page), overseas names listed by country (5 pages) and detailed, exploded views of a Mercer chronometer movement (4 pages).

[revised edition 2004, very good] The preliminary chapters are a mixed bag. The discussion of identification and dating, the details of the 1805 trial methods (which includes tables of trial winners for 1822-35 and 1840-1914), and the serial number list for Mercer chronometers are very interesting and useful. In contrast, the other chapters add little to the book because they are too short, making them rather superficial and vague. Also, the pictorial guide is of little use, the photographs being mediocre and not in any order.

The list of makers provides a valuable resource for chronometer makers. Importantly, Mercer distinguishes between "Makers" who made chronometers and "makers" who merely signed out-sourced timepieces; the entries for makers including information about their supplier Makers. There are also some interesting anecdotes about compasses, Sir John Bennett (who also, I have been told, had many mistresses), James Wilson (see Christie), Alexander Cumming, Robert Silk and others.

The chronology of Greenwich is too short and superficial to be of much use, but the lists of craftsmen (regional, Liverpool. London and Prescott) will be valuable for research.

Like Baillie, Loomes and other lists of makers, this is not a book to be read but one to be delved into when the need arises.

[Remark] There is one error in the lists that I know of. The Dent in the partnership Kendal and Dent is not related to E.J. Dent.

R1818 Mercer, Tony

Mercer chronometers

history, maintenance and repair

England: Mayfield Books, 2003, 25.5 x 19.5 cm, 239 pp, 305 ill.

History, repair, illustration (English).

Seven chapters: Clerkenwell & St Albans (31 pages); The new factory and World War I (19 pages); Diversification (36 pages); Some personalities (26 pages); Chronometers a photographic survey (37 pages); Chronometer balance design (14 pages); and Chronometer repair, rating & maintenance (45 pages).

There are five appendices: Thomas Mercer a condensed history (9 pages); Old tools used in making chronometers and watches (5 pages); The founders of the British Horological Institute (2 pages); Serial numbers of Mercer chronometers (3 pages); and Serial numbers of Kullberg chronometers (1 page). Followed by a short bibliography and index,

[1st edition, very good] The first 4 chapters provide a history of the Mercer firm from the early days of watchmaking in Liverpool to the large scale manufacture of chronometers in Clerkenwell and St Albans; the company manufactured some 30,000 marine chronometers from 1858 to 1984. This section of the book is an interesting and enjoyable history including biographies of the main personalities and many

anecdotes. There is some, but not much insight into manufacturing methods, the main focus being a social history. However there are very interesting sections on helical spring making and adjustment for isochronism. Appendix 1 is an almost unnecessary chronological summary.

The next two chapters are more technical. The photographic survey shows chronometers that have passed through Mercer's hands. The include H1 and H3 and I think this is the first time I have realised the Gould did not, in fact, restore them; Mercer did. The photographs are good but most of the captions concern the makers rather than features of the machines. The following chapter gives a useful overview of chronometer balance design and various middle temperature affixes.

The final chapter on repair presumes the reader is competent and most repairs involve replacing interchangeable parts. It begins with inspection and fault finding and then describes replacing the impulse pallet, fitting and adjusting a new detent, and making a new detent (this part is easily damaged and not interchangeable). In addition, re-silvering dials is detailed. Then adjusting the escapement, rating, middle temperature error, isochronism and general handling are covered. This chapter is included, in part, because of the dwindling number of competent repairers and the problems an ordinary watchmaker would have. Although good, I feel it could have been usefully expanded to include more detail on other repair problems, such as balance staff replacement; but this is a minor comment.

Overall the book is very enjoyable and very useful.

R1819 Mercer, Tony

Mercer chronometers

radical Tom Mercer and the house he founded

England: Brant Wright Associates, 1978, 25.5 x 19.0 cm, 251 pp, frontis, 68 ill, 24 col plates.

History, identification (English).

Limited edition

History of the company with lists of Mercer chronometers and serial numbers.

12 chapters: The beginning (14 pages); Clerkenwell (10 pages); The old home (12 pages); The workshop (7 pages); Prescott - 1900 onwards (6 pages); Frank Mercer and brothers (12 pages); Coventry, Hull & Christchurch (5 pages); Greenwich and other trials (11 pages); Electrical contacts etc. (20 pages); The trawler experiment (4 pages); Biographies etc. (20 pages); and And so on (8 pages).

6 appendixes: Technical (2 pages); Exploded drawings (16 pages); Electric clock installations (2 pages); Chronometer serial number (3 pages); Chronometer clocks (1 page); and Index of all known Mercer chronometers (82 pages).

With an index and short bibliography.

[1st edition, very good] The first seven chapters provide a very interesting and enjoyable history of the life and times of "Radical" Thomas Mercer (1822-1900) and his son Frank (1882-1970). This is a non-technical picture of the company and its organisation. It includes many fascinating anecdotes and good insights into working conditions, and it is these that are the most valuable aspects of the book.

Chapters 8 to 10 briefly look at the results achieved at Greenwich trials, the development of chronometers with electrical contacts for running master-slave clock networks on ships, and tests for designing suspensions for very rough sea conditions. Again there is little technical information, with middle temperature affixes and other features being glossed over or illustrated without comment.

Chapter 11 provides biographies for some of Mercer's workers and a biography of Victor Kullberg. Finally, chapter 12 is a postscript.

Appendix 1 provides a good description of file making and a few vague remarks about balances and balance springs. Appendix 2 consists of exploded diagrams, most with the parts named but there are no explanations. Appendix 3 lists the ships which had Mercer master-slave clock systems. Appendixes 4 and 5 provide tables of production, giving serial numbers and dates for chronometers and clocks. The last appendix is an alphabetical list of people and companies who purchased Mercer chronometers, providing some biographical information and details of the serial numbers of the chronometers and prices. Most of the buyers are retailers, but some prominent chronometer makers are included as customers.

The book is well worth reading, but the present day cost of second-hand copies will deter most people. These prices reflect bookseller perceptions of rarity, but the content, although interesting, does not justify them.

[Remark] Page 117 explains that it was Bill Godman, an employee of Mercer, who reconstructed John Harrison's H1 and H3 on behalf of Rupert Gould.

R1820 Mercer, V

Edward John Dent, a lecture

London: Antiquarian Horological Society, 1977, 4to, 12 pp, ill, plates.

History (English).

Offprint from "Antiquarian Horology".

R1821 Mercer, V

John Arnold & Son, chronometer makers 1762-1843

London: Antiquarian Horological Society, 1975 (1972), 25.5 x 19.5 cm and 24.5 x 18.5 cm, 302 pp, 212 plates and supplement of 18 pp, 6 plates.

History, identification, dating (English).

The main volume was printed in 1972 and the supplement in 1975. The pages and plates of the supplement are numbered to continue on from the main volume: pages 303-320 and plates 213 to 218.

21 chapters, 14 appendices and a bibliography.

The first 14 chapters (146 pages) concern John Arnold: chapters 1-7 detail the development of his escapements and balances; chapter 8 the conflict with Earnshaw; and chapters 9-14 other aspects of his business until his death.

The remaining chapters (41 pages) outline later events with the focus on John Roger Arnold and a further chapter on the conflict with Earnshaw.

The first 11 appendices reproduce documents. The main appendices provide lists of watches and marine chronometers and extracts from Greenwich records. There is a comprehensive index.

The supplement adds a few interesting snippets, an errata to the main volume, and additions and corrections to the watch check lists.

[1st edition and supplement, very good] I have accidentally read Mercer's trilogy in reverse order, when I should have read this book first. So I have just discovered Phillip Coole's advice to Mercer, "give us the facts and not too much theorising". This doesn't alter my opinion of his other two books, but I have taken it into consideration here.

Mercer has given us the facts. He has provided a detailed and fascinating account of the development of the spring detent escapement and compensation balances copiously illustrated by diagrams and excellent photographs of watches. His study of the chronological development of John Arnold's ideas delighted me and educated me far more than other books have done.

The brief biography of John Roger is also very good. Mercer was obviously irritated by Gould (who said "he appears to have been a poor workman and a poorer man of business") and he has given us a strong arguments to contradict this opinion.

The later years are glossed over, but these are the subject of Mercer's other two books.

Mercer has done quite a good job of avoiding "theorising". In a few places he has made unsupported (but often sensible) comments and occasionally he has said nothing at all. Except for the chapters on Earnshaw there is not much about the Arnold family that is contentious and so this approach is perfectly satisfactory. Indeed, I am tempted to consider this book as being excellent.

[Comparison of Mercer's biographies] Mercer's three books are distinctly different because of the personalities in them.

The Frodshams appear to have been fairly ordinary, if gifted people; and that book is the least contentious of the three. Mercer is able to stick to the facts without matters of opinion intruding, and I think this is why I find the book marginally the least interesting of them.

The Dents are another matter entirely. In that book Mercer presents a wealth of original letters and documents as well as information from other sources. Most of this gives only one side of the story and it raises many questions in the reader's mind, questions that Mercer does not mention or answer. So, although the factual content of the book is interesting, it is the unexamined aspects of the people that most interested me, and consequently I felt a little let down by Mercer's approach.

John Arnold was an exceptionally gifted horologist, more so than the Frodshams and the Dents, and the factual history of his inventions, patents and watches is completely satisfying and worthwhile in itself. Until Earnshaw appears!

When writing about Earnshaw, Mercer appears fair but he is biased. He provides strong arguments in favour of Arnold's originality and superiority; but his remarks about Earnshaw's writings and his misspelling of names, in contrast to Arnold's gentle and shy nature, suggest a preference based on behaviour rather than creativity.

This is discussed in more detail in my review of Earnshaw "Longitude".

The point I am making is that it is only possible to be factual with facts. The problem most authors face is that there are many interesting and important points that cannot be decided by simple facts. Either these are ignored or the writer must be willing to interpret events and argue for a particular view of history. I think Coole's advice was unsatisfactory; he should have said "give us the facts and only then, if you want to, theorise. After all, theorising is logical argument from assumptions, not fanciful guesswork; and I feel Mercer's books would have been enhanced by a bit more of it.

R1822 Mercer, V

Peter Litherland and Co

London: Antiquarian Horological Society, 1962, 4to, 10 pp, ill.

History, makers (English).

Offprint from "Antiquarian Horology", 1962.

R1823 Mercer, V

The Frodshams

the story of a family of chronometer makers

England: Antiquarian Horological Society, 1981, 24.5 x 18.5 cm, 458 pp, frontis, 20 ill, fld table, 106 plates.

History (English).

Antiquarian Horological Society Monograph No. 21.

Twelve chapters (218 pages) followed by appendices (121 pages), plates (96 pages) and indexes. The text covers the early Frodshams, Parkinson & Frodsham, Liverpool branches, Charles Frodsham, Frodsham & Co, and Nicole Nielson. The appendices include family trees, dating watches by serial number, manufacturers of movements, chronometer records, extracts from publications and a bibliography. The bulk of the text (144 pages) relates to Charles Frodsham and the succeeding company.

[1st edition, very good?] This book might be better titled "A few facts connected with the elements of the Frodsham family". It is not a story, but a compilation of mainly biographical information in a fairly chronological order. Mostly it flows logically, but occasionally odd snippets of information appear without warning or reason. My feeling is that Mercer decided to stick to known facts rather than commit the error of some biographers; that of creating a myth by confusing the truth with their imagination. This approach makes the story a bit disjointed, but it gives us a true, if distant picture of the people.

My main objection is the relatively little material on Frodsham watches (and clocks). There are a few photographs of movements, a discussion of tourbillons and karussels, and a very useful appendix on dating by serial number. Even though the book is a biography, a more coherent study of timepieces would have been valuable.

However, these criticisms are not major. It is a readable, very interesting and useful book.

R1824 Mercer, V

The life and letters of Edward John Dent

and some account of his successors

London: Antiquarian Horological Society, 1977, 25.0 x 19.5 cm, 829 pp including 154 plates, 2 col plates, frontis; supplement of 20 pp, fld plate.

History (English).

Antiquarian Horological Society Monograph 13. There is also a 1984 supplement (20 pp, folding plate) which includes information on Kew certificates.

34 chapters covering the Dent dynasty from 1767 to about 1970.

Half the book, the first 19 chapters, is concerned with EJ, Edward John Dent. This part consists largely of quotations from letters written from and to EJ and other documents covering all aspects of his activity: Arnold & Dent, discussions with the Astronomer Royal Airy, chronometers, clocks, the diploidoscope, marine compasses and barometers.

This is followed by two chapters on the design and construction of the Westminster clock.

The remainder of the book, beginning with EJ's will, covers the descendant companies (Frederick Dent, Richard Dent, MF Dent & Co and E Dent & Co), fakes, other unrelated Dents, and turret clocks (really an appendix).

There are 12 appendices including EJ's indenture, Greenwich trials, business titles and addresses, numbering and suppliers, and Kew certificates. The book contains only a little material directly related to watches.

[1st edition, very good?] Mercer has produced a massive, detailed biography which is a readable, interesting and very useful book. As with his book on the Frodshams (which I read first) he has stuck to known facts and has not included a coherent study of timepieces.

There are some events that could be interpreted with reasonable confidence and Mercer's failure to do so is a pity. Certainly the uncritical and unedited presentation of facts must form the basis of any historical or biographic work, for without this data the reader cannot distinguish between considered interpretation and fanciful myth-making. Mercer does this basic work for us, but he does not attempt to analyse this information, which I found frustrating and unsatisfying, wanting to have some guidance and feeling for the events.

For example, EJ supposedly finished at least 228 of his own chronometers in 15 years while also working for a living with other firms. Is this credible, or are serial numbers a poor guide to the quantities he actually made? Likewise, EJ's letter to Mr Hunt (page 168) pointing out that 25 year old Richard Rippon was not financially able "to settle in life" deserves a better comment than it "would indeed be interesting to know the outcome of this". Surely it is reasonable to suppose a proposal of marriage to Hunt's daughter with the outcome of Richard not marrying for another 8 years? And this is quite significant considering how important his eventual wife was.

More important is EJ's letter to Schumacher (page 213) in which he indicates he does not understand or speak French. This has a major impact on how we should view his patents and his problems with wheel-work.

So, although it is pleasing that Mercer has not fantasised about the Dents, I feel he has gone too far the other way and failed to examine the implications of the material he presents.

[Remark] Although quite outside my role of a bibliographer, I shall give my interpretation of who EJ was.

First, the letters indicate that EJ was a reasonable person, but not averse to using events to his advantage. By reasonable I mean he was not arrogant, dictatorial or one who would ride roughshod over others to achieve his aims. He had "one dream, one ambition ... to be recognised as the best chronometer maker in the world", and was clearly very determined in his quest (even though he became more famous for his clocks). Although Mercer regards the 1833-35 and 1839 disputes over the chronometer trial results as "a rather light-hearted incident" I have no doubt they were deadly serious. The awards were a major battle for reputation, patronage and income, and EJ's objections would have been far from frivolous if he really wanted to be the best in the world. He was happy to infer proprietary rights when there was no risk, such as when he sold "Dent's patent diploidoscope" without clarifying that it was Bloxam's patent. And he could sack an employee for working on a watch "not intrusted by the firm" at the same time as he was finishing watches for himself in preparation for leaving Arnold. But here is a nice person, pleased to send dozens of chronometers on rather pointless excursions in wagons (which "... helped considerably to establish Dent in his business") and willing to work with others to gain status and reputation (most

obviously with Airy and the Royal Exchange clock).

There is a major problem in that most letters are written by EJ, giving a one-sided view of events. For example, I find it hard to assess the extent to which EJ deliberately engineered the break-up with Arnold rather than it being a consequence of Arnold's behaviour. Dent's letters suggest Arnold was becoming a liability and EJ needed to move on if he was going to further his career. It is possible to infer that Arnold's public complaints were the only way Arnold could retaliate against being frozen out by Dent, rather than genuine grounds of EJ against him.

Perhaps a more important question is raised by Jagger ("Royal clocks"). EJ's first application for a Royal appointment was rejected by Airy, but he is said to have been appointed in 1841 and certainly used "by appointment to the Queen" afterwards. However, Jagger notes that the warrant copy is annotated "void not sent". So did Dent ever have a Royal appointment?

Second, EJ was not a great horologist, but a very gifted craftsman.

One indication is EJ's lack of knowledge of gearing. Around 1837 Hawkins ("A treatise on the teeth of wheels") visited several London shops, including Arnold & Dent, and found gear teeth were not formed according to any principle. In 1843 EJ wrote to Airy, Professor Schumacher and Professor Hanson describing how watch and chronometer ebauches are purchased from Lancashire with imperfectly cut wheels, and indirectly indicating that he had not thought about the form of teeth until he was asked to make a clock. Then he described cycloidal teeth and being "pretty well acquainted with Comer's book" as though it was new to him. As there is no book written by Comer, presumably Comer is in error for Camus and I suspect EJ never saw the book, but only heard the author's name spoken.

If the suggestion that EJ could not read French is correct, then this lack of knowledge is partly understandable; the significant texts were in that language and little of importance had been published in English.

His patents also support the view that he was not an inventor. Much in them is inconsequential and parts are derived from Airy's original ideas. Further, Mercer, if at times indirectly, says Fred (Frederick Rippon/Dent) was the inventor: "perhaps the actual work was performed by Frederick Rippon under Dent's supervision". It is interesting to note that Glasgow ("Watch and clock making") mentions EJ as "the original Mr Dent", but most of the time he refers to "old Dent" who is indexed to Fred. Although this may be an error, it seems Glasgow believed Fred was the instigator. The fact that the second and third patents were registered in Paris by Fred might simply be because EJ did not speak French; although EJ made a mistake in his version of one patent which Fred did not, suggesting Fred had a greater understanding of it than EJ.

In contrast, the patents purchased by EJ are significant; Bloxam's dipleidoscope, Nicole's keyless mechanism and McDowall's escapement. And it appears that much of the barometer design depends on the work of Vidi. (Later Buckney purchased patents for E Dent & Co. These included one by MG Cole who was almost certainly the son of JF Cole, although Mercer fails to see the link; this was for a resilient lever which is usually and incorrectly credited to Dent in many books.)

The 1833 letter to the Nautical Magazine on middle temperature error, EJ's compensation balance designs and his work with glass balance springs suggest he was a thoughtful inventor. But Mercer says the letter was not from EJ but the firm of Arnold & Dent and the experiments were probably conducted by Fred (he does not provide sources, although he may be referring to Glasgow). Further, the letter explains the middle temperature error as due to "the want of affinity existing between the metallic particles which comprise the balance-spring" which is vague to the point of nonsense. Baillie ("Watches - their history, decoration and mechanism") says Ulrich preceded Dent in 1814 (although Mercer throws doubts on this claim), and Glasgow suggests it was understood well before Dent's time. Unfortunately the appropriate parts of the main contemporary book, Rees "The Cyclopaedia ...", were written before 1808 and so are too early to help. I prefer Saunier's statement that "Dent was the first to publish this fact".

These hints are reinforced by the emphatic evidence of EJ building clocks to the designs of Airy. The correspondence between them clearly shows Airy to be the inventive scientist, providing designs of escapements, maintaining power and conical pendulums, instruction on the form of teeth and other matters. Whereas EJ is the mechanic using this knowledge to solve the problems of building a workable clock. Not that he lacked imagination as he often raised questions and gave suggestions about the practical matters of implementation.

Dent did, of course, make a major contribution and his practical skills cannot be under-rated. But everything points to a consummate craftsman implementing the ideas of others, rather than a knowledgeable, original thinker. Which is precisely why Airy could work with him; EJ was the ideal mechanic to go with Airy's creative genius. Vulliamy could never have been used because he would have both designed and built, cutting out Airy. And it is why Dent would not apply for the Westminster clock without Denison's "kind support" (and his design).

[Myth making!] Let me finish by confusing fact with imagination. Because of the ambiguity of the roles of Fred and Richard (Richard Rippon/Dent) it is difficult to avoid questioning the relationships between EJ and them. I am sure many have pondered this problem but I haven't seen anything in print.

Mercer documents but does not discuss several key questions. Why did EJ stay single for 52 years and then marry Elizabeth, Rippon's widow? Why did Richard change his surname to Dent and why did EJ request Fred change his surname (in neither case was it necessary from a business point of view)? Why did Amelia Rippon name all her children Dent after her mother's second husband and omit all reference to her "father"? Why was the name of Rippon erased from the family until some generations later?

A simple answer is that EJ was the father of some or all of Elizabeth's children. It is not improbable that a 17 year old apprentice watchmaker got a girl pregnant. This would have been a total disaster for both of them. The covenants of indenture of apprenticeship stipulate that the apprentice "shall not commit fornication nor contract matrimony within the said term." To make an apprentice free at the end of his time, his master had swear an oath that the apprentice abided by his indenture, and any false testimony would mean that the apprentice would forfeit his freedom and be unable to work (see House of Commons "Report from the committee on the petitions of watchmakers of Coventry, etc."). So being unable to "settle in life" Dent's career hopes would have been destroyed and Elizabeth would be disgraced and outcast (note the tribulations of Thomas Earnshaw). Unless, of course, some-one rescued them by marrying her and they had to wait 35 years before legalising their love.

This is not entirely fanciful. Richard changed his name about the time he married, the first significant event for him where parentage might be important. Fred didn't change his name when he married, but he may have married against his parents' wishes and without their knowledge (which might also explain EJ's original will). Only Mary Rippon, who married Thomas Buckney, did not use the name Dent.

R1825 Merritt, HE**Gear trains**

including a Brocot table of decimal equivalents and a table of factors of all useful numbers up to 200,000

London: Isaac Pitman & Sons, 1947, 22.0 x 14.5 cm, 178 pp, 33 ill, tables.

Theory (English).

Seven chapters: Types of gear train, Gear ratios of simple and compound trains, The factor table, Some properties of fractions, The calculation of compound trains, The single epicyclic train, and Coupled trains.

The factor table occupies 39 pages and the Brocot table occupies 31 pages.

[1st edition, good] I came across this book accidentally. The NAWCC Mart of October 2003 reprinted an article by Brian Hayes which had originally appeared in the July/August 2000 issue of American Scientist. This fascinating article titled "On the teeth of wheels" examines a method for determining motion work trains which was first proposed by Achille Brocot in 1861 ("Calcul des rouages par approximation"). Unlike the trial and error methods used by Camus and others, this is a methodical and much more logical approach.

This book is not concerned with horology and discusses other gearing problems such as lathe change gears and large mechanical gearing systems.

It provides a theoretical foundation for factor tables and discusses determining gear trains in that context. I found it less accessible than Brian Hayes's article.

R1826 Mesnage, MP**Musées de Besançon, collections d'horlogerie**

Besançon., 1955, 8vo, 63 pp, 10 plates.

Collection, catalogue (French).

[1st edition review by Joseph Sternfeld] This is a catalogue (in French) of a famous museum collection of old watches, clocks and incidental objects such as planetariums, sundials, sandglasses, clockmakers tools, machines and specialties. The illustrations give a general oversight of the composition of the collection, which typifies practically a complete picture of horological development. Examples range in periods from the last quarter of the 16th century to the early 19th. Hundreds of items are listed and described in some detail.

There is a moderate amount of text in which information is included concerning such matters as the introduction of the spiral, fusee, chain, with references to early watches which embodied these features, forms and decoration of watch cocks, complications of movements, construction details of cases, materials used, development of styles, etc. All this useful to collectors in determining age and period of pieces.

In his text, Professor Mesnage points out that the origin of the watch remains in some uncertainty, he makes no specific claims in that respect, and comments that the controversies which have arisen in the past rest on no firm basis, the arguments being often more sentimental in nature than scientific. The collections of the Besançon Museums do not enter into these discussions, since their earliest examples do not go further back than the last quarter of the 16th century. There is a short list of bibliographical references.

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R1827 Mestral, A de**Daniel Jeanrichard**

founder of the Jura watch industry 1672-1741

Zurich: Institut de Recherches Economiques, 1957 (1956), 24.0 x 17.0 cm, 60 pp, 29 ill.

History (English, French, German).

Separate language editions. Volume 2 of "Pionniers suisses de l'économie et de la technique" produced for the Fabrique d'Horlogerie JeanRichard of Geneva. Numbered limited edition.

A biography of Daniel JeanRichard intertwined with historical remarks on watchmaking in Neuchâtel.

[1st edition, fair] About two-thirds of the book is concerned with JeanRichard from his birth to his death. It provides a quite factual study, disproving some of the myths about him and placing him in context. The remainder of the book is based on his much later resurrection and the creation of the myth

that he was a blacksmith.

Throughout there are general remarks about the development of horology in the region which put JeanRichard in context.

Although the history of JeanRichard is very good, some of the later parts of the book are rather vague, idealised and self-congratulatory; indeed, they don't really relate to the title and do not add much. But this is a minor criticism.

R1828 Metsker, U

Time a premium

a book about premium/promotional watches and clocks

USA: PU Productions, 2004, 10.5 x 7.25 inch, 322 pp, ill.

Illustration (English).

[Review by Julia Mueller] Ursula Metsker's book, "Time: A Premium", is a must-have for anyone interested in character watches - from the beginner to the long-time collector. It features over 300 advertising and character watches and clocks, collected by Ursula from the 1970s to the present.

The introduction sets the stage, with clear, concise explanations of the book's content. The watches are listed in alphabetical order by company, and the index lists the watches or clocks by advertiser / character, or alternatively, by product. The prices listed with the item descriptions are time-of-offer prices.

This is a fun book and it is also an excellent premium watch reference book for the era.

Each page includes a color picture of the watch or clock, in most cases the original order form, a description of the watch, and many times an anecdotal story of how Ursula became aware of the offer. On page 241, you will read how Ursula dug through a trash can at a Burger King to retrieve her two Rugrats watches. As I perused the book, I was amazed at how many watches I had missed ordering over the years. Ursula had great foresight and perseverance in saving, for future reference, the order forms, records of what was needed to send in with the form, how many bar codes were needed, how many boxes of the product needed to be purchased, etc.

One section describes watches that were given as gifts by various (NAWCC) chapters over the years. Cherokee Chapter 30 issued one at their regional in October 1971. Then, in 1975, Lake Erie Chapter 28 hosted the National Convention and gave a pocket watch as a registration gift. In 1979, Centennial Chapter 100 hosted a regional in Colorado Springs and distributed a pocket watch as a registration gift. When I turned to the next two pages, Ursula featured a watch from Philadelphia Chapter 1 to commemorate their 25th Anniversary (1943-1968). When 1993 rolled around, Chapter 1 issued a 50th Anniversary watch. I am certain that Ursula is looking forward to 2018 when, hopefully, Chapter 1 will issue a 75th Anniversary watch.

When Ursula and I first met in 1994, on a horological tour in Australia organized by Bob and Nancy Reichel, we discovered that we had a common interest in character and premium watches. The only one that we could find "down under" featured a big, stuffed bear named Humphrey. When we were together from then on we would cruise the flea markets, thrift stores, or the marts in search of these fun watches.

Over the years, there was one watch, Snausages (1993), that I could not find an order form for up here in the Pacific Northwest. All these years, I have wondered what that watch looked like, and it was the first watch I looked for in Ursula's book. There it was, on page 148, in all its comic humor. Ursula relates many stories about what she had to go through to get some of these watches. On page 120, you will find the Howard the Coward watch. The picture that goes along with the order form is Gary Larson at his wittiest.

Have you wondered what the watch put out by the Los Angeles Coroner's office might look like? You will find it on page 140. And, next time you see Ursula's husband, Paul, check his shoes - you'll understand why when you turn to the Johnson & Murphy watch on page 125.

Ursula states that there are many other premium watches that she has not encountered. Even so, she has done a remarkable job of assembling this collection and saving the information and order forms. This is a vital book for reference and identification of character and advertising watches and it adds a bit of color, humor, and wit to the horological collecting world. Thank you, Ursula.

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R1829 Metzgar, T; Whisker, J

Pennsylvania clockmakers and watchmakers

Clockmakers and watchmakers

goldsmiths and silversmiths, a checklist

USA: Closson Press, 1989, 11 x 8.5 inch, 161 pp, ill, plates.

Makers (English).

Both titles refer to the same book.

List of Pennsylvania tradesmen including genealogical facts, documentation, and a section of nostalgic ads and clippings from newspapers.

R1830 Meyer, E

Justice et charité sociales dans l'industrie

Soleure: Meyer & Stüdeli, ca 1945, 8vo, 39 pp and 31 plates.

(French).

"Roamerhaus" le foyer de la fabrique de montres Meyer & Stüdeli S.A. Soleure.

R1831 Meyer, J**Der grundlehren der uhrmacherkunst**

Weimar: Voigt, 1891 (1864), 8vo, 101 pp, 28 ill, 3 plates (261 pp).
(German).

Three editions, the second dated 1874.

The 1864 edition is available as a Google Book PDF file, but the plates scanned folded and so useless.
Basic learning of horological art.

R1832 Meyer, L**L'horloger bijoutier amateur**

ou les secrets de l'horlogerie dévoilés

Paris: Portal & Cie, 1900, 8vo, 100 pp, 1 plate.

Description, repair (French).

The amateur horologer-jeweler or the secrets of horology revealed.

Described as a "useful and interesting vade-mecum of recipes and procedures by a well known manufacturer of watches".

R1833 Meyer, P; Millot, P**La compatibilité de l'horloger-bijoutier**

et les nouvelles lois fiscales

1918, 332 pp, fld tables.

Business (French).

The operations of the watchmaker-jeweller and the new fiscal laws.

R1834 Meyer, W**Catalogue of clocks and watches**

in the Topkari Sarayi museum Istanbul

Istanbul: the Museum, ca 1970, 4to, 118 pp, b/w ill.

Collection, catalogue (English, German, French).

In four languages.

"Not the best quality illustrations."

R1835 Meyers, K**United States horological trademark index**

registered United States trademarks of domestic and foreign watches and clocks 1870-1960

USA: Trafford, 2004, 25.5 x 20.0 cm, 519 pp, ill.

Identification (English).

Index of trademarks between 1870 and 1960 derived from the US Patent and Trademark Office, alphabetically organised by the trademark registrant. With a pictorial index and contemporary advertisements.

[1st edition, review by Fortunat Mueller-Maerki] Trademark indexes are invaluable research and identification tools, which every collector and researcher who deals with factory made, branded goods wants and needs. For evaluating and appreciating Kurtis Meyers' book, the first major new book in this category in decades, it however is necessary to digress into horological publishing history.

In horology the trademark "bible" has long been Karl Kochmann's pioneering work "Clock & Watch Trademark Index - European Origin". First published in the 1970s as a manually compiled listing of a few hundred trademarks on under 100 pages, it grew organically through the author's lifelong hunt for first hand evidence, and through a global network of correspondents, to the 1000 page sixth edition of 1992, the last produced by Mr. Kochmann himself, who by then was in his 70s. It lists nearly 10,000 trademarks or variants thereof, based on 35,000 observations. Kochmann deserves the eternal gratitude of the horological community for not only introducing most of us to the importance of trademark research, but also for collecting and publishing the data in a time before computers and databases were standard tools of research and publishing. Kochmann's books were produced mostly on a manual typewriter; the image trademarks hand drawn by the author. (The current, hardbound edition of Kochmann has been re-published by a third party, and is essentially a photo-mechanical reproduction of Kochmann's own last edition.)

The strength of Kochmann's work relies on its vast diversity of sources, but the process of its creation also is the roots of its limitations: Not all sources were equally reliable and the thoroughness of the fact-checking varied over time, leading to numerous errors and a organizational structure of the final volume that baffles novices, and sometime challenges even long-time users. I doubt there is anybody who would describe that book as "user friendly".

And this is where Kurtis Meyer steps into the picture with his new book. He set out to create a horological trademark index by a process that is diametrically opposed to the one used by Kochmann. The publication aims only to take trademark information from one source and make it easily available to his fellow horologists. The result is a book that looks and feels "clean", and is easy to use. Myers systematically mined the database of the US Patent and Trademark Office for all horological trademarks - both wordmarks and images - that were registered in this country between 1870 and 1960. In other words it documents "trademarks claimed and issued" (rather than "trademarks observed") and thereby drastically reduces the "clutter" from all the unregistered trademarks (and variants of registered trademarks) as well as the obscure marks of small overseas makers who never intended to market their timepieces in America, and whose goods are hardly encountered by collectors in this country.

The main part of the book is organized alphabetically by registrant. The registrant may be a manufacturer, a "private label" marketer, or a U.S. importer or agent for a foreign based entity. (The main entry includes date of registration and the date protection was granted.) Because of cross indexing, organisation by registrant does not present problems, and provides the added benefit of documenting hard to find information on who represented which foreign makers in the US over time. The book shows photographic reproduction of the image and word logos as filed with the authority, and thus avoids the inherent pitfalls of images hand copied from clock plates and redrawn over generations.

A book that labels itself an "index" of course is only as good as the indexes that provide alternative ways of getting into the main body of the text. Beside a comprehensive alphabetical index of about 400 entries, the book features a most compact and very useful pictorial index, which makes it very easy to identify picture-only or illegible trademarks. The whole book is well organized, and easy to use even for the casual and novice user.

There is no doubt that Myers' work contains fewer trademarks than Kochman, but it is infinitely easier to use, and it will provide a quick answer to 95% plus of your questions. I predict that this new book will become a standard reference work for the American horological collector and researcher. For those unusual and tricky conundrums the more experienced researcher will certainly also want to keep a copy of Kochmann at hand, but "United States Horological Trademark Index" by Kurtis Meyers is bound to be an indispensable part of any well stocked horological bookshelf.

R1836 Meyrat; Perdrizet**Instruction sur un cercle a calcul fixe sur une montre ordinaire**

Montbeliard:, 1884, 15 pp.

Technical (French).

Listed in Tardy.

R1837 Meyrick, R**John Gershom Parkington**

the time measurement instruments

England: St. Edmundsbury Borough Council, 1979, 24 x 18.5 cm, 46 pp, 53 ill.

Catalogue, description (English).

Official catalogue of the John Gershom Parkington Memorial Collection of clocks, watches, dials and chronometers housed in a Queen Anne house in Bury St Edmunds, Suffolk.

Part of the collection was later stolen.

R1838 Michaels, JO**School of time**

USA: JO Michaels, 2001, 3 CD ROMs.

Repair (English).

There is a 4th CD ROM (presumably lesson 2) on clock repair.

Lesson 1, watchmaking (300 photographs, movies): It includes cleaning enamel dials to remove dirt in the hairlines, case parts (stems, sleeves, crowns and bows), how to take the movement apart, proper techniques for assembling trains, where and when to oil or grease parts, removing and oiling balance jewel settings, removing and replacing mainsprings, correct terms for parts.

Lesson 3, friction jewelery (70 photographs, movies): Identifying the different kinds of jewels used in watches, how to use the jewelery tool, using a micrometer, selecting the proper size jewel, replacing train jewels, checking endshake.

Lesson 4, staffing watches: It includes how to true a balance, using under cutters, measuring movements, poisoning the balance, removing and replacing the roller, using a lathe to cut out the old staff, removing and replacing the balance spring, "matching up" and selecting a new staff, using a staking tool to rivet a new staff, how to add or remove weight when poisoning.

R1839 Michal, Stanislav**Clocks and watches**

a catalogue of clocks and watches 16th to 20th century in the collection of the National Technical Museum, Prague

Prague: National Technical Museum, 1974, 4to, 272 pp, ill, plates.

Collection, description (English).

Limited edition of 1000 copies.

R1840 Michel, H**Le vernier et son inventeur**

l'ingénieur Pierre Vernier d'Ornans

Besançon:, 1913, 69 pp.

History (French).

The vernier and its inventor, the engineer Pierre Vernier of Ornans.

R1841 Mieville, JC**Le repassage en blanc des montres**

Besançon: Impr. de l'Est, 1921, 8vo, 54 pp.

Technical (French).

"Descriptif de cette méthode qui consistait à la mise au point de toutes les fonctions avant le montage définitif".

Finishing watch ebauches.

R1842 Mieville, JC; Gagnant, L**Le reparation des montres**

Besançon: Union Professionnelle, 1920, 24.5 x 16.0 cm, 36 pp, 3 ill.

Repair (French).

The repair of watches.

R1843 Migeon, G; Garnier, P**Catalogue de la collection Paul Garnier**

musée du Louvre, horloges et montres ivoire et plaquettes

Paris: Hachette & Cie, 1917 (1906), 19 x 13 cm, 112 pp, 48 b/w plates with 115 ill.

Collection, description (French).

One source lists 70 plates, but this is probably in error.

Tardy lists two printings in 1906 and 1917.

Description of the collection with notes by Paul Garnier. It covers sixty-three 16th and 17th century watches and 3 table clocks.

R1844 Milham, Willis I**Time and timekeepers**

including the history, construction, care and accuracy of clocks and watches

New York: Macmillan, 1947 (1923), 21.0 x 14.5 cm, 616 pp, 339 ill (609 pp, 339 ill).

History, bibliography (English).

Printed at least six times.

A history of time pieces and descriptions of how they work, including a section on American factories.

Twenty-five chapters covering: Time (30 pages); Early timekeepers and clocks (66 pages); The modern watch (24 pages); Modern clocks (92 pages); Watches and chronometers (76 pages); Tower, electrical and precision clocks (54 pages); American clock and watch making (82 pages); European watchmakers (13 pages); Care and repair (57 pages); and Famous clocks and watches (44 pages).

There are 5 appendices including a chronology (with short biographies of makers), glossary of terms (with French and German equivalents), guide to collections and a bibliography of 518 titles.

[1944 edition, fair] Written by an astronomer for use in a college course. It is comprehensive but not stimulating and consequently of no great merit.

I have the impression Milham has largely collated material from other books and done so fairly uncritically. He has provided a reasonably good descriptive history, although the American section is largely a listing of companies with photographs of buildings.

But other material is dubious and the technical information is sporadic and vague; for example, the pendulum and anchor escapement are covered in some detail whereas the balance spring is glossed over in a few words. My impression is not helped by the poor quality of the illustrations in the reprint.

The book is most interesting for the extensive bibliography, especially of post 1800 works, but otherwise I did not find it useful.

R1845 Miller, AH; Miller, DM**Illinois horology**

a brief view into the land of Lincoln

USA: National Association of Watch and Clock Collectors, 1977, 21.5 x 14.0 cm, 64 pp, 115 ill.

Description, history (English).

Published in connection with the 33rd National Convention of the NAWCC in Chicago.

A pictorial review of watch and clock making with brief descriptions of 34 companies and people active in Illinois. The watch companies are: Aurora, Cornell, Elgin, Freeport, H. von der Heydt, Illinois, McIntyre, Peoria, Rockford, Rock Island and Westclox.

[1st edition, mediocre] An uninspiring booklet. The companies are presented randomly, the histories are uninformative, and the photographs (some in colour) mediocre.

Although this book might just have had some value when it was published, there are much better books available now.

R1846 Mintmeir, RW**Concise answers to horology questions**

USA: R.W. Mintmeir, 1947, 29 pp.

(English).

R1847 Miyashita, Masami**Tokei no kagaku**

Tokyo: Nyu Furendo, 1948, 168 pp.

(Japanese).

Horology.

R1848 Mizutani, Hiroshi**Jissen tokeigaku**

Tokyo: Nyu Furendo, 1933, 351 pp.

(Japanese).

Practical horology.

R1849 Mocařico, G; Simonin, A**Mouvement**

Germany: Steidl, 2008, 35 x 35 cm, 80 pp, ill.

Illustration (French).

[1st edition, review by Fortunat Mueller-Maerki] The first paragraph in this book reads: "This is a book of photographs. The photographs in this book all show watch movements, but it is not a book about watches."

That is undoubtedly true. This is not a book about watches, it is a book solely about the beauty of high grade, contemporary wristwatch movements. The Italian photographer Guido Mocařico, together with the German design team of Steidl Publishers, and with the technical advice of Swiss watchmaker Antoine Simonin, has created one of the most extraordinary 'watch books' I have ever seen.

The team selected 37 contemporary wristwatch movements, and took amazing, full movement photographs of them (sometimes the under dial view, sometimes the back of the movement). The core of the book consists of these 37 very large, incredibly detailed pictures. They are each reproduced on a double page, in 12 inch diameter vivid color images of stunning clarity and depth of focus, without any text on the pages to diminish their visceral impact.

The creator is the first to admit that he neither understands - nor cares about - how watch movements work, and that he made the book not for horologists but primarily for people who care about beautiful shapes. But that uncompromising bias favoring 'beauty' over horology - in the opinion of this reviewer - has resulted in a book that is nevertheless likely to become a 'must-have' book for technically savvy enthusiasts of complicated watches. The watches selected are mostly Swiss (the exceptions are three watches by A. Lange & Söhne, and one by Glashütte Original), covering the large well known upscale brands such as Patek, IWC, Audemars, Vacheron, Chopard, Blancpain, Hublot; as well as smaller brands including Jaquet Droz, DeWitt, Harry Winston, Journe, Greubel-Forsey, Genta, Lacroix, Dubuis, and individuals such as Voutilainien, Gauthier, and Roth.

Every conceivable complication is represented, including many tourbillions, minute repeaters, chronographs, perpetual calendars, double escapements (resonance), etc, and most decorative techniques are illustrated (including perlage, Geneva stripes, skeletonizing, engraving, black polishing etc.).

A technical appendix (six movements per page), identifies and describes each movement shown, listing the brand, year made, model, caliber, dimension, jewellery, complications, escapement type, running time, number of components and decorative technologies used. While that text is in French, any watch enthusiast can decipher that information, even if he/she does not read French. A one page horological glossary in French concludes the book.

This book was made to be 'eye candy', a coffee table book appealing to a broad non-horological readership. But I predict it will also become the one book many watch collectors will want to have at hand not only to enjoy it themselves, but to show to their non-horologist friends, because this beautiful volume is ideal for demonstrating to those not so afflicted, how it is possible to fall in love - and become obsessed - with marvels of micro-mechanics. Mocařico's 'Mouvement' is a strong reminder to all passionate horologists that our obsession is not only about mechanical function but also about beauty.

R1850 Moebius**Some considerations on the lubrication of watch movements and fine mechanisms**

Switzerland: H. Moebius & Son, ca 1960, 21.0 x 15.0 cm, 20 pp, 16 ill.

Technical (English).

Undated.

Introduction followed by The properties of oil, The range of Moebius lubricants, Some observations from experience, Conclusion, and Bibliography.

[1st edition, very good] Although primarily an advertising brochure, this booklet provides a very good, if brief discussion of oil properties. It then lists the types and uses of different Moebius lubricants.

R1851 Moeller**Uhren**

von der fruhen eisenuhr bis zur armbanduhr, fakten, preise, trends

Munich: Deutscher Kunstverlag, 1996, 27 x 21 cm, 162 pp, 250 ill.

Price guide (German).

Timepieces from the early lantern clock to the wristwatch, facts, prices, trends.

A broad spectrum of clocks is presented from late gothic house clocks through grandfather clocks and elegant French pendules up to the various forms of pocket and wrist watches. Current price estimates, numerous tips on their care, technology and repair, and important information on the market situation.

R1852 Moine, R; Steiner, E; Pequignot et al**Chronique du jura bernois**

présentation de nombreuses sociétés horlogères et manufactures diverses, avec répertoire alphabétique des principales entreprises industrielles et commerciales

Zurich: H. Diriwächter, 1947, 4to, 466 pp, ill.

Makers (French).

Presentation of the numerous horological societies and various manufacturers, with an alphabetical list of the principal industrial and commercial businesses.

History, geography and economy.

R1853 Moinet, Louis

Nouveau traite général, élémentaire, pratique et théorique d'horlogerie

(Paris: Dutertre) (Paris:), 1978 (1848), 27 x 17 cm (25 x 33 cm), 3 vols text, 1 vol atlas (2 volumes of text, 432 and 544 pp, and 1 volume of 51 fld plates, 13 tables).

Technical, theory (French).

Apparently four editions, but inconsistently described. One source gives 1841 for the first edition, but it is generally dated 1848. The second edition is undated but usually given as 1853, and is just a reprint of the first. It was produced in two volumes (432, 19 folding plates and 544 pp, 32 folding plates) or three (separate atlas), and the modern reprint is of this edition. It may have been reprinted, undated but given as 1860, although this may be just an alternative date for the 1853 printing.

The 3rd edition was published in 1875: 2 volumes of text, 432 and 544 pp, and 1 volume of 51 fld plates, 13 tables. But also some sets have an appendix of 204 pp, 19 fld plates.

The 4th edition (5 volumes) was published in 1877.

Moinet is said to have sold the copyright to the first edition and to have died a poor man. Presumably someone else edited and revised the 3rd and 4th editions.

Volume 1 of the 1848 edition is available as a Google Book PDF file, but the plates are scanned folded and so useless.

Second edition: A technical study of timepieces, with chapters on geometry, mechanics and properties of materials. The sections on watches focus on the work of Berthoud and Lepine and include an extensive examination of repeaters. Many parts are quotations from other authors.

Volume 1 begins with an historical preface (14 pages) and definitions of terms (37 pages). These are followed by ten chapters: Introduction (description of early clocks, Huygens, gearing, 64 pages); The ordinary pendulum clock (18 pages); The ordinary verge watch (22 pages); Repeater clocks and watches, alarm watches (44 pages); Modern civil watches (Lepine calibres, examination of watches by P. Gaudron, 24 pages); Brief notes on physics (geometry, compass of proportion, 40 pages); Properties of bodies (mechanical terms, chemistry, metals and alloys, oil, sun dials, 52 pages); The verge escapement (verge escapement, proportions, sun dials, 32 pages); Calibre of simple and repeater watches (22 pages); Hand-work in horology (plates, wheels, pinions, pivots, Berthoud repeater, Ellicott clock, 61 pages).

Volume 2 has ten chapters: Remontoirs, equation timepieces (48 pages); Mechanics (levers, forces, the screw, friction, 80 pages); The escapement (descriptions of escapements, equation mechanisms, a new compensator for the motive force by Pescheloche, general observations on motive forces, barometers and thermometers, isochronous escapements by Brocot & Sons, Mudge remontoir, thermometers, automates, supplementary notes on physics and sun dials, 96 pages); Treatise on gears (80 pages); Gears and trains and escapements (cycloids, calculating trains, logarithms, cylinder, Graham's anchor, duplex, virgule, lever and detent escapements, examination of the ordinary repeater, half-quarter and 5 minute repeaters, pendulum suspension, 112 pages); Marine chronometers (astronomical regulator, theory of the pendulum, expansion of metals, compensation pendulums, 48 pages); Description of a modern seconds regulator (23 pages); Observations and research on the Graham anchor escapement by Vulliamy and a memoir on suspension springs by Laugier and Winnerl (21 pages); Tower clocks (4 pages); and Tables (12 pages). The volume concludes with a table of contents, errata and a list of subscribers.

I am unsure of the number of tables in the 2nd edition because many are on unnumbered pages. My set has 8 unnumbered tables: simple pendulum 21000-9400 beats per hour, simple pendulum 9300-600 beats per hour, equation of time, acceleration of stars relative to mean time, expansion of materials, linear expansion of materials, melting points, and specific gravities. There are also 5 tables on numbered pages in volume 2: french measures, logarithms, table for the Laugier & Winnerl paper, table for the Vulliamy paper, and table for a letter quoted on pages 500-502.

The 3rd edition of 1875 includes chapters on electrical horology.

[2nd edition, fair] Moinet worked for Breguet and this book was published after leaving him. Some have said that parts were taken from Breguet's own work. Apparently Moinet transcribed work for Breguet (see Chapuis and Jaquet "The History of the self-winding Watch 1770-1931") and *Antiquorum* "Art of Breguet" (description of Lot 7) states emphatically "a book that was in fact being written by Breguet before his death" and provides documentary evidence to support this.

But I find it very difficult to believe that any of this book was written by Breguet. Most authors, like dogs and cats, mark their territory, their ownership. Which is to say, books are vehicles for the author's ideas and contain at least some description of their own inventions. Thiout, Berthoud, Reid, Cumming and Daniels (to name just a few) include specific material on their own contributions. Even minor works (such as Booth, Kendrick & Davis and Camm) exhibit this feature.

But Moinet doesn't mention Breguet. There are plenty of (almost archaic) pages and plates concerning Berthoud, Lepaute, Lepine, Vulliamy and others, but the only things that relate to Breguet are a lepine repeater calibre (like the *Antiquorum* lot 7), a modern repeater, a passing remark about parachutes and perhaps a calendar system. Where are Breguet's techniques and inventions? Not a word about calibre design, tourbillons, sympathetic watches, and so on. I find it simply incredible that Breguet would write a book and not discuss his own work in some depth. Indeed, *Antiquorum* quotes a letter saying "... Moinet disguises or ignores completely all that Monsieur Breguet has done ... and after reading this book you would in no way be aware of the important inventions of Monsieur Breguet". In consequence it seems

reasonable to conclude that most of Breguet's writings were expunged or, much more likely, were never there in the first place; and what is left is largely or entirely Moinet. Actually I should say largely or entirely other authors as much of the book either directly quotes or derives from other books.

Several references talk of Moinet in terms like "one of the greatest 19th century handbooks on horology", but perhaps they haven't examined it. It may be true, but the suggestion damns the rest of the 19th century authors (which, come to think of it, might be justified). It is a rather odd and not well organised collection of useful information showing little originality. A compilation of dubious quality.

The letter quoted above is dated 1843 which suggests there may have been an earlier edition. The only book I know of that might fit this is Breguet (ancien eleve de) "L'art de l'horlogerie enseigne en trente lecons" (1827), which see, but it is quite different.

See also Breguet "Le guide de l'horloger".

R1854 Molbert, K

Taschenuhrstander

von der schnitzkunst zur industriellen herstellung

1997, 25 x 17 cm, 302 pp, 154 ill, 48 plates.

Description (German).

Pocket watch stands from the hand made to industrial manufacture. A history of 200 years development in metal, wood, porcelain and ceramic.

R1855 Molinier, Emile

Dictionnaire des émailleurs

depuis le moyen age jusqu'a la fin du XVIII siècle

: Jacques Laget (Paris: Jules Rouam), 2004 (1885), 18 x 12 cm, 113 pp, 67 ill.

Dictionary, makers (French).

Reprinted in 1991 and 2004.

Dictionary of enamellers to the end of the 18th century. It includes 67 marks and monograms.

Guide to the collection of Jules Rouam.

R1856 Mollinger, C

Kleiner uhren katechismus

Berlin:, 1818, 16mo.

(German).

Listed in Robertson "The evolution of clockwork".

I am not sure if this is a small book about clocks or a book about small clocks (watches).

R1857 Mondani, G

100 years of Rolex

Genova: Mondani, 2008, 31.5 x 25 cm, 320 pp, ill.

(English, Italian).

Limited edition of 4,000 copies

With separate price estimate booklet, and form for free update.

"The guide which can answer all your questions, clear up your doubts and help you to understand the true value of a Rolex collector watch".

R1858 Mondani, G

Collecting Rolex GMT-master wristwatches

Rome: Mondani, 2007, 312 pp, ill, ads.

Collecting, price guide (English, Italian).

English and Italian text.

Describes as: "Covers from the first models in the 1950's to the latest innovations, including prototypes, military models, bracelets and all the case and dial variants with up to date valuations and detailed reference information." With a price guide.

R1859 Mondani, G

Rolex gallery

Italy: Mondani Press, nd, 28.5 x 24 cm, 224 pp, 1000 ill.

Illustration (English, French, German, Italian, Spanish).

Parallel 5-language text.

Seventeen chapters: Air king; Bubble back; Chronographs; Daytona; Explorer; GMT master; Miligauss, Moon phases; Oyster date; Oyster datejust; Oyster day-date; Oyster no date; Prince; Quartz; Submariner and Sea dweller; Turn-o-graph; and Yacht master.

Each section has an introductory page with some very basic information and history on the model category – only a paragraph or two.

R1860 Mondani, G; Mondani, F; Ravagnani, L

Rolex submariner story

Rome: Mondani, 2009, 41 x 31 cm, 276 pp, 800 ill.

Identification (Italian).

Limited edition of 2000 copies.

"For many years the market of high quality watchmaking has been characterised by an authentic passion for Rolex Submariner and Sea-Dweller watches, and Mondani Editore has decided to further strengthen this trend by publishing a new and important edition entirely dedicated to these models. Rolex Submariner Story will be full of distinguishing features and details; it will examine all those little

differences which today greatly influence the value of the watch and are the object of discussion in all forums dedicated to watchmaking and, thanks to the premium quality illustrations, will clearly show all the characteristics of each reference. With over 800 images and 30 different described references, this publication will present a new format which is even bigger (31 x 41 cm) thereby giving the reader a much clearer and satisfying enlargement of each single feature of all the watches. It is the first time that a book about watches is presented in such a format. The editors Guido Mondani and Lele Ravagnani will supply in depth information and pictures to illustrate the various marks and the corresponding serial numbers. They will also specify all the dial variants (from Comex to personalised, from those defined as service replacement dials to complete originals)."

"Probably the world's biggest and rarest book on Submariner Watches. Over 800 images. Submariner, Submariner Date, Sea-Dweller, and Deep-Sea models are covered in depth. Marks and corresponding serial numbers. Dial variants. Case number, bracelet and it's reference, the winding crown, the case back, the caliber etc."

Said to contain only a little text and so "easy to understand".

R1861 Mondani, G; Ravagnani, L

Collecting Rolex submariner wristwatches

Collezione orologi da polsa Rolex submariner

Rome: Mondani, 2007 (2005), 31.5 x 25 cm, 316 pp, ill.

Collecting, price guide (English, Italian).

Apparently published in 2005 and 2007, the 2005 edition being Italian only.

R1862 Mongin, H

Echappements de montres et pendules

Schweiz: Technicum neuchâtelois, 1958, 42 pp, ill.

(French).

Compléments au cours d'échappements, Technicum neuchâtelois

R1863 Montandon, C

La publicité dans l'industrie horlogère suisse

Lausanne: A. Bovard-Giddey, 1932, 22.5 x 15.5 cm, 143 pp.

History (French).

Theses for Doctor of Commercial and Economic Sciences, University of Neuchâtel.

R1864 Montandon, F

La montre normale, essai d'unification

Bienne: Magron, 1922, 20 x 13 cm, 64 pp, 11 ill, 4 fld plates.

Identification, repair (French).

Identification and assembly of 1920's standard movements.

R1865 Montanes, L

Catalogo ilustrado del museo de relojes

de las bodegas Zoilo Ruiz Mateos S/A

La Atalaya: Jerez de la Frontera, 1982 (1974), 24 x 17.5 cm, 163 pp, ill.

Collection, illustration (Spanish).

Horological collection in Jerez, Spain. Published in 1974, 1977 and 1982

Said to include French watches, but one source says it is only clocks.

R1866 Montanes, L

Relojes olvidados

sumario de relojería historica Espanola

Madrid: , 1961, 122 pp, 32 plates.

Collection, illustration (Spanish).

Limited edition of 500 copies.

Also given as 127 pp, 45 plates.

Horological collection in Jerez, Spain, containing French watches.

R1867 Montefusco, T

Introduction to watch repair

USA: Tony Montefusco, 2003, 68 min, video tape.

Repair (English).

Montefusco has produced 17 videos of which 2 relate to watch repair:

Number 12: Watch Crystal Grinding and Fitting, 43 min.

Number 13: Introduction to Watch Repair, 68 min.

R1868 Montefusco, T

Watch crystal grinding and fitting

USA: Tony Montefusco, 2003, 43 min, video tape.

Repair (English).

Montefusco has produced 17 videos of which 2 relate to watch repair:

Number 12: Watch Crystal Grinding and Fitting, 43 min.

Number 13: Introduction to Watch Repair, 68 min.

R1869 Montes, Mary

R1869 Montes, Mary

Brown boots in Earlsdon

England: Coventry Branch of the Historical Association Pamphlet No. 15, 1991 (1989), 21.0 x 14.5 cm, 60 pp, 21 ill, 3 tables.

History (English).

A social history of the watchmaking enclave in Earlsdon, a suburb of Coventry, covering the period 1850 to about 1910.

[1st edition, very good?] An enjoyable account with anecdotal material and worth reading. It gives a very good insight into working conditions and the decline of English manufacturing.

R1870 Montreal Y Tejada, L

Relojes antiguos 1500-1850

coleccion F Perez de Olaguer-Feliu

Barcelona: L Montreal Y Tejada?, 1955, 8vo, 18 pp and 142 b/w plates, slip case.

Collection, catalogue, makers (Spanish).

Also listed as 300 pp, ill.

Catalogue of the Perez de Olaguer-Feliu collection.

18 pages of text, followed by 142 plates, illustrating 238 clocks and watches, and an index of makers.

R1871 Moore, Charles

Timing a century

history of the Waltham Watch Company

USA: Harvard University Press, 1945, 21.5 x 15.0 cm, 362 pp, 18 plates.

History (English).

An economic and business history of the Waltham Watch Company.

The first half covers the growth and decline of Waltham from 1850 to 1923. The second half concerns Dumaine's "dictatorship" to 1944 and a few notes on the start of the Ira Guilden era in 1945. The book was completed in 1941 and held up by a court case (which is not discussed but which apparently caused some rewriting).

There are 17 chapters: Sources of a new American industry, 1850 (12 pages); Success and failure (6 pages); Salvaging Dennison's enterprise (19 pages); The golden age 1859-1882 (31 pages); Competition in the watch industry 1864-1907 (20 pages); The decay of management, 1910-1921 (27 pages); Control by commercial banks (10 pages); Reorganization (23 pages); Management and industrial development (9 pages); The Dumaine management in action (11 pages); The strike 1924 (21 pages); Dumaine's business policies (15 pages); Depression and recovery, 1929 to 1935 (17 pages); Problems in production (18 pages); Problems of distribution (20 pages); Finance and management (14 pages); and A change in strategy (15 pages).

There are 6 appendixes: Partners and officers; Directors; Sources of capital; Types of stockholders; Partial list of watch manufacturers in the United States; and Financial record of President Dumaine.

There are 36 pages of notes and references and a 16 page index.

[1st edition, excellent] Underpinning nearly all activity (including Breguet, Harrison, etc.) is the need to manufacture profitably, and the study of horological enterprises should include the examination of management and business objectives. I hesitated before reading this book, thinking it would be dry and boring. I was wrong.

The first half is an excellent, lively account of the company, far better than Abbott "A pioneer, a history of the American Waltham Watch Company". In it, Moore examines in detail the formation of the company and the ownership and autocratic (but successful) management of Robbins, the problems he faced and his solutions. He then explains the transfer of control to Ezra Fitch and the ensuing decline, caused by poor management and competition, until 1921-3 when impending bankruptcy led to two re-organisations and the installation of Dumaine. Included is an interesting study of the effects of competition and the enforced lowering of standards to remain profitable in the absence of trusts or cartels.

And the second half?

Whereas the preceding part is historical, the second part is descriptive of recent events and has a totally different flavour. Moore, in addition to being horologically ignorant, clearly idolises Dumaine even though the evidence he presents is flimsy and, in some cases, suggestive of bad management in favour of profitability (such as the small amount spent on tooling and maintenance). How much of this support for Dumaine is due to the court case is not known to me, but there is too much that smacks of bias to be comfortable. The description tends to present selective facts and leaves me wondering, especially as the company finally crashed only a few years later.

Nevertheless, it is interesting reading, especially when compared with the analysis in Landes "Revolution in time", where Dumaine is regarded as self-seeking business destroyer. Moore's uncritical comments about the war effort and transfer to Guilden give some credence to Landes interpretation; whereas earlier social events are dealt with dispassionately, this period is glossed over in glowing terms.

This book is very good and much too important to be missed. It is not only a serious history of a particular watch company, but provides a general insight into industrial problems of the times. The lack of discussion of tooling, manufacturing processes and products (which Moore knew nothing about) detracts a little. But many other histories do little more than catalogue such aspects and so most of that information is readily available elsewhere.

[Remark] The above review was written several years ago, long before I read Kenison "Frederic C Dumaine, office boy to tycoon". Despite some embarrassment at the incorrect assertion that Moore "glossed over" anything, I am retaining it unaltered; it is a good example of the need to read books more than once and now my opinion is a little different.

First, my appreciation of Moore has increased and the book remains, to my mind, one of the very best I have read. To a considerable extent this is because of Moore's professionalism in providing comprehensive evidence to support his views on Waltham's management and his detailed analysis of the company.

Second, my opinion of Dumaine has become more ambivalent. It appears that the contradictory viewpoints, business saviour or self-seeking destroyer, apply equally to his other management roles with the Amoskeag cotton mills and the New Haven Railroad. I suspect I was influenced by Landes, for whom I have great respect, who damns Dumaine in no uncertain terms. The fact that Waltham was involved in publishing Moore's book lends some credence to the suggestion of Landes that he was "reluctant to criticize", but my suggestion that the court case may have forced Moore to take a kindly view of Dumaine is unlikely to be true; Kenison pointed out to me that this was probably the shareholders' action against Waltham for withholding dividend payments. But for comments on these issues see my remarks about Kenison's book.

R1872 Moore, D

British clockmakers and watchmakers apprentice records

1710-1810

England: Mayfield Books, 2003, 9.5 x 7.5 inch, 368 pp.

Makers (English).

Information for about 14,000 makers compiled from Public Record Office files.

[Reviewed by Brian Loomes] Dennis Moore has been working on this compilation of apprenticeship records for some years by taking details from the records kept by the Inland Revenue. Fortunately, these records were preserved due to the taxes payable on apprenticeship indentures. The system is explained by Moore in a couple of pages at the beginning of the book. This means that clockmakers, watchmakers, and anyone in the related trades such as watchcase making, entered into an official apprenticeship. The details have been preserved and can be found here. They amount to some 14,000 makers.

What surprised me when I saw it was the sheer size of the book. The makers are, quite sensibly, in alphabetical order, but each maker may appear more than once; first if he was apprenticed to his master, second, if he himself took an apprentice, and several times more if he took several apprentices. In other words, any entry pertaining to any maker is listed, and may vary from one entry to six or more per maker. What at first sight looks like a boring list of names and dates, is in fact, absolutely fascinating for anyone with a serious interest. By and large, these entries appear in print for the first time, though the apprenticeships of those who were apprenticed through the Clockmakers Company of London may well be detailed elsewhere too. For the first time ever, we can check very quickly on a favorite clockmaker or two, to see which master he served his time under, and those who were trained by him. What can be surprising at first is that those you expect to find may not appear. Only those bound in a formal apprenticeship paid the tax. The father of a clockmaking family would often take his children, or perhaps nephews, under an informal arrangement, probably to avoid the duty, hence not appearing in the records.

Although Dennis Moore may have been meticulous, the lists contain many errors (not of his making). These come about principally from carelessness in copying and from erratic spellings at the time when the entries were first written down, or were copied from loose slips into the registers. I remember searching these original records myself years ago for the apprenticeship of John Ismay of Thursby of Cumberland to John Ogden of Bowbridge, Yorkshire, as I was pretty sure had been the case. Sure enough, he was apprenticed to Ogden, but his usual surname of Ismay had been incorrectly copied down (misread?) as Wray, his father's name (which I knew to be John), was given as Leonard Wray (presumably the abbreviation Jno. was misread Leo). Thursby is in Cumberland, but is stated in the entry to be in Yorkshire. So, if we use the original registers, we could find here a clockmaker, John Wray, who never existed, son of Leo Wray, who also never existed, and spend hours looking for a place in Yorkshire, which was in fact not there. Dennis Moore was aware of this error and recognized the maker as Ismay, but it illustrates how we need to be cautious when using such records. Moore also recognizes that Thomas Radford of Leeds was listed as Thomas Bedford, and corrected the error.

Another thing surprised me. One would have assumed that nearly all of these clockmakers would have already been listed in the standard texts (such as *Watchmakers & Clockmakers of the World*), but not so. I went through the A index to see, and was astonished to find over 40 who were previously unlisted.

Some were in ancillary trades (such as watch-glass maker), and we can well understand their failure to be recorded previously. Others are names, perhaps of journeymen, that may never have appeared on the product and are here recorded for the first time. Others might be apprentices who never completed their training, perhaps dying young or moving to some other profession. Still, others may have made their way to America, and for the first time, the training record of these American makers might be contained within this book.

These factors all show what an extremely important book this is. One cannot imagine a book of this specialized nature selling in the thousands, and the publisher is to be commended for being one of the very few (if not the only one), willing to fund such a niche in publishing today. The author, too, must be congratulated for undertaking such a painstakingly lengthy task, which must seem dauntingly boring to anyone looking in from the outside. Those with a serious interest in clocks must buy it. If it is out of print

in a few years time, the enthusiast will then regret not having invested in it.

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R1873 Moore, DS; Priestley, Philip

Some account of Liverpool watch case makers

1785-1798

Sussex: Antiquarian Horological Society, 1997, 25.0 x 17.5 cm, 13 pp, 3 ill.

History, identification (English).

Offprint from *Antiquarian Horology*, 1997.

An examination of case assay data for the period from 1785-1798 taken from ledgers of the Chester office.

[1st edition, fair] This article provides production statistics, biographies of 14 makers and errata to Jackson "English goldsmiths and their marks" and Priestley "Watch case makers of England" (which see).

R1874 Moore, N Hudson

The old clock book

New York: Frederick Stokes, 1937 (1911), 8vo, 339 pp, 104 ill.

Illustration (English).

The 1936 edition is available as a Google Book PDF file (USA only?).

Includes an index of Boston and English watch/clock makers.

Apparently some watches.

R1875 Moreno, R

Jose Rodríguez de Losada vida y obra

Madrid: Torreangulo-Fundación Juanelo Turriano, 1995, 29.5 x 22.5 cm, 233 pp, ill.

History (Spanish).

Limited edition of 1500 copies.

A study of the life and work of Losada who worked in Spain before moving to London in about 1835. The book covers the clocks and watches made by Losada with details of several public clocks in England and Spain. It has a section on Losada's marine chronometers, including information from the Spanish Navy's archives.

R1876 Morgan, C Octavius

List of members of the Clockmakers Company

from the period of their incorporation in 1631 to the year 1732

1883, 4to, 22 pp.

History, makers (English).

Reprinted from the "Archaeological Journal".

Morgan also wrote two papers "Observations on the history and progress of the art of watchmaking" (London, 1849, 17 pp) and "Continuation of the history and progress of the art of watchmaking" (1850, 15 pp). I don't know if these have been produced as offprints.

R1877 Morley, C

A ride in the cab of the twentieth century limited

USA: Hamilton Watch Company, 1928, 7 x 5 inch, 18 pp, 7 plates.

Description (English).

Limited edition of 250 copies and a second printing, both in 1928.

This book tells the tale of a ride with the engineer in the cab of the train "The Twentieth Century Limited." It includes the train's schedule, departure from Grand Central Station, the importance of timekeeping and inside details of locomotive operation.

Advertising booklet for Hamilton Watch Co.

R1878 Morley, C

On the nose

USA: Hamilton Watch Company, 1930, 13.0 x 8.5 cm, 19 pp, 4 plates.

Prose (English).

Two printings, the first a limited edition of 250 copies.

A short story about a radio broadcast timed "on the nose" (exactly) using a Hamilton watch, with tipped-in plates relating to the story. Includes insights on sound effects, live radio timing and the craft of the actors.

A piece of subtle advertising.

R1879 Morley, C

When we speak of a tenth

USA: Hamilton Watch Company, 1931, 13 x 9.5 inch, 27 pp, 6 plates, slip case.

Description (English).

Limited edition of 260 copies in slip case. Also a trade edition given away to dealers?

A short story describing a tour of the Hamilton watch factory; the gilding room, damaskeening, train department, etc.

To "speak of a tenth" is a tenth of one-thousandth of an inch, the measure of precision in watchmaking. *Some parts are quoted in Sauers "Time for America - the Hamilton Watch Company 1892-1992".*

R1880 Morpurgo, E**Dizionario degli orologiai Italiani**

Milan: , 1974 (1950), 8vo, 318 pp, 114 plates.
Makers (Italian).

An extensive list of Italian makers.

R1881 Morpurgo, E**Gli orologi****Le arti e stili in ogni tempo e paese**

Milan: Fabbri Editori, Proprieta Letteraria e Artistica Riservata, 1966, 20 x 14 cm, 157 pp, 68 col ill.
Illustration (Italian).

The title has been given differently in different sources.

Survey of clock and watch making history.

R1882 Morpurgo, E**Nederlandse klokken en horlogemakers vanaf 1300**

Amsterdam: Scheltema & Holkema, 1970, 8vo, 152 pp, ill.

Makers (Dutch).

A list of Dutch makers.

R1883 Morpurgo, E**Precious watches from the 16th-19th century****Orologie preziosi dal XVI al XIX secolo**

Milan: Omega Publications, ca 1965, 24.0 x 22.5 cm, 113 pp, ill, 30 col plates.

Collection, history (English, Italian).

Probably only one undated printing after 1964; the introduction refers to 1964. One source suggested circa 1950 which is unlikely.

A 23 page introduction by Morpurgo, which is a history of watchmaking with an Italian focus, followed by plates showing watches from a number of collections including the Omega collection.

[1st edition, fair] Morpurgo's history is a rather bland, popular summary of some interest for the Italian focus. There are a few dubious assertions in it, the most interesting being that Cristoforo Agostini of Pesario invented the repeater. This may be true, but Morpurgo gives no references and in the context of the rest of the introduction it may just be fervent patriotism. It would have been better if he had written a more formal history with the necessary citations.

The illustrations of clocks, sundials, an astrolabe and watches (from a number of collections including Omega, Pomella, Muller and Zoccai) are largely uninspiring. The black and white photographs are inadequate and the color plates just adequate. Being a popular account the focus is on beautiful cases.

This is not a book I would go out of my way to get.

R1884 Morpurgo, E**The origin of the watch****L'origine dell'orologio tascabile****Origine de la montre de poche**

Rome: La Clessidra, 1954 (1951), 21.0 x 15.0 cm, 80 pp, 12 ill on 8 plates (2 fld) (45 pp).

History (Italian, English, French).

Italian/English, and also in an Italian/French edition?

The 45 page edition is probably the original article from La Clessidra, the journal of Italian watchmakers.

A 48 page Italian article followed by a 26 page English translation (in a smaller typeface) examining the evidence that watches existed in Italy circa 1480, with a few illustrations from the Lamberti collection.

[1st edition, excellent] This is a fascinating paper. It begins with a critical examination of the evidence in favour of Henlein inventing the watch, providing convincing arguments that it is mythological. Morpurgo then examines evidence for the existence of watches before 1500, including the meaning of "orologio", Italian documents and a painting by Verrocchio (see also Beckmann "A history of inventions ...").

The aim is not patriotic fervour, claiming the watch for Italy, but rather to debunk a myth and leave the origin of the watch in limbo. But until evidence comes from another country which is as compelling, both are achieved.

I rate this book as excellent because I believe many readers will benefit from Morpurgo's examination history and historians.

[Remark] There are two serious problems with historical accounts. The first is that we can never prove beyond any doubt what has happened let alone why. Some events can be regarded as indisputable because of documents or physical remains, but these usually form only a part of a complex whole and their inter-relationships with other events are far less certain or even totally unknown. Consequently, any interpretation has to be based on incomplete information and probabilistic argument. The faint-hearted historian will avoid the problem by presenting a catalogue of facts with, perhaps, some vague and generalised explanations; we can see this in Wood "Curiosities of clocks and watches" where interminable lists of items are interspersed with unjustified titbits of information. To my mind such histories are dull and unsatisfying. Surely to deserve the title of "historian" an author must possess the ability to interpret the past in a way which is not only realistic but also gives the reader an understanding and an awareness of relevance to later progress? I agree with Morpurgo when he writes that professional historians are

“those people who, by the use of documents and their own intelligence and knowledge, pursue a matter to its core” but not “those who blindly repeat the opinions of others”.

However, some authors do blindly repeat and it is often such books that beginners read. For example, Samelius “Watch and clock information please”, published in 1981, says that about 1550 Peter Henlein invented the mainspring and “up to that time only clocks existed which were weight driven”. In 1994 Selby “Wrist-watches - the collectors guide to identifying, buying and enjoying” includes “the first portable timepiece was supposed to have been worn by Marie Antoinette”; but this is merely carelessness as she is referring to wristwatches. Balfour, in “The classic watch”, wrote in 1989 (reprinted 1996) “Henlein of Nuremberg is credited with inventing the mainspring”. But the most surprising examples are the first and third editions of Clutton and Daniels “Watches”, both of which clearly if indirectly support the Henlein myth. Fortunately most recent books express doubt.

The second problem facing readers of historical accounts is that of discriminating between argument and persuasion. By this I mean the distinction between an author reasoning on the basis of evidence in contrast to phrasing questionable statements in ways that give them a specific bias. The first edition of Clutton and Daniels “Watches” includes “Although Harrison’s work led to nothing, he at least showed that accurate marine timekeeping was a possibility”. This is true but it is politically unacceptable! The third edition rephrases it: “John Harrison made no final contribution to the science of horology”. This is also true, but gives a quite different impression. Whereas the former is all encompassing, the latter is limited to science giving the opportunity for the reader to presume Harrison contributed to other aspects of horology. More significant is the first edition remark that “Earnshaw probably must have credit for devising the modern method of fusing together the brass and steel laminae of the balance”. This rather dismissive comment may have raised some ire, because the third edition was revised to read “the useful contribution Earnshaw did make was his method of fusing ...”. But even here the words “useful contribution” imply something of no particular importance and, at the same time, suggest Earnshaw did nothing else of note. This becomes obvious if we imagine the authors had instead written “the great contribution Earnshaw did make was his method of fusing ...”. (But Chamberlain “Its about time” also says there is evidence that Earnshaw used steel cylinder escape wheels in 1780. See also my review of Earnshaw “Longitude - an appeal to the public”.)

Another form of persuasion comes from omissions. For example, Jaquet and Chapuis in “Technique and history of the swiss watch” provide a somewhat sanitised view of the Swiss industry, ignoring some of the realities of 18th century life and 19th century trade.

Morpurgo does not consider this aspect, where writers influence the reader by their choice of words. But those with authority and renown will be respected and their opinions accepted by the learner without questioning. It is important that they carefully justify their views.

R1885 Morrow, JB**The man who holds a watch on 125,000 miles of railroad**

USA: Meredith Publications, nd (ca 1910), 17.5 x 10.5 cm, 16 pp, ill.

History (English).

It may have been reprinted several times.

Reprint of a newspaper article based on an interview with Webb C. Ball.

[reprint?, fair] In the article Ball explains why and how he set up his watch inspection and supply system for the US railway companies.

Light but interesting.

R1886 Mortensen, O**Haandbog for urmagere**

Copenhagen: Nordisk Forlag for Videnskab og Teknik, 1958 (1948), 8vo, 519 pp (3 volumes, ill, fld plates).

Repair (Danish).

Not seen. One source gives one volume (plastic cover with metal spine) and others 3 or 4 volumes. It may be loose sections in various bindings.

R1887 Moser, KW**Brevets suisse d’horlogerie**

Bienne: Bureau de Brevets, 1940 to 1947, 8 vols.

Technical (French).

Swiss horological patents

R1888 Movado Watch Co**The museum watch**

Switzerland: Movado Watch Co, 1988, 18 x 12 cm, 17 pp, ill.

Description (English, German).

R1889 Movado Watch Co; Wasbotten, MM**Movado**

New York: Assouline, 2001, 8vo, 80 pp, 28 col ill, 27 b/w ill.

Illustration (English).

One source suggests it might have been given away by Movado.

A 13 page history followed by photographs of Movado watches.

The author is uncertain.

R1890 Moxon, J**Mechanick exercises**

or the doctrine of handy-works

Praeger Publications (London: J. Moxon), 1989 (1678), 8vo, 352 pp, ill, 25 plates.

Tools (English).

There are 2 reprints, in 1970 and 1989.

As far as I have been able to deduce, there are 2 volumes.

Volume 1 is "Mechanic exercises, or the doctrine of handy works, applied to the art of printing". This book was the first book in English on the printing craft and "covers the full range of the technicalities of printing practice, including compositor, corrector, pressman and warehouseman, as well as including a detailed explanation of type-founding."

Volume 2 is "Mechanic exercises volume 2, or the doctrine of handy works, applied to the arts of smithing, joinery, carpentry, turning, bricklayery. To which is added mechanick dialling." There is nothing relevant to watches except perhaps for the section on turning, which includes ornamental, oval and rose work.

References to this book in an horological context are usually vague.

R1891 Mudge, T; Pennington, Robert**A description with plates**

of the time-keeper invented by the late Thomas Mudge. To which is prefixed a narrative, by Thomas Mudge his son, of measures taken to give effect to the invention since the reward bestowed upon it by the house of commons in the year 1773, a republication of a tract by the late Mr Mudge on the improvement of time-keepers, and a series of letters written by him to his excellency Count Bruhl between the years 1773 and 1787.

England: Scholar Press (London: Turner and Devereux, Canada: Movements in Time) (London: T Mudge), 1977 (1799), 25.0 x 18.0 cm, cli and 176 pp, 9 plates.

Description, history, technical (English).

The facsimile edition was printed in 1977 and perhaps reprinted as it says "Reprinted by the Scholar Press" (no date).

A 151 page introduction (written by Thomas Mudge junior) followed by "Thoughts on the means of improving watches" (16 pages, written by Mudge senior in 1765), letters written by Mudge senior to Bruhl (146 pages) and "Description of the plates of Mr Mudge's time-keeper" (14 pages and 9 plates, written by Robert Pennington).

The introduction contains extensive quotations from House of Commons "Report from the select committee into the petition of Thomas Mudge and the principles of his timekeepers" (the complete report and extracts from the minutes of evidence).

[1st edition reprint, good] The very interesting introduction is a detailed and at times passionate account of Mudge's successful petition for a reward. Much of it concerns disagreements on how to determine the rate of a chronometer with details of trials of Mudge's watches. It also contains a brief history of the factory set up by Mudge junior and his attempt to build chronometers based on his father's design. There is no doubt that Mudge's chronometers were not better than others and practical problems with manufacture made them distinctly inferior to the designs of Earnshaw and Arnold. But equally there is little doubt that there were some bitter disagreements and a few reasons for Mudge to feel hard done by.

The short "Thoughts" explains why Mudge decided to use a remontoir escapement. Baillie "Clocks and watches: an historical bibliography" says "it does little credit to the author" although I don't really see why. Given the poor state of wheel-work, the proposal of a remontoir is sensible. Detached escapements are superior, and Mudge's failure to recognize the virtues of his lever escapement is surprising, but the ideas expressed in the pamphlet are reasonable. Perhaps Baillie is referring to Mudge's concern about being branded a plagiarist. But surely the concern is largely justified in the light of the wrangling taking place?

The correspondence with Count Bruhl is, on the whole, disappointing. Bruhl's letters to Mudge are not included and we are given a very incomplete and one-sided picture with too many gaps which cannot be filled. The almost fawning letters from Mudge provide only an indication of his problems and faint hints of events. So, although interesting, they leave too much unsaid. There are several references to the Queen's watch, but all are brief remarks and not very informative.

The final part gives a terse description of Mudge's chronometer design together with an illustration of the lever escapement and motion-work for the moon.

Overall, a very interesting but frustrating piece of history that leaves too many questions unanswered.

[Remark] I feel it is worth giving an abbreviated quote from Encyclopedia Britannica "Clock and watch work" which was written by Edmund Beckett: "The lever escapement was invented by Thomas Mudge to whom, in 1793, a committee of the House of Commons, in opposition to the opinion of the Board of Longitude, and apparently not understanding the evidence they took, gave a reward of £3000 for inventing a remontoir escapement for chronometers, not worth a farthing, and indeed, as it turned out, worth a good deal less than nothing to his son. However, if this reward is considered as given for the invention of the lever escapement it may be said to have been well deserved".

For the original report see House of Commons "Report from the select committee into the petition of Thomas Mudge and the principles of his timekeepers".

R1892 Muensterberger, W**Collecting an unruly passion**

psychological perspectives

New York: Harcourt Brace & Co (Princeton: Princeton University Press), 1995 (1994), 23.0 x 15.0 cm, 295 pp, 1 ill.

Collecting, miscellany (English).

In 5 parts: Preludes to collecting (48 pages); Magic objects (22 pages); Three psychobiographies (92 pages on the collecting of Sir Thomas Phillipps, Honore Balzac, and Mr. G.); Excursions into history (62 pages); and In search of pleasure 32 pages). Followed by notes, bibliography and index.

Watches are not mentioned.

[1st edition reprint, good] "Cupidity and collecting mania have their correlating determinants in the infantile attitude toward faeces." I was relieved to read that Muensterberger does not agree; having a borderline personality disorder is enough and I don't need to be anal retentive as well! But I do find psychoanalytic books and their terminology strange.*Muensterberger begins by discussing why some people collect, with the aim of formulating a psychological profile of the collector. This relates to the early transfer of affection from people to objects. He illustrates his theories by three case studies: Thomas Phillipps (who attempted to collect one of every book and manuscript in the world), Honore de Balzac and Martin G (a contemporary collector of Chinese ceramics). I have included this fairly unreadable book because of my curiosity. What I collect is, of course, eminently reasonable! But why do people collect empty beer cans, Japanese swords or Picasso paintings? I don't like Muensterberger's style or terminology, but he does provide an interesting and thought-provoking insight. An example of a clock collector is given in my review of Hadfield "Lot 104 rare, antiquarian and out of print books". The passion of Torrens is vividly illustrated in Crom "Early Lancashire horological tools and their makers" and Gardner's catalogue of his book collection.***R1893 Muhe, R****Uhren der Hellmut Kienzle sammlung**

1982, 21 x 15 cm, 40 pp, 41 ill.

Collection (German).

R1894 Muhe, R; Kahlert, H**Die geschichte der uhr**

Deutsches uhrenmuseum Furtwangen

Munich: Deutsches Uhrenmuseum Furtwangen, 1994 (1967), 25 x 19 cm, 180 pp, 272 ill (160 pp, 216 ill) (108 pp, ill).

Collection, catalogue, illustration (German).

4 editions and several printings.

*Possibly only clocks, but the cover illustrates a watch. I presume the title "Historische uhrensammlung Furtwangen" (108 pp, ill, by Muhe) is an early edition. This book is subtitled "the history of time measurement, the evolution of Black Forest clocks, small guide to the collection".***R1895 Muhe, R; Kahlert, H; Techen, B****Wecker**

Deutsches uhrenmuseum Furtwangen

Munich: Callwey, 1991, 22.5 x 22.5 cm, 194 pp, ill.

Description (German).

Limited edition?

Alarms. The age of the alarms. Alarm design. The mechanisms of alarms. Collecting. Bibliography. Comprehensive range of clocks, pocket watches and electric synchronous clocks catalogued.

R1896 Muir, W; Kraus, B**Marion**

a history of the United States Watch Company

USA: National Association of Watch and Clock Collectors, 1985, 28.5 x 22.0 cm, 216 pp, 256 plates.

Dating, description, history, identification (English).

Produced in an edition of 2000 copies, 500 numbered; perhaps 500 hard cover and 1500 soft cover.

An introduction and 4 page chronology followed by two sections:

Part 1 Historical (104 pages) is a detailed history of the company in 16 chapters. As well as detailing its life, the history briefly covers the background to Marion's formation and events after it closed.

Part 2 Production (74 pages) a comprehensive study of production in 9 chapters: Products and patents; Prices of movements and cases; Grade descriptions; Honors and testimonials; Special order watches; Centennial commemoratives; Related watch companies; Production estimates; and Miscellaneous data.

With a bibliography and index.

[1st edition, excellent] In the overall picture of watchmaking Marion is almost irrelevant; it existed for about twelve years, from 1865 to 1877, and produced some 57,000 watches. But Muir has given us a beautifully written and gripping yarn which takes us on a wonderful (if catastrophic) journey through a small piece of watchmaking history; an exciting biography of the company and its people. It is very well researched but not dry, and for me it is an outstanding example of how history should be written.*This book is only about Marion and, other than anecdotal and contextual information, it doesn't do much to develop an understanding of the American industry or watchmaking in general. In contrast, although Moore ("Timing a century") focuses on Waltham I feel he manages to provide a broader picture. In saying*

that I am not criticising what is a superb piece of writing, but noting that the book may appear to have a limited appeal even though it deserves a wide audience.

The second part is not meant to be "read" and is, like other production catalogues, to be mined for information when needed. Kraus has produced a very good survey which would be essential for owners of Marion watches. But actually it is worth browsing anyway, as learning something of the grades is interesting even if you don't collect them.

Both sections are supported by excellent photographs.

R1897 Murray, H**Directory of York goldsmiths, silversmiths and allied craftsmen**

England: William Sessions, 1998, 8.5 x 6 inch, 165 pp, 14 plates.

Makers (English).

Alphabetical listing of 12th to 20th century workers with registered marks, including watch and clock makers.

"This well researched book includes York watch and clock makers who may also have worked in gold and silver. Each entry includes dates, addresses and family details where known."

R1898 Musée Château des Monts**Collection d'horlogerie de la Ville du Locle****Musée d'horlogerie de la Ville du Locle**

au Château des Monts

Le Locle: Musée Château des Monts, 1967 (1959), 21 cm, 102 pp, ill (102 pp, ill).

Catalogue, collection (French).

Possibly 2 different books.

The 1959 printing is described as "Collection Maurice Sandoz, montres bijoux et automates des XVIII et XIXes siècles."

The 1967 printing is described as "Avec des hommages à Maurice Sandoz (1892-1958) qui a légué les pièces principales de sa collection d'horlogerie à sa ville natale et à Alfred Chapuis (1880-1958) qui lui a laissé notamment sa bibliothèque et sa riche documentation."

Also see Musée Château des Monts "La détermination de l'heure" just to confuse everyone even more!

R1899 Musée Château des Monts**Histoire de l'horlogerie**

bicentenaire du Château des Monts 1787-1987

Le Locle: Musée Château des Monts, 1987, 24 x 17 cm, 117 pp, ill.

History (French).

Limited edition of 500 copies.

R1900 Musée Château des Monts**La détermination de l'heure**

et sa conservation à travers les âges, montres et pendules du XVI siècle à nos jours

La Locle: Glauser-Oderbolz, Neuchatel: Musée Château des Monts, 1967 (1959), 21 x 13 cm, 102 pp, 70 ill.

Collection, description (French).

The title is given in various forms and this has the same dates and format as "Musée d'horlogeries de la Ville du Locle au Château des Monts" and "Collection d'horlogerie de la Ville du Locle au Château des Monts".

18th and 19th century clocks, watches and automata from the collection of Maurice Sandoz.

R1901 Musée du Petit Palais**The art of Cartier**

Paris: Musée du Petit-Palais, 1989, 32 x 25 cm, 177 pp, 73 ill, 624 ill.

Catalogue, exhibition (English?).

Exhibition of Cartier jewellery.

R1902 Musée International d'Horlogerie**Bibliothèque la Chaux-de-Fonds**

La Chaux-de-Fonds: Musée International d'Horlogerie, 1979 (ca 1950), 21 x 15 cm, 217 pp (95 pp).

Bibliography (French).

Catalogue of horology books in the museum.

R1903 Musée International d'Horlogerie**Chefs d'oeuvre de Musée d'Horlogerie et de l'émaillerie de Genève**

montres émaux bijoux

La Chaux-de-Fonds: Musée International d'Horlogerie, nd.

Collection, catalogue (French).

R1904 Musée International d'Horlogerie**Collections du Musée International d'Horlogerie**

une sélection parmi 3100 objets

La Chaux-de-Fonds: Musée International d'Horlogerie, 1974, 24 x 17 cm, 149 pp, 900 ill, 16 plates.

Collection, illustration (French).

An extensive catalogue illustrating a cross section of the watches in the museum.

- R1905 Musée International d'Horlogerie**
Du cadran solaire à l'horloge atomique
 catalogue d'œuvres choisies
 La Chaux-de-Fonds: Musée International d'Horlogerie, 2002 (1999), 363 pp, ill (383 pp, ill).
 Exhibition (French).
- R1906 Musée International d'Horlogerie**
L'homme et temps
 La Chaux-de-Fonds: Musée International d'Horlogerie, 1977, 16 x 23 cm, 68 pp, ill.
 History (French, German).
 With some German text.
 Man and time.
 See also Cardinal *"L'homme et le temps en Suisse 1291-1991"*.
- R1907 Musée International d'Horlogerie**
L'oeuvre d'Abraham-Louis Breguet
 La Chaux-de-Fonds: Musée International d'Horlogerie, 1976, 24 x 16 cm, 56 pp, 14 plates.
 Catalogue, description, illustration (French, German).
 The works of Abraham-Louis Breguet.
- R1908 Musée International d'Horlogerie**
Les Jurgensen
 une dynastie de grands horlogers
 La Chaux-de-Fonds: Musée International d'Horlogerie, 1974, 21 x 15 cm, 54 pp, 32 ill.
 Catalogue, description, history (French).
 The Jurgensens, a dynasty of great watchmakers.
 Historical overview and illustrations of 25 timepieces.
- R1909 Musée International d'Horlogerie**
Montres emmaillées des XVIIe et XVIIIe siècles
 La Chaux-de-Fonds: Musée International d'Horlogerie, 1976 (1970), 9.2 x 6.3 inch, 48 pp, 40 ill, 8 plates.
 Catalogue, exhibition (French).
 Enamel watches of the 17th and 18th centuries from the collections of the Louvre and Musée Parisiens.
- R1910 Musée International d'Horlogerie**
Montres genevoise
 du 17th siècle et du 18th siècle et du 19th siècle
 La Chaux-de-Fonds: Musée International d'Horlogerie, 1982, 4to, three volumes, ill.
 Catalogue, description (French).
 Three small volumes, one for each century: 17th century of 31 pp showing 22 timepieces; 19th century of 31 pp showing 22 timepieces.
 Genevan watches.
- R1911 Musée International d'Horlogerie**
Musée International d'Horlogerie
 La Chaux-de-Fonds: Musée International d'Horlogerie, nd, 90 pp, ill, 2 plates.
 Collection (French).
- R1912 Museo Poldi Pezzoli**
Catalogue of the collection of Museo Poldi Pezzoli, Milan
 Milan: Gruppo Editoriale Electa, 1981, 433 pp, ill.
 Collection, description (Italian).
 Description of the Falck collection, including watches.
- R1913 Muser, S; Horlbeck, MP**
Classic wristwatches
 price guide for vintage watch collectors 2011-2012
 USA: Abbeville Press, 2010, 11.5 x 8.5 inch, 232 pp, ill.
 Price guide, illustration (English).
 "Updated and revised every two years, Classic Wristwatches is the ultimate resource for information on vintage watches, that is, watches no longer in current production. This easy-to-use guide fully describes and illustrates each of the 1300 timepieces it features, and also provides an estimated price carefully calculated by experts in the field. It includes all the information that a collector needs to know about a vintage watch and its approximate current value, such as details on the movement, case, and special characteristics of the piece. A symbol also denotes whether the authors believe the value of the watch will increase, decrease, or remain the same. In addition to collectible vintage watches, the coverage in Classic Wristwatches includes important historical models by Rolex and Patek Philippe and such rare brands as Record and Enicar."
- R1914 Mutzlitz, H**
A. Lange & Söhne highlights
 Germany: Heel, 2010, 23 cm, 96 pp, 120 ill.
 History (English, German).
 A history of Lange & Söhne, founded in 1845 and, since 1990, a premier maker of mechanical wristwatches. The book documents the wristwatches produced since 1994 including the Lange 1, 1815, Arkade and Cabaret models.

R1915 Mutzlitz, H**Breitling highlights**

Germany: Heel, 2010, 23 cm, 96 pp, 120 ill.

History (English, German).

The book starts with a history of this famous watch brand and the reasons for its popularity. One hundred of the most important models are described and illustrated, including the “Navitimer”, the “Avenger”, chronographs for nearly every purpose, the “Superocean”, the “Cockpit” and the special edition “Breitling for Bentley”.

R1916 Mutzlitz, H**Omega highlights**

Germany: Heel, 2010, 23 cm, 96 pp, 120 ill.

History (English, German).

A history of Omega, known for their involvement in timekeeping at sporting events and for the watch that went to the moon. About one hundred of the most important models are described and illustrated: the Speedmaster “Moonwatch”, today’s wristwatches with co-axial escapements, special editions such as the “Legend Collection”, the “Olympic Collection”, “Seamaster” and many more.

R1917 Mutzlitz, H; James, Herbert**Patek Philippe highlights**

Germany: Heel, 2010, 23 x 21.5 cm, 96 pp, 150 ill.

History (English, German).

“On May 1st, 1839 two Polish immigrants, Antoine Norbert de Patek (Salesman) and Francois Czapek (Watchmaker) joined forces to found Patek, Czapek & Cie. Today Patek Philippe S.A remains a family owned firm, with 3rd and 4th generation at its head: Mr. Philippe Stern, President and Mr. Thierry Stern, his son, Vice-President. The Swiss manufacturer stands for innovation and perfection and today has more than 70 patents at its disposal including the famous annual calendar. It is the only manufacturer that crafts all of its mechanical movements according to the strict specifications of the Geneva Seal.

This book includes a compilation of the best Patek Philippe watch models that were developed and sold over the last few years. It contains primarily men’s watches, for example the famous Calibre 89 which was created in celebration of the 150th anniversary in 1989. It took nine years to design the watch which is classified as the most complicated in the world. Among these are also several women’s watches and pocket watches. All in all this new, beautifully illustrated “Highlights” title provides all-important facts on the clockwork, the functions, the cases and retail prices.

Henning Mutzlitz is a well respected journalist and wristwatch enthusiast plus a regular contributor to the bestselling German wristwatch magazine “Armbanduhren”.

R1918 MVR**The story of an old watch**

and the lessons of its life

ca 1882.

Novel (English).

R1919 MWA**American watch historical information**

with serial numbers and dates

USA: Trade Publishing Co, ca 1970, 15.0 x 11.5 cm, 15 pp, no ill.

Makers (English).

Undated Minnesota Watchmakers Association pamphlet containing information about American makers. It contains serial number and date lists for companies, alphabetical lists of makers and plate names, and a chronological list of factories.

[1st edition, mediocre] A tiny booklet of little interest as far better listings exist.

R1920 Myers, John**A few words about watches and clocks**

1872, 8vo, 47 pp, ill.

Catalogue (English).

Illustrated catalogue with prices.

R1921 Myers, SF**Illustrated catalogue and wholesale price list No. 22****Illustrated catalogue and wholesale price list No. 31**

USA: National Association of Watch and Clock Collectors (USA: S.F. Myers), 1976 (1890), 16.0 x 21.5 cm, 74 pp, ill (364 pp, ill).

Catalogue, history (English).

The facsimile reprint, of a small part of the original 1890 catalogue, was given to NAWCC members registered to attend the fifth annual Midwest Regional meeting, July 1976.

There are at least two other reprints:

Part of the 1884 catalogue No. 22 (28 pp, ill), available as a PDF file.

Part of the 1885 catalogue (28 pp, ill, nd, 12 x 8.75 inch).

[Catalogue No. 31, NAWCC reprint, fair] This lovely example of Victorian advertising is filled with illustrations of movements and cases (and their prices). The last page has a list of rates for watch repair work. It is nice to look at, but of no real consequence.

R1922 [N, M]

R1922 [N, M]

Meaningless note

nd.

(English).

[Remark] *This is not a book, merely an observation. The fact that considerably more names of notable people appear in the first half of the alphabet has been attributed to the old custom of seating school children in alphabetical order, and so those near the start of the alphabet sat at the front and got preferential treatment. The imbalance in this bibliography (1,921 with names beginning A to M and 901 with names beginning N to Z) supports this view, even allowing for Abbott and the common method of listing a book's authors in alphabetical order. Zumbaugh wouldn't have had a chance 100 years ago!*

R1923 Naas, R

Grand complications

the original annual of the world's watch complications and manufacturers

New York: Tourbillon International, 2005, 28.5 x 23.0 cm, 416 pp, ill.

Illustration (English).

Volume II (576 pp, ill) was published in 2006.

A survey of wrist watches with complications.

31 pages of advertisements with the contents and index embedded in them, followed by an introduction of 20 pages containing: The magic of mechanics, 250 years strong (Vacheron Constantin, and Kiu Tai Yu. The body of the book is in 9 sections: Multicomplications (38 pages); Tourbillons (66 pages); Minute repeaters and sonneries (32 pages); Equation of time (10 pages); Perpetual calendars (78 pages) Chronographs, rattrapantes and flyback (34 pages); Retrogrades and jump hours (20 pages); Multiple time zones (36 pages); and Novelties (22 pages).

Watches with multiple complications appear several times in different sections.

The book also has a glossary and provides addresses of manufacturers.

[1st edition, mediocre] *This book is a buyer's guide providing information about complicated watches, most of which are currently available. Decide what complications you would like to have, look up the appropriate sections and choose a watch that takes your fancy.*

The book can be summed up by the last sentence in the introductory notes by Roberta Naas: "Indulge." Indulgence and self gratification must be prime motivations because most of these watches cost more than a good size house in an attractive locality. It is the purpose of the book. It does not educate, it does not contain useful or interesting information, it simply parades very desirable objects.

Each watch has a photograph and a short, often very vague and sometimes incorrect description. The main emphasis is to state the number of parts (usually more than 300), the number of jewels and the precious metals of the case. Some attempt is made to describe the dial indications, but quite often it is hard or impossible to locate the features (especially when you are looking at the wrong photograph as happens in a couple of places). From the copyright page, it is apparent that these photographs and descriptions have been provided by the manufactures, which makes sense as they generally read like advertising.

After the introduction and two advertorials about Vacheron Constantin and Kiu Tai Yu, each section begins with an attempted explanation of the complications covered. These are vague, error-prone and do little but introduce desirable terminology; certainly don't read this book if you want to learn something about complications. The author of these parts and the glossary provides plenty of hints of ignorance and I presume she (if it was Naas) has a knowledge of horology as deep as the advertising with which the book abounds. The most startling examples are three entries in the glossary:

"Hunter calibre. A calibre characterized by the seconds hand fitted on an axis perpendicular to the one of the winding-stem." Besides the fact that I have never (and never will) see any other arrangement of the seconds axis, many hunter watches don't have seconds hands or winding stems. As the defining feature is the case, the statement is incomprehensible rubbish.

"Lepine calibre. A calibre typical for pocket watches, characterised by the seconds hand fitted in the axis of the winding-stem." See, I wasn't being rude! And if you still think I am being mean:

"Open-face calibre. Lepine calibre", despite the fact that many lepine calibres are mounted in hunter cases.

Although it is possible to tease out vaguely meaningful statements from the tortured, incorrect English, these examples illustrate a lack of competence in an amateurish text. In other places statements are just silly; for example "2100 is not divisible by four"!

But I suspect the text and glossary are included simply to enable prospective watch buyers to gain some familiarity with terminology, even if they do not know what it means. If terms like "lepine" and "equation of time" come up in a conversation then the listener will at least have met them before and will be able to feign understanding. One embarrassing case is the frequent confusion of "chronometer" and "chronograph", and I still cringe when fusees are called "fusses".

So overall we are given a parade of exquisite timepieces to admire and, if we have a spare \$250,000 or more, to buy. Our fantasies and lust are amply stimulated without any annoying technical information or useful facts.

R1924 Naas, R; Childers, C**Master wristwatches**

New York: Rizzoli, 1999, 11 x 11 inch, 226 pp, ill.

History (English).

"This is a visually stunning and most desirable book, featuring all types of timeless masterpieces by the famed houses of renown. "Birth of the Wristwatch," "Winning Time," "Bucheron," "Chopard," "Hamilton," "Hublot," "Longines," "Patek Philippe", and much more! Plus, the movie stars, famous personalities and heads of state who have worn them. Those fascinated by the combination of miniaturized science, technology, jewelry and art will understand why discerning people are mesmerized with these small timekeepers!"

Described as "a luxurious, in-depth look at an essential tool and fashion accessory". A revision of "Great timepieces of the world"?

R1925 Nadelhoffer, H**Cartier**

juweliere der konige, konige der juweliere

Germany: Schuler, 1984, 31 x 24 cm, 316 pp, 493 ill.

History, illustration (German).

Cartier, jeweller to kings, king of jewellers.

A history of the house of Cartier. Decoration, rings, brooches, jewels, watches, company history.

The author was a jewel expert at Christie's.

R1926 Nadelhoffer, H**Cartier jewelers extraordinary**

New York: Harry N. Abrams, London: Thames and Hudson, 2007 (1984), 31.5 x 23.0 cm, 293 pp, ill.

History (English).

Also printed in 1988 and 1999.

With notes, bibliography, family tree, chronology and index.

"Authorized story of this legendary firm, told with never before published photographs and working sketches. Includes plates dating back to the early 1900s and personal sketchbooks of the Cartier family and key designers. This is the definitive volume on the history of the jeweler all others are measured against."

English translation of "Cartier, juweliere der konige"?

R1927 Nadelhoffer, H**Retrospective Louis Cartier**

masterworks of art deco

: Cartier, 1982, 31 x 24 cm, unpaginated, ill, plates.

Illustration (English).

Limited edition of 1000 copies.

Detailed descriptions of 124 items, accompanied by photographs in color and black-and-white, including elegant jewelry, clocks and watches, cigarette boxes, lighters and vanity cases.

An earlier edition of "Cartier, juweliere der konige, konige der juweliere"? The author was a jewel expert at Christie's.

R1928 [Namur]**La mesure du temps**

catalogue de l'exposition Namur 7-22 Juillet 1962

Namur: Section Culturelle De La XIIe Exposition Provinciale, 1962, 8vo, 128 pp, 85 ill.

Catalogue, exhibition (French).

Namur, Belgium, exhibition catalogue illustrating clocks, watches and tools and with a list of makers.

R1929 Nardin, Raymond; Fallet, Estelle**Les chronomètres de marine Ulysse Nardin**

La Chaux-de-Fonds: Institute l'Homme et le Temps, 1994, 158 pp, ill.

History (French).

A book about the chronometers of the famous Swiss firm Ulysse Nardin. The first 132 pages, by Raymond Nardin, open with a brief history of the quest for accurate timekeeping at sea from 1708 to 1803, with details of the Nardin family between 1803 and 1846, followed by a detailed account of the Ulysse Nardin business from its founding in 1846 up to 1975. The second part of the book by Estelle Fallet is a detailed study of the chronometer activities of Paul-David Nardin (Ulysse Nardin's son) between 1876 and 1918.

R1930 Natermann, J**Etude de l'échappement a ancre**

Genève: Journal Suisse d'Horlogerie, 1909 (1879), 24 x 16 cm, 59 pp, 15 ill, 2 fld plates (50 pp) (35 pp, 3 ill, 2 plates).

Technical (French).

Three editions in 1879, 1900 and 1909. Leroy "Collection Léon Leroy: mouvements, portraits, livres et documents" erroneously gives Watermann as the author.

Study of the lever escapement.

R1931 NAWCC

225 years of timepieces

a Lancaster County legacy

USA: National Association of Watch and Clock Collectors, 1979, 21.5 x 14.0 cm, 84 pp, 69 b/w ill.

Catalogue, exhibition (English).

Catalogue of the first annual exhibit of the National Association of Watch and Clock Collectors Museum.

A 3 page preface and map of Lancaster County followed by photographs and descriptions in 6 sections:

Clocks (27 in 34 pages).

Watches (98 in 18 pages, but only 21 illustrated).

Miscellany (15 in 3 pages, but only 2 illustrated).

Tools (23 in 2 pages, but only 1 illustrated).

Advertising (56 in 10 pages, but only 9 illustrated).

Books, etc. (79 in 7 pages, but only 9 illustrated).

There is a short bibliography.

[1st edition, fair] This catalogue is probably of some value for the clocks, because there are extensive captions on the makers. But the rest simply documents the exhibition, listing the items and providing basic information on them. There are a few reasonable photographs, but there is nothing in the book on watches which justifies adding it to a library.

R1932 NAWCC

Boston seminar exhibit

USA: National Association of Watch and Clock Collectors, 2005, 8.5 x 11 inch, 124 pp, 330 col ill.

History, illustration (English).

Part of the NAWCC Special Order Supplement No. 5 "Boston: cradle of industrial watchmaking".

Distributed as an Adobe pdf file on CDROM.

Six sections: Precursors to industrialization (Tom McIntyre, 10 pages), Boston Watch Company (Ron Price, 8 pages), The BWCo sequel - the model 57 (Ron Price, 16 pages), The American Watch Company (Tom McIntyre, 41 pages), E. Howard & Co. related watches and artefacts (Clint Geller, 45 pages), and Waltham complicated watches (Craig Risch and Clint Geller, 6 pages). Each section has some preliminary text followed by photographs of watches with extensive captions.

[1st edition, good] A useful and interesting collection of photographs of watches including many good movement views and some valuable discussions.

There are a few oversights, the main one being that there is no explanation of why the precursor watches are considered American rather than imports from England. And the section on Howard watches, although fascinating, is largely irrelevant to the theme because all included a large amount of hand work and hand finishing.

R1933 NAWCC

Boston: cradle of industrial watchmaking

USA: National Association of Watch and Clock Collectors, 2005, 27.5 x 21.5 cm, 120 pp, 214 ill.

History (English).

NAWCC Special Order Supplement No. 5 distributed with "Boston seminar exhibit" (which see).

NAWCC Special Order Supplements 5, 6 and 7 were first published as a set under the title "Boston: cradle of industrial watchmaking".

Seven papers presented at the 23rd annual NAWCC seminar, October 2002: Pierre-Frederick Ingold - his impact on watchmaking both in Europe and America (David Penny, 18 pages); Why Boston during the 1850s (Michael Harrold, 19 pages); Workers together (Thomas McIntyre, 8 pages); American system standards, methods and automatic machinery (George Collord, 10 pages); Evolution of the first industrial watch (Ron Price, 16 pages); The life and work of Charles Vander Woerd (Craig Risch, 19 pages); and Impact of American technology on the English watch trade (Philip Priestley, 24 pages).

[1st edition, good] The introduction, by Clint Geller, begins: "America's most important contribution to watchmaking was the development and first practical demonstration of truly efficient mass production methods for watches. To understand this unique legacy, it is necessary to examine why technical know-how alone failed to achieve this end in England ... and why efforts in the Boston area beginning around 1850 finally succeeded where earlier American efforts had failed."

Unfortunately the articles in this volume do not successfully address "these and other intriguing questions". Most of the discussion is descriptive and often vague, but such questions require detailed analysis and precision. Without taking great care it is too easy to gloss over events in a way that allows unsubstantiated conclusions to be drawn. Such conclusions may be correct, but it is impossible to place much faith in them because the supportive arguments are missing.

One obvious example of this point is the statement by Ron Price: "The use of automatic machinery to turn out interchangeable parts for watches on a large scale was first achieved in America in 1850 by the Boston Watch Company". It may be possible to define "automatic" and "interchangeable" in ways that permit this statement to have some sort of truth, but they would water down these concepts so much as to make them meaningless. In reality automatic machines were not developed until about 20 years later and most certainly many parts were not interchangeable as late as 1876 and probably into the 20th century. I have argued the need for precision elsewhere; see my review of Hoke "Ingenious yankees - the rise of the american system of manufactures in the private sector" in this bibliography, and "Jacques David—and a Summary of 'American and Swiss Watchmaking in 1876' with Emphasis on Interchangeability in

Manufacturing, NAWCC Bulletin, No. 350 (June 2004): pp. 294-302; also available from www.watkinsr.id.au). The vague statements about the American system, which are rife, have done nothing useful and have created a mythological view which is not supported by evidence.

This problem is clearly illustrated in the first article by David Penney. He suggests that “unlike a few select, self-promoting investors and mechanics in mid-nineteenth century Boston, Ingold attempted to establish a complete system of machine watchmaking” and he concludes that the American system should be renamed the “Ingold System of Watchmaking”. These remarks make me wonder if Penney was deliberately baiting his audience by making outrageous claims and there is a danger that his views will be dismissed out-of-hand, whereas such statements should be an incentive to seriously examine the conflict between Penney’s thesis and the generally held opinions about American watchmaking. The basic thrust of his paper is that mass production had been successfully carried out earlier in Europe and that Ingold had developed many important tools for it. I don’t think that Ingold is a major figure and I disagree with Penney’s opinion of the importance of his work. However, that does not alter the conclusion that the Americans were not the first. So, the basic premise of the book having been removed, the rest collapses like a pack of cards. Or does it? There is no doubt that the Americans achieved something very important. It is just that it cannot be discovered and explained from such general “motherhood” statements as appear in the introduction.

Michael Harrold’s paper “Why Boston during the 1850s?” persuasively argues that watchmaking was an outgrowth of the pre-existing clockmaking industry centered on Boston, and the examination of the Pitkins, Dennison, Howard and others in this context is very interesting. Included is a brief but thought-provoking discussion on the desirability of making parts on a single machine to avoid set-up problems and errors inherent in processing parts on several machines; however much time had to pass before this was achieved; as Collord notes in his article, 4-spindle vertical drill presses were being used as late as the 1890s. Harrold considers twice-manufactured parts in the context of the work of Japy and Ingold, who had nothing at all to do with Boston and should not have been mentioned, especially as Harrold uncritically repeats Cutmore’s blunder that Japy manufactured about 40,000 watches in a year with a workforce of 50 people. (He also suggests “Vacheron apparently kept industrial methods sufficiently separate from hand finishing as to avoid a trade backlash”. This is an interesting comment, but it begs the question: could they have done anything else? In reality it is almost certain that Vacheron & Constantin had no choice and simply could not avoid hand finishing.)

The main result of these two papers is to provide evidence that compromises the basic aim of the book. Indeed, after reading them I realised that the title should be “Boston: Cradle of American Industrial Watchmaking” as both Penney and Harrold make it clear that industrial watchmaking existed in Europe before 1850. However, no-one bothers to define the word “industrial” and so there may be a qualitative difference between Japy and Waltham; sadly this is not explored.

The next two papers are disappointing. Under the title “Workers Together”, Tom McIntyre provides yet another brief history of Waltham, this time oriented towards employee/company relationships. But it lacks structure and tries to bring together unrelated, if interesting, topics. George Collord’s article is simply a collection of photographs of tools and machinery from Waltham. There is little text but there are captions which provide quite a lot of information about the items illustrated. However, each is a separate entity and there is no thread joining them. Consequently it is not possible to deduce anything useful about developments over time. There is also another example of myth making. Collord states that automatic screw making machines could produce around 10,000 screws per day and that Waltham had 45 such machines. A little calculation shows that the machines must have produced screws at the rate of 4 per second and 45 machines would turn out enough screws for 10,000 watches in a day, which is not credible. (Later in the book, Risch gives a more realistic figure of 3,500 per machine-day or one screw every 10 seconds, in which case having 45 such machines is probably justified.)

What should be the center-piece of the book is Ron Price’s study on the “Evolution of the First Successful Industrialized Watch”. The focus of his work is the Waltham Model 57, which was produced for about 23 years from 1857 to 1879. He begins by describing the Dennison, Howard & Davis watch which was the predecessor of the Model 57 and then examines the various incarnations of the Model 57, first built after Robbins took over.

Although providing much useful detail, Price completely overlooks one fundamental question: What is the Model 57? Nowhere does he explain the features of the movement that define it to be a Model 57 rather than some other caliber, and without such a definition it is impossible to study its development. What does become clear is that this “model” is in fact a series of quite different calibers. They do have in common size (size 18) and style (full plate), but whether anything else is common is unknown but unlikely. Price does provide a summary of design changes, which include rate (fast and slow trains), winding (key wound and set, pendant wound and key set, and pendant wound and set), balances (plain steel or gold and compensation), hairsprings (sprung under and over the balance), center pinion (ordinary and safety), escapements, stop work and clicks, and mainsprings/barrels (brace end and T end). From this it is clear that two Model 57 movements can be so utterly different as to be different calibres. And, perhaps more important from Price’s perspective, there cannot be any interchangeability between them other than trite aspects. As he writes “there are fewer differences between the Dennison, Howard & Davis and the first Model 57 than there are between early and late Model 57s”. So the word “evolution” in the title has nothing to do with origins (which are not explained and Price gives no information about its initial creation) but later developments (which are explained descriptively and without precision). So it

is impossible for Price to define the Model 57 because there are so many differences that any definition would be trite and unhelpful and his article is forced to be an interesting list of details linked by a tenuous common thread.

But also see Price "Origins of the Waltham model 57, evolution of the first successful industrialized watch".

In contrast "The Life and Work of Charles Vander Woerd" by Craig Risch is a very good study of the man and his contributions to American watchmaking. This paper succeeds where most of the others fail because it has a clearly defined, simple objective and sticks to it. In doing so Risch achieves much more in explaining developments of watchmaking and machinery than Collord manages in his photographic essay.

Finally, Priestley's examination of the impact of American watchmaking on England (and the continent) provides some useful information about English companies and their use of American machinery. The first part describes Dennison's two trips to England and his eventual relocation there, interlaced with information about English manufacturers. Priestley then goes on to look at later developments, much based on importation of American machinery.

Perhaps it is inevitable in a short paper, but Priestley is at times a bit vague when detail would be helpful. He begins by dedicating "this work to my hero, Aaron Lufkin Dennison", but later makes the correct and very pertinent remark that "all his endeavors had failed"; so he worships a hero who achieved very little. More pertinent is the mention of John Wycherley, who "received a patent in 1867 for the production of ebauche movements with interchangeable parts". Priestley does not discuss the patent, a summary of which will be found in "Patents for invention - abridgements of specifications class 139, watches, clocks and other timepieces 1855-1930". This summary indicates that Wycherley's ideas were quite simplistic and represent a far less sophisticated system than that at Waltham; maybe Priestley omitted the detail because it casts doubt on the importance of Wycherley's factory? Finally, it is stated the "Birmingham trade directory shows 'Dennison and Howard' as watchcase makers ... indicating that Edward Howard, his old friend and former partner ... was able to send financial support all those miles". There are two problems with this suggestion. First, there is simply no reason to assume it was Edward Howard, the surname being common. Second, there is evidence that Howard and Dennison had ceased to be friends by the time of the bankruptcy in 1857. Priestley may be right, but without more concrete evidence there is a serious danger of myth-making. (At the time of writing, Priestley is preparing a book titled "Aaron Lufkin Dennison, an industrial pioneer and his legacy" which supplies evidence to support his view. But why Howard provided support is a matter for conjecture.)

Overall this book is a useful and interesting contribution. However there are too many unanswered questions and too many unsupported statements, so that the reader needs to examine the contents with care and not simply accept it as the latest facts.

R1934 NAWCC

NAWCC thirty-second national convention

commemorative exhibit catalogue

Los Angeles: NAWCC Los Angeles Chapter, 1976, 25.5 x 18.5 cm, 64 pp, ill.

Catalogue, exhibition (English).

2500 copies.

European clocks (26 pages); European watches (7 pages); American watches (5 pages); Japanese clocks (7 pages); American clocks (6 pages); Chronometers (1 page); Electric clocks (1 page); Enamel watches (2 pages); Tower clock (1 page); Tools (1 page).

[1st edition, fair] Most illustrations of watches are black and white photographs which are too small to provide useful views and overall this catalogue has past its use-by-date.

However, the catalogue is notable because it is the only book with photographs of Pitkin watch number 46, the earliest known existing Pitkin watch. The photographs show features which suggest these watches were not machine made; see Watkins "Watchmaking and the American system of manufacturing".

R1935 NAWCC

Pocket timepieces of the New York chapter members

New York: National Association of Watch and Clock Collectors New York Chapter, 1968, 8.5 x 5.5 inch, 38 pp, ill.

Description (English).

Limited edition of 600 copies.

Photographs and descriptions of watches belonging to members of the New York chapter of the NAWCC.

R1936 NAWCC

Watches of the Paul Chamberlain collection

2009 NAWCC National Convention exhibit

USA: National Association of Watch and Clock Collectors, 2009, 28.0 x 22.0 cm, 36 pp, 153 b/w ill, 16 col ill.

Catalogue, illustration (English).

An introduction followed by photographs and descriptions of 44 watches, the descriptions being taken from Chamberlain "Watches - the Paul M. Chamberlain collection at the Art Institute of Chicago".

[1st edition, review by Fortunat Mueller-Maerki] Paul Mellen Chamberlain, the eminent horological author and scholar, assembled two major watch collections during his lifetime. In the few years just before World War I, this engineer hailing from a prominent Michigan family, quietly put together a

collection of around 300 pocket watches with unusual and innovative features, many of them made by the luminaries of horological history including Tompion, Graham, LeRoy, Berthoud and Breguet. Not only were the watches remarkable, but so was the fact that he assembled the collection in such a short time. In 1917, when Chamberlain expected to be deployed to the war zone in France, he donated the collection to the Chamberlain Memorial Museum in Three Oaks, MI.

By the time the military discharged him in 1920, Chamberlain was exhausted. He had served stateside in a stressful position coordinating ordinance issues throughout the Midwest, and his wife had died. For relief, Chamberlain once again turned to horology, and arranged for 292 watches of his first collection to be publicly exhibited in 1921 at the Art Institute of Chicago. The published 64 page catalog produced at that time briefly describes each watch (the texts though unattributed are presumably by Chamberlain himself) and is an underappreciated treasure among horological publications.

When the Chamberlain Museum closed in 1952, its entire contents were transferred to the Michigan State University Museum, where only a few of the Chamberlain watches were ever officially exhibited (furthermore, about a dozen of them were shown at the Smithsonian as part of a loan for several years in the 1960s). Many years ago, the Museum also reported the watches as stolen, and they have ever since figured prominently on the international lists of stolen horological artefacts. A short time ago, however, the community of horological scholars discovered that at least a good portion of the collection had been quickly recovered and had been stored away in the Museum vaults in recent decades.

The National Association of Watch and Clock Collectors used the occasion of its 64th Convention in nearby Grand Rapids, Michigan in June 2009, to arrange for a short duration temporary public exhibit of 44 of the watches. This is the first time they have been exhibited in many decades. For this occasion, Dennis Engels, a local photographer took new photographs, and former NAWCC Bulletin editor Terry Casey, with the help of the NAWCC publications department, produced the small booklet under review. The publication reuses the descriptive texts from the 1921 catalogue, and enhances them with new color and black and white photographs, as well as a few historic diagrams of some of the more unusual escapements. The resulting booklet is a most reasonably priced, 'must-have' addition to the horological library of any enthusiast of 'technical' rarities among pocket watches. The publication is no glossy coffee table book, but a low-key and welcome addition to the horological reference literature.

During the exhibit at the Convention in Grand Rapids there was much discussion about the current 'state of the watches'. As also shown in the newly published catalog, at some time between 1952 and the present, the MSU Museum prominently marked each watch with scratched inscriptions on their plates with 'MSU' and an inventory number. Whoever did this must have been a 'fine arts' curator, following the museum practice of permanently marking artefacts in an 'inconspicuous place'. Horological scholars however are rightfully outraged by this 'desecration'. For a collection telling the technical history of horology the plates are NOT an 'inconspicuous place', but are the center of attention of the object, equivalent to the surface of an oil painting.

For the record it is worth noting that soon after the 1921 exhibit at the Art Institute, Chamberlain moved to New York, where he took up a 'bohemian lifestyle', travelled extensively in Europe, became a prolific horological writer, and eventually remarried. He also started a much more extensive second horological collection, which grew to about 1500 pieces. Just before Chamberlain died, he had started to dispose of that collection. There is reason to believe he wanted most of it to be in museums in order to facilitate horological scholarship (his marine chronometers mostly went to the Mariners Museum in Newport News, VA). His death short-circuited those plans, and most of the second collection was sold piecemeal over the decades by his widow (including some pieces alleged to have been on loan to Chamberlain at the time of his death, creating some troublesome provenance cases that are unresolved to this day).

Historians of horology should be delighted about the news that at least a sizable portion of the first Chamberlain collection has survived intact, and will be available for scholarship once again. The collection still has much to tell about technical horology, and the great collector who assembled it. That the pieces are no longer in the location - and certainly no longer in the pristine state that Chamberlain had intended for them - is unfortunate. MSU deserves credit for allowing some of them to be exhibited publicly again, and the NAWCC is to be commended for quickly making a record of these 44 watches available. Hopefully, the publication under review is but a teaser for a more comprehensive and more scholarly publication to come, with photographs by a specialist in horological imaging and a text that maybe combines Chamberlain's description with a present-day critical examination on where these examples fit into the progress of horological technology through the ages.

R1937 Neale, JA

Joseph and Thomas Windmills

clock and watch makers 1671-1737

England: Antiquarian Horological Society, 1999, 25.0 x 17.5 cm, 320 pp, 247 ill, 12 col plates.

History (English).

Not to be confused with the journal offprint, Neale "Joseph and Thomas Windmills", 16 pp, ill, 1987. A history of the Windmills family and business.

Seven chapters: Joseph Windmills 1671-1700 (14 pages), Windmills's clocks 1671-1700 (42 pages), Windmills's watches 1671-1700 (30 pages), The two Windmills 1700-1724 (14 pages), Windmills's clocks 1700-1724 (72 pages), Windmills's watches 1700-1724 (20 pages), and Thomas Windmills and partners (38 pages).

Followed by three appendices (34 pages, Contracts with the Ordnance Office, Case makers, and Heirs and successors), tables (27 pages), bibliography and index.

[1st edition, very good] This book has a detailed (definitive) study of the Windmills and their timepieces, together with information on existing clocks and watches and the numbering of watches. The information on the timepieces is descriptive and assumes some knowledge of the design of English 17th century clocks and watches.

R1938 Negretti, G**Legendary watches, Officine Panerai****Uhren am puls der zeit**

Italy:, 1998, 7.2 x 7.2 inch, 72 pp, ill.

Description, history (English, German).

Limited edition?

A history of Officine Panerai and Panerai watches.

Seven chapters: The cradles of horology, Accurate timekeeping, Florence and Officine Panerai, Commando equipment, The Panerai watches, Heroes of great exploits, and Panerai watches today.

Negretti has also written "Panerai historia, from the depths of the sea" (75 pp, ill).

Another book "Officine Panerai, the value of time" was produced in conjunction with an auction in Milan. This includes the words "Personalities from the worlds of politics, learning, arts, culture, show business, sport and fashion who appear in these pages ...".

I haven't seen these books, but the impression I get is of high-class advertising, perhaps more concerned with celebrities than watches. I had never heard of Panerai before I came across these books, so I suppose I move in the wrong circles.

See also Panerai "Panerai style book" and Zei "The Panerai in Florence".

R1939 Negretti, G; De Burton, S**Panerai**

Milan: Skira, Paris: Flammarion, 2008, 32 x 32 cm, 192 pp, 200 ill.

History (French, Italian, English?).

"Prestigious book of relating the 150 years history of the famous Italian brand."

Catalogue of the firm's collections and archives.

See also Zei "The Panerai in Florence".

R1940 Negretti, G; Nencini, F**Masters of time****I signori del tempo****Die schönsten armbanduhr**

300 fabulous vintage wristwatches of our century

Italy: Editoriale Wrist, Munich: Heyne Verlag, 1995 (1986), 30 x 22 cm, 347 pp, 270 plates, slip case.

Illustration, price guide (English, Italian, German).

English and Italian text, and separate German edition.

Wristwatches by 17 different makers (including Audemars Piguët, Cartier, IWC, Omega, Patek Philippe and Rolex) with price estimates.

"A sumptuously produced book, giving detailed information on 310 collectable wristwatches of the world wide known 'noble' brands, all photographed in minute detail with fine descriptions. Fully indexed. An absolutely must have book for the wristwatch aficionado."

These comments continue: This very book, in the original Italian edition, ("Il Signori Del Tempo") created the revival of the mechanical watch, and an era of watch collecting, resulting in astonishing prices at specialised auctions world wide." So it seems it was Negretti and not the Swiss who rebuilt the industry.

R1941 Negretti, G; Nencini, F**Ore d'oro**

wrist watches investment and passion

Milano: Wrist Editoriale, 1984, 30 x 22 cm, 199 pp, 400 ill, ads, price guide, slip case.

Description (English, Italian).

English and Italian text.

Brief histories of watch companies (about 30 pages) followed by photographs of watches.

"Illustrates and describes 386 upscale collectable wrist watches, showing the dial and also the movement for selected watches. Includes Patek Phillipe, Vacheron, Rolex, Cartier, etc. Vintage and contemporary."

See also Barracca, Negretti and Nencini "Ore d'oro, volume 2".

R1942 Negretti, G; Vecchi, P de**Faszination uhr****Les collections horlogerie**

eine geschichte der zeitmessung

Munich: Callwey (France: Celiv), 1996 (1994), 31 x 25 cm, 237 pp, 543 ill.

History (French, German).

Published in 1996.

I presume "Les collections horlogerie" published in 1994 is the French version and not a separate book.

- R1943 Negretti, G; Vecchi, P de**
Les collections horlogerie
Horlogerie, les collections
 trad. Sylvie Salzmann
 Switzerland: CELIV, 1994, 32 x 26 cm, 240 pp, 550 ill.
 Illustration, collection (French).
- R1944 Negretti, G; Vecchi, P de; Gregato, G**
Patek Philippe, complicated wrist watches
Patek Philippe, orologi complicati da polso
Patek Philippe, komplizierte armbanduhren
Patek Philippe, montres-bracelets complique
 Koln: Konemann (Milan: Leonardo Arte), 1999 (1997), 34 x 25 cm, 180 pp, 200 ill (177 pp, 184 plates).
 Collection, description (English, French, German, Italian).
 The first edition is in Italian. The later edition is trilingual English, German and French.
 Eight chapters: Quality collecting, Technical excellence, Chronographs, Chronographs with perpetual calendars, Calendars, World time zone, Dual time zone and Minute repeaters.
[2nd edition, mediocre] Illustrations of Patek Philippe complicated wrist watches from 1923 to 1981 showing dials and movements. There is almost no text, just very brief comments on each watch (so the language doesn't matter much). Pretty, but I feel it is of little use.
- R1945 Neher, FL**
Ein Jahrhundert Junghans 1861-1961
 ein beitrage zur technik und kultur geschichte der uhr
 Schramberg: Uhrenfabriken Gebrüder Junghans, 1961, 25.5 x 20 cm, 161 pp, ill.
 History (German).
 Published for the centenary of Junghans.
 One hundred years of Junghans, a contribution to the technical and cultural history of horology.
- R1946 Nelson-Hall**
Cyclopedia of valuable information
 for jeweller, watchmaker, optician
 USA: Golden Times Ent. Publishers (Chicago: Nelson-Hall), ca 1998 (nd), 3 x 9 inch, 51 pp, no ill.
 Technical (English).
 "Privately printed for the trade. Not to be sold outside the trade."
 Receipts for various things.
See Cleary "Useful information for jewelers and watchmakers" for my comments.
- R1947 Nelson, JH**
Silversmiths and clockmakers of Fulton county
 Pennsylvania 1785-1900
 Pennsylvania: Fulton County Historical Society, ca 1984, 8.5 x 5.5 inch, 30 pp, 16 ill, facsimile ads.
 Makers (English).
[Review by Donald Summar] This little book covers information found on 28 silversmiths, watchmakers, clockmakers, and jewelers who worked in Fulton County, in south-central Pennsylvania. Included are three clockmakers, although no clocks are known for two of the three makers. Repairers are distinguished by the terms "clocksmith" and "watchsmith". The facsimilies of advertisements are interesting. Information on the Sherry & Byram tower clock formerly in the county court house is also included.
(Reprinted by permission. NAWCC Bulletin No. 232, ©1984 by the National Association of Watch and Clock Collectors, Inc.)
- R1948 Nelthropp, HL**
A catalogue chronologically arranged
 of the collection of clocks, watches, chronometers, sundials, seals, etc. etc. presented to the Worshipful Company of Clockmakers of the City of London by the Revd H.L. Nelthropp
 London: Blades, East & Blades (London: Clockmakers Company), 1902 (1895), 24.0 x 15.0 cm, 85 pp, ill (58 pp, 1 plate, 1 ill and 15 pp, 1 ill).
 Collection (English).
 Originally produced in 1895 with a supplement in 1897. A second edition was printed in 1902. See also Baillie "Catalogue of the museum of the Worshipful Company of Clockmakers".
 The main catalogue describes 141 clocks and watches (mainly watches), 61 movements, 9 chronometers and other items. The additions catalogue includes 12 watches and an errata page. The only illustrations are a signed portrait of Nelthropp, Enderlin's escapement and a stackfreed clock-watch.
[1st edition, fair] The descriptions are terse with only a few giving some details or anecdotal information. Consequently, the catalogue is of historical interest but of little practical value. Many of the watches have probably been illustrated in other books.

R1949 Nelthropp, HL**A treatise on watch-work, past and present**

London: Spon, 1873, 18.5 x 13.0 cm, 310 pp, 87 ill.

Biography, description, history (English).

It is available as a Google Book PDF file (USA only?).

This book can be divided into four sections:

Chapters 1-3: A description of a watch, an explanation of terminology and a description of tools (31 pages).

Chapters 4-6: A history, primarily consisting of quotations from other works (81 pages).

Chapters 7-18: Watches, being chapters on trains (which "has been taken nearly word for word from Reid's Treatise"), the verge, cylinder, duplex, lever and chronometer escapements, repeaters, keyless work, balance springs, compensation and jewellery (129 pages).

Chapters 19-23: Descriptive sections on Clerkenwell, fallacies of the trade, poor workmanship and how to choose a watch (30 pages).

An appendix contains a translation of "A treatise on pitchings" by Lalande, which was first published in Lepaute "Traite d'horlogerie" (33 pages).

There is a 6 page index.

[1st edition, mediocre] The preface to this work begins "The great desire for education which has sprung up among all classes ...". Sadly Nelthropp lacked any understanding of what "education" means and he has written a book which is virtually incomprehensible to the learner. Indeed, the majority of the text is simply quoted from other works and his own infrequent words often read like the curt notes of a lecturer. One wonders if he himself understood the topics.

Further, the content and illustrations suggest a text written at least 50 years earlier. Perhaps this reflects a general ignorance of developments elsewhere, which would have contributed to the demise of the English industry.

As an irrelevant aside, the cover has an embossed, gilt illustration of a lever escapement which is quite wrong!

Gardner's catalogue of the Torrens collection says "While strictly speaking not a good book, the chapters at the end ... are first class entertainment". A little generous, I feel.

[Remark] I cannot refrain from attacking horological book sellers and buyers at this point! Books like this one command high prices but the value of their content and usefulness is small. I, and I presume others, only discover how little value they get when the book is in their hands. It is about time buyers educated themselves and forced prices to reflect content, at least in part.

R1950 Nemnich, PA**Neuste reise durch England, Schottland und Ireland**

hauptsachlich in bezug auf produkte, fabriken und handlung

1806.

History (German).

New journey to England, Scotland and Ireland mainly covering products, manufacture and trade.

Referenced in Weiss "Watchmaking in England 1760-1820" and quoted in Baillie "Watches - their history, decoration and mechanism".

R1951 Neret, G**Boucheron, histoire d'une dynastie de joaillier****Boucheron, le joaillier du temps**

Lausanne: Conti (Fribourg, Office du Livre), 1992 (1988), 11 x 10 inch, 224 pp, 403 ill (223 pp, 325 ill).

Description, history (French).

Boucheron, the jeweller of time.

A survey of the production of the House of Boucheron.

I assume these 2 titles are different editions of the one book.

R1952 Neudorffer, Johann; Lochner, GWK (ed)**Nachrichten von kunstlern und werkleuten**

dasselbst aus dem jahre 1547 nebst der fortsetzung des Andeas Gulden

Vienna:, 1875 (1546), 12mo, 98 pp, 3 portraits.

Biography, history (German).

Two editions in 1828 and 1875.

Neudorffer (1497-1563) provides short biographies of artists and craftsmen from Nurnberg including four watch and clock makers.

Referenced in Baillie "Clocks and watches, an historical bibliography". He notes that Neudorffer wrote "This Heinlein is almost the first who found out how to make small clocks in musk balls", confirmed by a 1524 archive entry noting payment to H. Henlein for such a watch.

R1953 New England Watch Co**Book of enameled watches and brooches**

USA: New England Watch Co., 1998 (ca 1901), 28 pp, col ill.

Catalogue (English).

Colour catalogue of watches and matching brooches.

R1954 New England Watch Co**Pointers for watchmakers and repairers**

USA: New England Watch Co, ca 1895, 13.0 x 8.5 cm, 16 pp, 5 ill.

Repair (English).

Undated but before 1899.

A small booklet on American duplex escapement watches and their repair.

[1st edition, good] The first half (after some advertising) describes the examination and cleaning of movements, assuming repairs are mainly done by replacing parts with new material. The remainder of the booklet describes how to adjust the duplex escapement. The information is specific to the Waterbury and New England series of duplex movements based on Buck's design, the last illustration showing the in-beat positions for different models.

It was reprinted in the 3rd edition of *Jewelers' Circular "Workshop notes for jewelers and watchmakers"* (1899) omitting all references to New England, a little information specific to that company's watches and the last illustration.

R1955 Newman, Sue**The Christchurch fusee chain gang**

who they were, what they did, how they lived

England: Amberley Publishing, 2010, 23.5 x 15.5 cm, 256 pp, ill, 16 col plates.

History (English).

Seven chapters: Christchurch, an engaging combination of scenes (16 pages); On the breadline in Christchurch (41 pages); The Christchurch fusee chain workers and the Pit site (16 pages); A brief history of timekeeping (27 pages); The fusee and the chain (13 pages); The Christchurch fusee chain manufacturers (53 pages); and Other Christchurch occupations (36 pages).

There is a 38 page appendix (The chainworkers in the Christchurch censuses 1841-1891), a 3 page bibliography and an index.

[1st edition, very good] Until this book was published, information about chain making was largely limited to White "The chain makers" (which is an inadequate social history, but better than nothing) and Weiss "Watch-making in England 1760-1820" (which is an excellent technical book). This new book provides a far better study of the subject.

The non-horological parts are very good.

The first 3 chapters provide a brief history of Christchurch followed by a detailed study of lives and circumstances of the workers. Unlike many "histories", Newman gives an excellent picture of reality; the hardship and squalor suffered by these people who relied, to a large extent on smuggling to survive. This is certainly the best and most interesting part of the book.

Chapter 6 provides a history of fusee chain making in the context of the people who established factories in the town; Cox, Hart and Jenkins. Being very detailed it takes a little effort to read, but it provides much information about the business in Christchurch. I think it would have been better if Newman's research went beyond Christchurch. Although chain making in other places is mentioned, it is only in passing. Also, customers are only briefly mentioned and there is no information on who supplied Liverpool and Prescott; but I expect she was limited by a lack of useful, extant documents. Certainly there is far more information than in the earlier book "The chain makers" by Allen White.

Chapter 7 is really a continuation of the first three chapters, providing information about other occupations. For the ordinary reader like myself, it is very interesting, and the five chapters together provide a fascinating insight into rural life in the 18th and 19th centuries.

In contrast, the horological parts (40 pages out of 202 pages of text) leave a lot to be desired.

In Chapter 4, Newman spends some time on the concepts of time and calendars, and then gives a short history of timekeepers, covering elemental clocks and early mechanical clocks as well as watches. Most is derived (probably paraphrased) from introductory books and so is an acceptable if ordinary history the subject for the person who knows nothing. Like most such histories, it includes a few errors. However, when she presents material in her own words, it becomes clear that she knows little about the subject; consequently when writing about the purpose of fusees and other aspects of movements she is confused and the result is unsatisfactory.

Apparently the book was commissioned, and providing a background to the subject, to set it in context, was part of her brief. This is unfortunate. The majority of the chapter is irrelevant, the history is too brief to do more than pay lip-service to the subject, and the discussion of watches and fusees is poor.

Chapter 5 reproduces the three Diderot and d'Alambert plates on chain making (one of which is irrelevant to fusees) together with a translation of the accompanying text. This is followed by some incorrect historical remarks on the "invention" of the going barrel and the consequences of the downturn in English watchmaking. The chapter ends with some information on a modern chain maker. Most of the chapter, being the illustrations and words of Soubeyran for Diderot and d'Alambert, is of course very good. But again Newman's own writing is unsatisfactory.

Unfortunately the maps, street plans and chain-making plates have been greatly reduced and I, and probably many others, need a magnifying glass to see them. I suspect this was a decision of the publisher; it seems publishers regard layout and appearance as more important than legibility.

So the book is, in fact, a social history of Christchurch, and chain making, although central, provides the vehicle by which this history is given. It is certainly worth reading for the very good study of the lives of poor people in those times, and for the useful Diderot and d'Alembert translation.

[Remark] *The context for my reviews has always, and always will be, the study of watches. They are specifically written for people who have more than a casual interest in the subject, who have at least some knowledge, and who, like me, want to know the horological value of a book. Consequently, it is incumbent on me to delve deeper than would be necessary for a review published in a general newspaper or journal. And, whereas most reviewers are polite and kind, it is necessary to be frank and, perhaps, brutal (my review of Barrow "The pocket watch: restoration, maintenance and repair" is a good example of the latter). After all, should obvious errors and inadequacies be glossed over or excused when such problems significantly affect the value of a book to my readership?*

Of course there are many relevant books, like Sue Newman's, which contain substantial information only loosely related to horology, and occasionally even totally irrelevant (as in the case of Campbell "The London tradesman"). However, not being an expert in other fields, such as the social history of the south of England, I try to ensure my comments reflect my ability to assess.

Which leads me to a fundamental question: what knowledge should a writer have before writing on horology, even for beginners?

Before answering, I must note the commission aspect of her book. In an email to me Newman wrote:

"The book was written to a specification which was certainly challenging, but publication did not materialise. When I did get the opportunity for this, I wanted to include the timekeeping chapter as a great deal of work had gone into it, and I had made sure it was read over by someone who could have found these faults."

Let me now list the faults I found in nine of the pages written by Newman on watches:

Pages 105-106: In a brief and irrelevant sketch of John Harrison she fails to mention that he is credited with the invention of fusee maintaining power, a point that is directly relevant to the book.

Page 105-106: "... the British Government offered £20,000 to the inventor who could create a timepiece ..." This is wrong. The act of Queen Anne does not stipulate a method and several methods were proposed, including two very important astronomical methods that did not rely on watches or clocks.

Page 106: "... the invention of ... the balance spring (by Dr Hooke once more) ...". And, on page 108: "... the development of the coiled balance spring ... one again by the Dutch scientist Christiaan Huygens ...". This is simply confusing! The former statement is basically wrong. Hooke did discover the fundamental law of springs in general, and he makes some very vague and unsubstantiated claims for regulating springs in watches, but he did not invent the balance spring. The latter, contradictory, statement is right. (The best study is Ball "Bringing the work on 1675-1680").

Page 106-107: Although expressing herself vaguely, Newman claims Henlein invented the watch. This is generally accepted as incorrect, because there is evidence for watches being made in the region we now call Italy before 1500. (Probably the best source is Morpurgo "The origin of the watch, l'origine dell'orologio tascabile".) Also, although actually irrelevant, I will also note that she refers to "Nuremburg eggs" which is a mythological term.

Page 107: "The unwinding of the coiled spring ... was initially achieved ... by a device called a stackfreed." This is meaningless. The unwinding is achieved by the spring itself and has nothing to do with stackfreeds or fusees.

Page 107: "As the spring unwinds ... the stackfreed evened out the force." How? Without explaining what the stackfreed does, this does not make sense. And why even out the force anyway? Newman simply does not explain.

Page 107: Nowhere does Newman explain the purpose of the fusee and chain, what it does and why it was used, and they remain a mystery to the readers. Understanding stackfreeds and fusees depends on understanding isochronism and escapements, neither of which are mentioned. Understanding going barrels also depends on understanding isochronism and escapements.

Page 110: "This (dollar) watch was one that we would recognise today, worn on the wrist ...". This is incorrect; the "dollar watch" was a pocket watch.

Page 121: "The Swiss had begun to make a mainspring which was far lighter than those used with the fusee, yet just as strong, ..." As mainspring strength is related to mainspring size, a "lighter" spring is necessarily weaker. But I doubt if this is what she was trying to say. However, I have no idea what she means.

Page 121: "... and by the introduction of jewels into the mechanism the spring needed little power to operate..." However, jewels were used extensively in English fusee watches. Using jewels would only make a very small difference to the mainspring, if any at all, and they are irrelevant to the use of fusees or going barrels.

Page 122: "... only the middle part of the mainspring is wound in the going barrel." I presume what she is trying to say unsuccessfully is that only the middle part of the mainspring is used. However, this is also true of watches with fusees.

Page 167: "... fusee chainmaking was by this time (1851) superseded by the going barrel ..." Incorrect. The English continued to use fusees to the end of the century.

Page 167: "... the usefulness of the cheaper, newer method of regulating the mainspring (the going barrel) ..." But the going barrel does not regulate anything; its feature is the absence of any form of regulation. Also, it is actually not "newer", going barrels being used circa 1800 by, for example, Breguet.

So there are 13 dubious, misleading or straight-out incorrect statements in 9 pages.

Fundamental to my criticism of this book (and others) is the question: How much knowledge and experience is need to teach? The obvious answer is to look at school and university education where a

fundamental requirement for a teacher is to have a qualification at least one level higher than the level being taught. Why? Simply because the majority of us mere mortals need to know more than our students. We need to be able to decide what needs to be taught, in what order and at what level of complexity, so that a course can be structured which will guide the student from his or her present level of knowledge. And we need to understand how to present the material to suit these requirements. But this cannot be done unless we know much more than they do.

As I have noted above, understanding fuseses and going barrels involves understanding isochronism and escapements, topics which I admit are too advanced for a book like "The Christchurch fusee chainmakers". So what should the teacher do? In fact it is possible to mention the basic concept of isochronism (preferably in conjunction with the basic concepts of temperature and positional variations). And it is possible to present, perhaps as largely unexplained facts, the basic ideas of escapements. But to do this requires the teacher to be competent and to very carefully work out how to get such information across, a task which is undoubtedly difficult and well beyond the abilities of a novice.

Unfortunately, Sue Newman simply does not know enough about the subject to write competently on it. I have no doubt that she has spent a few months reading a few books, but this is obviously inadequate. (In contrast, it took me about ten years, in which time I bought and read hundreds of books, before I felt able to write anything.)

But what about the referee to whom she submitted her work for evaluation? I can only assume that this "expert" was either incompetent or was too kind and did not point out the errors to spare her feelings. Either way he did the author a gross disservice, allowing her to publish incorrect material which he should have prevented.

It is essential that referees take their task seriously and "mentor" authors. But in this case it was not done and consequently Newman has suffered criticism that should never have occurred.

R1956 Nicholls, Andrew; Good, Richard

Clocks and watches in colour

Dorset: New Orchard Editions, 1985 (1978), 8 x 5 inch, 218 pp, 28 b/w ill, 86 col ill.

Collection, description, history, illustration (English).

See Good "Watches in Colour".

R1957 Nicholson File Co

A treatise on files and rasps

descriptive and illustrated

USA: Nicholson File Company, 1878, 11.5 x 8.5 inch, xi, 79 pp, ill.

History, tools (English).

"For the use of master mechanics, dealers, etc. in which the kinds of files in most common use, and the newest and most approved special tools connected therewith, are described giving some of their principal uses. With a description of the process of manufacture, and a few hints on the use and care of the file".

Not watches, but probably interesting.

R1958 Nicholson, DM

Santa Fe

how it governed its timepieces throughout the system

USA: Scanlon American Reprints, 1994 (1984), 28.0 x 21.5 cm, 47 pp, ill.

History (English).

A non technical account of the Atchison, Topeka and Santa Fe Railway Company's control and inspection of timepieces.

[1st edition reprint, good] As watches were bought and maintained by employees company oversight was essential for the running of the system.

Although a little too superficial, it is an interesting and well written account, made more so by the fact that Henry Montgomery (of Montgomery dial fame) is the leading personality.

R1959 Nicholson, John

The operative mechanic and british machinist

being a practical display of the manufactories and mechanical arts of the United Kingdom; Der praktische mechaniker und manufacturist

Philadelphia: Desilver (London: Robert Thurston) (Philadelphia: Carey & Lea), 1831 (1825), 22.5 x 14.0 cm, 2 volumes 448 pp and 360 pp, 106 plates with 4 fld (2 volumes 448 pp and 360 pp, 99 plates).

Description (English, German).

The American edition, derived from the second English edition, has additional plates illustrating American mechanics.

Volume 1 of the 1825 edition and volume 2 of the 1831 edition are available as Google Book PDF files, but some plates are missing and other plates are scanned folded and so useless..

Volume 1 contains 10 sections: On matter and mechanical powers (20 pages); Mill gearing (32 pages); Animal strength (12 pages); Water (58 pages); Wind (42 pages); Flour mills (22 pages); Steam (58 pages); Hydraulic engines (57 pages); Simple machines (51 pages); Manufacture of metals (37 pages); and Manufacture of fibrous materials (76 pages).

Volume 2 contains 3 sections: Sundry manufactures (45 pages on saw, bark, oil, colour and indigo milles, and pottery); Horology (43 pages); and Building (148 pages). There is an appendix (geometry, mensuration, useful receipts and glossary).

[1st American edition 1826, fair] This book is a comprehensive technical survey of late 18th century machines. It contains a number of sections relevant to horology.

The chapter on mill gearing has a general study of gearing (10 pp, 2 plates) which briefly defines epicycloids and the form of teeth.

The section on simple machines includes descriptions of an American file cutting machine ("particularly useful for cutting very fine small files for watchmakers"), Ramsden's dividing engine and lathes (including an American slide rest).

The chapter on horology includes 15 pages and 2 plates on watches and chronometers. The section on watches describes the common verge watch and gives a table of trains. The section on chronometers describes Earnshaw's chronometer and gives an interesting account of the design of the escapement and balance.

The appendix has some useful information, including receipts for Pinchbeck and rolled gold.

Overall the book is fascinating. But most of the material on horology appears to have been derived from earlier works and so it is interesting but not inspiring.

R1960 Nicole Nielsen

Manufacturers of fine watches, speedometers

England: David Penney (London: Nicole Nielsen), 2002 (ca 1910), 33 pp, ill.

Catalogue (English).

The reprint is a limited edition of 350 copies.

Watch catalogue (ca 1910) prefaced with brief details of the company and interesting views of workshops.

R1961 Nicolet, JC

From hand to machine

Von der hand zurmaschine

Switzerland: Scriptar, nd (1990), 31.5 x 24.5 cm, 110 pp, 48 col plates, 53 b/w ill, slip case.

Collection, description, history, tools (English, German).

Separate German and English editions. Said to be first published in 1990. My copy is undated and is possibly a reprint.

Description of tools in the Chaux-de-Fonds Musee International d'Horlogerie for making ebauches and parts, with information on their use.

Seven chapters: The ebauche (16 pages); Watch jewels and setting (8 pages); Watch material (44 pages); Exterior (17 pages, dials, hands, case); Measuring (7 pages); and Finishing (13 pages).

There is a two-page glossary.

[1st edition reprint?, fair] In this book, Nicolet provides large, detailed photographs of some watchmaking machines. Nearly all the text consists of descriptions of these machines and how they work. In addition there are some related illustrations and a little text providing background information. Crom described this as a "beautiful coffee-table book". Although I feel this is a bit harsh, I have to agree, in that the book achieves much less than it could have.

The main problem faced by the reader is linking the text to the plates. Nicolet tries to explain how each machine works, but the plates are not labelled and it is very hard for the reader to locate the parts of the machine being described and hence understand how the machine functions; especially difficult when he mentions parts "not shown" because they are hidden from view. This is exacerbated by some of the descriptions being poor, and a few are simply incomprehensible unless the reader has previous knowledge. The occasional incorrect English does not help.

Most of the problem lies in the plates. The photographs have been taken with aesthetic beauty being the main objective. They are superb, but sometimes I would have preferred less artistry and more information. Because the plates are the main feature of the book (and, as in all coffee-table books, the text is secondary) there is only one view of each machine, when at least two views are necessary. And even if Nicolet had wanted to put labels and arrows on these photographs, he would not have been allowed. And so the reader, as opposed to viewer, has great trouble relating the text to the machine parts.

Like all books, there are things of value, but the reader will learn more from other, technical descriptions of machines and tools.

R1962 Nicolet, JC

Glossary of watchmaking genius

Lexique du génie horloger

français, deutsch, english

Switzerland: Scriptar, 2001 (1997), 23 x 16.5 cm, 92 pp, ill (90 pp, ill).

Dictionary (English, French, German, Italian, Spanish, Chinese, Japanese).

Two editions in three different language sets: parallel English, French and German; parallel French, Spanish and Italian; and parallel English, Chinese and Japanese.

In two parts. A description of how watches and complications work, followed by definitions of watchmaking terms ordered by French terms.

Described as "various high end brands show their spectacular watches".

R1963 Nicolet, JC

Miettes de vie

souvenirs d'un maître-horloger

Switzerland: Editions Mon Village, 2006, 24 x 16 cm, 191 pp, ill.

History, novel? (French).

"If the agricultural world has inspired many stories and novels, it is not the same of the world of watchmaking, conspicuously absent from the literature, but which constitutes the bulk of daily life in the Jurassic arc, Valley de Joux, the valley of Saint-Imier, throughout the valleys Neuchâtel. Jean-Claude Nicolet gives us a narrative describing the lifestyle of the Jura watchmakers, the atmosphere in the villages and factories, the character and the special humor. These "crumbs of life" were gathered from the memory of parents and the life experiences of the master watchmaker. We discover the factory life in The Valley and the mountains of Neuchatel, the atmosphere at the School of Watchmaking, the portrait of personalities and the culture related to social and religious movements.

R1964 Nicolet, JC**Turning and milling in horology****Le taillage et le fraisage dans la réparation d'horlogerie****Das verzahnen und fräsen in der uhrenreparatur**

Switzerland: Bergeon, nd (1983), 27.0 x 21.0 cm, 53 pp, 62 ill, tables.

Repair, technical (English, French, German).

Separate language editions.

Five chapters:

Chapter 1 (17 pages): General, milling tools/cutters, milling machines, milling attachments and dividers.

Chapter 2 (7 pages): Use of Bergeon Technoli cutters in the cutting of gears (7 pages);

Chapter 3 (4 pages): Description of the Technoli 7810 set, use of cylindrical or flat cutters.

Chapter 4 (8 pages): Use of conical cutters, machining a ratchet, cutting a wolf's teeth wheel, machining a count wheel.

Chapter 5 (9 pages): Use of quadrant cutters, machining a crown wheel, machining an escape wheel with end teeth, machining a rack.

[reprint, fair] The book contains precise, very terse instructions and formulae for using cutters (to make train wheels, ratchets, wolf's teeth wheels and so on) in the context of clock work, with only passing reference to watches. It gives information on cutter speeds, division and calculation of wheel size (including a modern double addenda table in graph form). There is nothing about turning.

Besides some useful formulae and helpful tips for cutter mounting, the most interesting part is how to determine cutter speed on a watchmaker's lathe for those of us who don't have a Schaublin lathe or an Aciera milling machine.

Although undoubtedly good, this book and its misleading title irritated me. It is a manual for Bergeon clock wheel cutters, the sort of thing that should be supplied free of charge with cutter sets in the same way that a TV comes with a user manual. Although very useful and generally applicable information is given, Nicolet's incessant remarks about Bergeon are unnecessary.

R1965 Niebling, WH**History of the american watch case**

Philadelphia: Whitmore Publishing, 1971, 28.5 x 21.5 cm, 192 pp, 45 ill.

History, identification, makers (English).

Limited edition.

This book consists of four parts. It begins with an illustrated history of the Keystone company (27 pages including 17 pages of illustrations). This is followed by two chapters of 24 pages containing short histories of many other companies and individuals, varying from a few lines to a page, and a convenient summary listing of makers. The third section of 100 pages (chapter 5) reproduces trademarks with Patent office declarations. Finally, there is a list of case patents, a number of which are reproduced in full.

[1st edition, very good] An interesting book. The history of Keystone (beginning with Booze, of alcohol fame, and Boss, of gold-filled case fame) and the following short summaries provides a good source of information for American case making. And the extensive reproduction of trademarks would be a considerable aid to identification, if not dating.

Most of the patents concern case design and ornamentation (with some very strange and thankfully forgotten ideas!). There are a number of important patents dealing with case manufacture, including that of James Boss for gold filled cases.

Unfortunately this book has only been produced as a limited edition. It is a well-written volume and more useful than Ehrhardt "Trade Marks - Watch Cases, Pocket Watches, Precious Stones, Diamonds". It should be reprinted.

See also Crossman "A complete history of watch and clock making in America (1886-1891)".

R1966 Niebling, WH**Watch repair problems and their solutions**

USA: W. H. Niebling, 2000 (1986), 30 pp, ill.

Repair (English).

It may have been reprinted in 2000.

"How to diagnose watch problems, how to pinpoint the problem area and how to solve the problems".

It includes inspection, diagnosis, adjustment, jewel repair, bridge problems, poisoning the balance, poisoning train wheels, timing screws and parts.

R1967 Niehaus, JL

R1967 Niehaus, JL

A guide to watch holders

Ohio: Hunter Printing, 1978, 8.5 x 6 inch, unpaginated, about 40 pp, 57 plates.

History (English).

1984 price list.

R1968 Niemann, H

Faszination zeit

marken, geschichte und komplikationen klassischer uhren

Germany: Delius Klasing, 2009, 21 x 14.5 cm, 231 pp, ill.

Illustration (German).

Fascination with time, brands, history and complications, classical watches.

R1969 NIHS

Normes de l'industrie horlogère suisse 1958-1978

Switzerland: , 1978, 21 x 15 cm, 126 pp, ill.

Technical (French).

Standards of the Swiss horological industry.

R1970 Nijssen, GA

FA Lange and Glashütte

Boston: Hieratic Typesetting Co, 1978, 23.0 x 15.5 cm, 128 pp, 69 b/w ill.

History (English).

A brief history of the Glashütte watch industry and the work of Adolf Lange: Introduction, Ferdinand Adolph Lange, A. Lange & Söhne, Horological school, Karl Moritz Grossmann, Assmann factory, Glashütte cottage industry, Glashütte citizens, Glashütte authors, German horological terms, References, and Lange serial number guideline.

The are 26 pages of text, the remainder being illustrations.

[1st edition, good] Although short, this book provides a useful history of Glashütte horology to the end of World war II, with the emphasis on biographies of the leading figures. It also provides lists of Glashütte makers and Lange serial numbers.

See also Lange "The revival of time, memoirs".

R1971 Nivarox FAR SA

Au coeur du temps

150 ans d'histoire des assortiments et des parties réglantes

Switzerland: Nivarox SA, 2000, 141 pp, ill.

History (French).

At the heart of time, 150 years of escapements and balance springs.

R1972 Nivarox SA

Praktische mitteilungen

uber die fabrikation und verwendung von uhrenspiralen

Switzerland: Nivarox SA, ca 1964, 15 x 21 cm, 48 pp, 34 ill.

Description, repair (German).

Practical communication on the fabrication and application of balance springs.

R1973 Niwa, Tadanaru

Tokei

Tokyo: Idea Shoin, 1951, 204 pp.

(Japanese).

Timepieces.

R1974 Noakes, A

Charles Spencelayh and his paintings

London: Jupiter, 1978, 32.5 x 25.5 cm, 190 pp, 116 ill, 61 b/w plates, 8 col plates.

Miscellany (English).

Spencelayh painted old men in antique shops repairing clocks and watches.

"Born in 1865, barely recognised for his paintings during his lifetime, despite exhibiting at the Royal Academy in 1892, continuing until 1958, the year of his death. Always painting in his own way, ignoring trends and controversies, he was never made an R.A. or an Associate."

R1975 Noel, HJ

Learn basic watch repair

USA: , 1999 (nd), 4 hours, 2 VHS video tapes or DVDs.

Repair (English).

The first tape covers basic tools and disassembly. The second tape includes cleaning by hand, assembly and the lever escapement. Each tape is about 2 hours.

Noel describes these lessons as: "Detailed instructions on how to clean movements by hand (includes breakdown part by part) using a small amount of tools and without using expensive equipment. Using a model I explain how the lever escapement works. This large model shows in detail how the impulse is passed through the escapement and the purpose of each component. This is the heart of a watch, understand how the escapement works and you have mastered what many will never understand. Emphasis is placed on lock, drop, slide, draft, banking pins, guard pin and more. Learn how: the stop works work and the proper way to time them, How to wind mainsprings by hand and by using a spring

winder. Poising and truing the balance, oiling, cleaning solutions, replacing pallet & roller jewels, hand & dial removal, replacement of a balance staff is clearly shown using the staking set and many other tools and tips. I fully explain the setting parts, and much, much more."

R1976 Noeldechen, W**Peter Hele der erfinder der taschenuhren**

Altenburg: Geibel, 1891, 17 x 12 cm, 112 pp, 4 ill.

History, miscellany (German).

Peter Hele the inventor of the pocket watch.

Described as a tale for young people.

R1977 Norgate, J; Norgate, M; Hudson, F**Dunfermline clockmakers**

up to 1900

Dunfermline: F. Hudson, 1982, 4to, 138 pp, plates.

Makers (English).

Limited edition of 600 copies.

Clockmaking in the town; Public clocks; Longcase clocks 1750-1870; Other clocks, watches and ephemera; Directory of clockmakers:

R1978 Norris, G**A time for watching**

New York: Knopf, 1969, 8vo, 82 pp, ill.

Prose (children) (English).

Childrens story of a young Swedish boy intrigued by the watchmaker's house next door and the mysterious workings of timepieces.

R1979 Nussbaum, JM**Hommage a Maurice Favre**

un homme dans la cite

La Chaux-de-Fonds: Administration du Bureau du Contrôle des Ouvrages en Métaux Précieux, 1964, 26.0 x 12.0 cm, 137 pp, ill, 7 plates.

History (French).

Numbered limited edition of 1800 copies.

History of the watchmaker Maurice Favre.

One source says he "worked as curator of the Musee d'horlogerie de la Chaux-de-Fonds where he acquired many rare pieces". It sounds like he was rather dishonest!

R1980 Nussbaum, JM**La Chaux-de-Fonds, métropole de l'horlogerie**

Chaux-de-Fonds: L'Association pour le Développment de la Chaux-de-Fonds, ca 1960, 8vo, 126 pp, ill.

History (French).

R1981 Nye, WF**Information for watchmakers and watch repairers regarding oil**

USA: Nye Lubricants, nd, 22 pp.

Repair (English).

R1982 O'Malley, Michael**Keeping watch**

a history of American time

New York: Viking Press and Penguin, 1990, 23.5 x 16.5 cm, 384 pp, 29 ill.

History (English).

A history of the development of standard time in America, focusing on the interaction of time measurement and philosophies of time on American culture and development. The book examines "natural" time, the introduction of standard time zones, the development of time efficiency, movies and daylight saving.

Six chapters: Time, nature and the good citizen (54 pages); Celestial railroad time (44 pages); The day of two noons (46 pages); Keep a watch on everybody (55 pages); Therbligs and hieroglyphs (56 pages); and The golf stick and the hoe (53 pages).

The is an epilogue (4 pages), notes (62 pages, mainly references), and index.

[1st edition, fair] Largely irrelevant to this bibliography having only a few specific references to watches, most notably a discussion of watch company advertising.

I think the argument centres around the conflict between natural "local" time and scientific "standard" time, and the cultural impacts of the transfer from one to the other. O'Malley, although vague and contradictory on this point, seems to ascribe social, cultural and economic change to time standardisation; a bit like the view that daylight saving causes curtains to fade faster. I find this unrealistic compared with the reverse view that social changes produced pressures which necessitated the development of a time industry.

An author should be able to arouse my interest and educate me. O'Malley does, but only a little. Although I find the topic fascinating, the history interesting and the anecdotal evidence enlightening, I feel the writing is pedestrian and its purpose vague.

A reasonably good book. It is a very interesting topic which deserves a more stimulating, more concise rendering.

R1983 Oberhänsli, HH

R1983 Oberhänsli, HH; Bramaz, H
Uhren von einst bis heute

Germany: Gloria Verlag, 1976, 31 x 22 cm, 160 pp, 180 ill.

History (German).

Die Zeit. Die Romer und der Obelisk. Christiaan Hygens und das Pendel. Quartzuhr.

Uhren; Chronometer; Spiralfeder; Pendel; Geschichte; Zeitgeschichte; Epochen; Historik.

R1984 Observatoire de Neuchâtel

Souvenir de son cinquantenaire

et de l'inauguration du pavillon Hirsch 1858-1912

Neuchâtel: Observatoire de Neuchâtel, 1912, 8vo, 144 pp, ill.

History (French).

Listed in Tardy.

R1985 Ohlson, Olof; Waltham Watch Co

Helpful information for watchmakers

USA: Arlington Book Co (USA: Manfred Trauring) (USA: Waltham Watch Co), 1993 (1906), 13.5 x 21.0 cm, 95 pp, ill (37 pp, ill) (20 pp, ill).

Repair, tools (English).

Many editions with at least three titles: "Hints for the watchmaker", "Helpful information for watchmakers" and "Watchmakers' handbook".

The earliest certain date is 1910, but it may have been printed before then.

Originally published by Waltham, the Arlington reprint is of the 11th edition (1937). Another edition has been reproduced privately by Manfred Trauring in 34 pp; it is virtually identical in contents, despite having fewer pages.

An undated revised edition is available as a Google Book PDF file (USA only?).

The first few pages describe features of Waltham watches: friction balance staff, balance spring stud, winding gears, jeweled barrel, recoil click, tapered steady pins and negative setting mechanism.

The main section (31 pages) gives details of the lever escapement with instructions for setting it up.

This is followed by notes on timing (principles of time, compensation balances and timing screws), measurement (micrometers, making gauges for escape wheels and the Waltham watchmakers' gauge) and repair suggestions (cleaning, casing, removing broken screws, setting jewels and hints). There are also tables of Waltham mainspring and screw tap sizes.

[11th edition reprint, good] An interesting, well illustrated book that gives some practical information about Waltham watches.

The first part is what might be called infotainment, advertising presented as information, but it does usefully describe watch features. The rest is a more substantial discussion which is of genuine value for watch repair.

R1986 Oliveira, FC de

Cronologia do tempo em Portugal

Lisbon: Lagonda, 2004, 64 pp, 101 ill.

History (Portuguese).

A 64 page linear timeline from the year 1176 to the present listing several hundred events or artefacts in the history of Portuguese timekeeping, 101 of which are illustrated.

[1st edition review by Fortunat Mueller-Maerki] The literature on horology in Portugal until recently has been meagre to non-existing. The only book on the subject I ever came across was the "Historia do Tempo em Portugal, Elementos para uma Historia do Tempo, da Relojoaria e das Mentalidades em Portugal" by the portugese journalist and watch enthusiast Fernando Correia de Oliveira, published 2003. That book, written in Portuguese, is difficult to follow for the non Portuguese speaker.

Fortunately the same author has now published a second book "Cronologia do tempo em Portugal" which although a less ambitious title is of more use to the non-Portuguese reading horological scholar.

It is a simple 64 page linear timeline from the year 1176 to the present listing several hundred events or artefacts in the timekeeping history of Portugal, 101 of which are illustrated. Items include for instance most of the significant Portugese made historic timepieces scattered around various museums in Portugal. This format makes the book usable even if you read no Portuguese, but for some reason still want to find out something on the subject of timekeeping in Portugal.

Admitted this is a tiny market niche but the author nevertheless deserves the appreciation of the global community of horological scholars for having filled it.

R1987 Oliveira, FC de

Historia do tempo

elementos para uma história do tempo, da relojaria e das mentalidades em Portugal

Portugal: FC de Oliveira, 2003, 328 pp, ill.

History, makers (Portuguese).

"A book about the history of time and it's makers; prefaced by the Portuguese President, Jorge Sampaio, and considered by critics has one of the best essay books published in that year.

R1988 Olzinn, A

Uhrensammlung Marfels

Frankfurt., 1891, 31 x 24 cm, 2 pp and 17 plates.

Collection (German).

R1989 Omega Watch Co**50th anniversary Speedmaster**

Switzerland: Omega Watch Company, 2007, 20.0 x 19.5 cm, 79 pp, ill.
Catalogue (English).

Advertising catalogue of watches produced for the 50th anniversary of the Speedmaster, 1957 - 2007.

[1st edition, good] I have included this catalogue because there is a tendency for some people to pay quite large sums for books to do with the Speedmaster watch.

This catalogue, which was available free of charge from Omega, lists the models available in the 50th anniversary collection. There are 26 pages of photographs with a little text, which describe the use of the watch in space and elsewhere. They are superficial "feel good" pieces designed to attract buyers and are almost devoid of information.

This is a nice catalogue but of little value to serious collectors.

R1990 Omega Watch Co**DeVilleville co-axial escapement**

Switzerland: Omega Watch Company, ca 2009, 21.5 x 15.5 cm, 43 pp, ill.
Catalogue (English).

No date or other publishing information.

A history of Omega (10 pages); Description of the watch (15 pages); The collection (6 pages); Description of the coaxial escapement and free sprung balance (6 pages).

[1st edition?, good] A typical piece of advertising in which Omega claims itself to be the greatest watchmaker in the world. It is saved from irrelevance by having a description of Daniels' co-axial escapement.

R1991 Omega Watch Co**Omega and the century of significant moments**

Switzerland: Omega Watch Company, 1989, 8 x 6 inch, 63 pp, ill.
Advertising (English).

"A journey through the highlights of the century in history and how Omega watches meet the demands of changing times". From Jules Verne and Amelia Earhart to going to the moon and the undersea world of William Bebe.

This book was distributed with Omega Speedmaster watches.

R1992 Omega Watch Co**The quest and conquest of time**

Switzerland: Omega Watch Company, nd, 9 x 8.5 inch, 95 pp, ill.
Description (English).

The history of time telling and timepieces, the watch a world in miniature, manufacture, beyond the watch.

R1993 Omega Watch Co**The secret of Switzerland**

Switzerland: Omega, 1950, 10 x 8 inch, 61 pp, ill.
History (English).

A centenary history of Omega from 1850: Introduction; 1950 (4 pages); An unproductive mountain (8 pages); Democracy by trial and error (8 pages); The evolution of our economy (12 pages); The meaning of smallness (8 pages), A declaration of faith (8 pages).

Described as presenting a few introductory remarks on the history of Omega, and then glorifying the philosophies and business practices which Omega feels have made it and Switzerland successful.

R1994 Omega Watch Co; Miller, I**The moon watch**

the first and only watch worn on the moon

Biel: Omega Watch Co, 1995, 32.0 x 23.0 cm, 157 pp, ill.

Description, history (English, French, German, Italian, Spanish, Japanese?).

Given to purchasers of the 25th Anniversary commemorative Apollo XI Omega Speedmaster watch, and also given to other people.

No date but 1995.

Introduction July 21, 1969; From Louis Brandt to the speedmaster professional (history of Omega); Designer of one of the century's greatest masterpieces (Albert Piguet); The speedmaster professional and its predecessors; In the service of space exploration; The speedmaster in space (list of astronauts and cosmonauts); The quality commitment; 25 years, Omega speedmaster professional 1969-1994 (description of the 1994 commemorative series); The speedmaster, a chronology; and Epilogue, testimonial of an astronaut.

[1st edition, good] Although first and foremost advertising, this book is much better than Imai "A time capsule, Omega Speedmaster". The text provides a useful, if too brief, history of Omega and the development of the Speedmaster chronograph, interspersed with the necessary photographs of astronauts, rockets, capsules and the moon. Which means it successfully accomplishes its aims.

[Remark] Who should be called the watchmaker? This question often arises. Many watches are signed by the retailer who had nothing to do with the manufacturer; a problem which frequently occurs with English watches. Much more difficult are movements which have been created from ebauches, when the signatory has acted as an etablisseeur and undertaken the finishing and adjusting. So when Rolex or

Patek Philippe use Valjoux movements should we regard the maker as Valjoux, Rolex or Patek Philippe? Similarly, many English marine chronometers were produced by buying a complete movement "in the grey" and finishing it.

Often the original "maker" is unknown and, anyway, it is generally supposed that the finishing justifies regarding the name on the movement or dial as the maker.

The Omega Speedmaster turns out to be much simpler. The movement was designed and made by Lemania. At the time, Lemania was a member of the umbrella organisation SSIH, together with Omega and Tissot. Fundamental to the structure of SSIH is that each member remained an autonomous company working cooperatively with the other members. So Tissot made movements for Omega and Omega made movements for Tissot, but both were independent entities. Likewise, Lemania was a separate, independent company within SSIH.

So should the watch be called the Lemania Speedmaster or the Omega Speedmaster? Although not stated, there must be some doubt about whether Omega did anything, other than sell the watches. Certainly many (presumably the majority) were sold unadjusted, as can be seen from movement photographs, and so Omega probably did no more than sign them, assuming Lemania did not make them already signed "Omega". It doesn't really matter and the watch will always be an Omega watch, but I feel a bit sad that Lemania's pivotal role has been almost completely ignored.

R1995 **Oppliger, Simone**

Quand nous étions horlogers

images-portrait de mon pays

Lausanne: Payot, 1980, 21.5 x 18.5 cm, 119 pp, b/w plates.

History (French).

When we were watchmakers, portraits of my country. A photographic and prose essay illustrating the effects of the decline of the Swiss industry at the time of the quartz crisis.

[1st edition, excellent] *Oppliger was born in Renan in the Jura and both her father and uncle worked in the Swiss watchmaking industry. She trained as a photographer and worked as a journalist, travelling extensively in South America.*

This book is a result of returning to her birthplace where she found reality at odds with her memories. Being from a working family she visited places, took photographs and asked questions in order to understand what had happened to Renan. And so, to some extent, this is a personal catharsis, coming to grips with grief and the futility of attempting to recapture the past. But it is also a fascinating, sad story of what happened to the watchmakers, the unknown workmen in the small factories.

Oppliger repeatedly presents stark contrasts between our "public" perception and private lives. As when she meets Charles, a part-time guard at the Musée International d'Horlogerie with its "large underground buildings, sumptuous windows and audio-visual displays". Or when she describes the suicide of the owner/manager of Iga, a case manufacturer. Most importantly, the people she interviews instil in us the sense of insecurity and neglect which they felt as management closed factories and re-organised into large, automated and impersonal production lines. But for these people their ethics and their "work station" was part of their life, and "to have your nose thirty centimetres from a board for decades, that marks the personality".

Not that Oppliger is unaware of the cause, and the quartz watch and cheap foreign manufacture loom in the background. Nor does she ignore the anguish of the small factory owners, forced into bankruptcy or swallowed up by conglomerates.

The book concludes with a section headed "Grey coats and white coats" (echoed by the final photograph of a grey and white striped cow in a deserted field) which comments on the change from artisan to technician. To paraphrase Oppliger "the historical bond between man and the watch industry is broken ... the pleasure of working on a movement, like a living heart, with beautiful tools will become a rare luxury and the emotional relationship between the watchmaker and his work has been lost ... the factories of tomorrow will be coldly standardised and the workmen, if they can, will cling to their secret gardens". This book is not a coherent history, just a few fragments giving us a glimpse into the lives of ordinary workers. But it has a power and sincerity missing from many "better" works.

Two photographs and some extracts are given in Landes "Revolution in time".

R1996 **Ord-Hume, Arthur**

The musical clock

musical and automaton clocks and watches

England: Mayfield Books, 1995, 25.5 x 19.5 cm, 352 pp, 97 ill, 365 plates.

History, technical (English).

A history of the musical clock in Britain, Europe and America. There are 13 chapters, a bibliography and a discography. Chapter 10 "Musical and automaton watches" (15 pages) is the only section on watches. Chapter 13 (63 pages) is an extensive list of makers.

[1st edition, good] *The chapter on watches contains a history of musical watches and details of the main types of mechanism. It then gives some information about automaton watches, including erotic watches, but does not provide technical information. Although the book contains a number of colour plates, all illustrations of watches are monochrome.*

R1997 Oregon Vocational Education; Valentine, MO; Gilles, DM**Course of technical information**

for clock and watch repairman apprentices

Salem: Oregon Dept of Vocational Education, 1950, 28.0 x 21.5 cm, preface of 10 pp, 11 parts of 331 pp, no ill, and 65 assignments of about 200 pp, no ill.

Repair (English).

A study guide for use in apprentice training courses containing 11 sections: Basic bench work, Cases and casing, Cleaning and oiling, Winding and setting devices, Barrel and mainspring assembly, Wheel arbor and pinion work, Pivoting and jewelery, Escapement, Regulating organ, Errors and their correction, and Clock repairing.

Each part contains a number of assignments which consist of an introduction, objectives, study guide text and a test. The whole is prefaced by a list of 2 compulsory text books (de Carle "Practical watch repairing" and Bulova "Training units") and 14 optional references.

[1st edition, fair] This manual was designed to be used in classes (as opposed to work experience) and "covers the related technical information". The majority of it simply gives aims and then references to books in which the relevant material will be found. In some places details are provided to supplement the books or remarks on alternative approaches are given. As can be deduced from the prescribed texts, it contains no theory or technical information and is a class-based practical course.

Taken out of context it is pretty useless. But in conjunction with the references it would have provided a quite interesting guide to learning watch repair. Its only value now is curiosity.

R1998 Oris Watch Company**Oris 100 years**

Switzerland: Oris SA, 2004, 18.0 x 25.5 cm, 180 pp, ill, slip case.

Catalogue (English).

Nine sections: The Oris history, Oris High Mech, The classical watches, The jazz watches, The pilot's watches, The Oris Williams F1 team watches, The diver's watches, The Oris film is about to start, and Watch encyclopaedia.

[1st edition, good] This is a glossy, well produced catalogue of Oris watches. It begins with a 28-page history of the company, founded in 1904 and then illustrates different watch collections. It ends with a glossary of terms and a few questions, that Oris watch owners might ask, with answers. There is not much text, most of the book being dial views of watches.

Like most such catalogues, Oris gives the impression that it is the only important watchmaker in Switzerland and its watches are the most innovative and collectable.

Oris started out making good quality pin lever watches for the low end of the market. When the mechanical watch market crashed, Oris was absorbed into ASUAG and required to make inexpensive watches "not a very successful strategy". Since then the company seems to have found a niche making limited edition watches for "status" collectors and, presumably, similar watches for the general market; these watches are good quality but Oris was restricted to producing watches selling for less than USD2,500. The watch collections illustrated include some interesting designs and the company has clearly moved up-market in the post-quartz era.

As a piece of advertising this is a very good book. But it is of little interest to people who want to learn about the history of the company or the movements of its watches, although it does have a little information on dial making and case design. However, it is much better than nothing.

R1999 Osborne, C**Some notes on the Prest family**

London: Antiquarian Horological Society, 1962.

History (English).

Reprint from the journal of the society, volume 4, 1962.

R2000 Osborne, C; Heaps, J**Essex clock and watchmakers**

England: C Osborne, 1979, 24 pp, ill.

Makers (English).

See also NAG Press "Watch and clock year book", 1963 in which there is a four page listing by Osborne titled "Clock and watchmakers of Essex".

R2001 Osborne, FL**The watchmakers' guide**

in modern watch repairing and adjusting, encyclopedia complete

Chicago: Henry Paulson & Co., 1935, 55 pp, ill.

Repair (English).

R2002 Osterhausen, F von**Paul Ditisheim, chronométrier**

Neuchâtel: Editions Simonin, 2003, 28 x 24.5 cm, 135 pp, ill.

History, dating, identification (French, German, English).

Parallel German and French text?

Biography and study of watches and marine chronometers made by Paul Ditisheim.

There is a supplemental English volume by Fortunat Mueller-Maerki (2004) containing a Synopsis and translated extracts.

R2003 Osterhausen, F von**R2003 Osterhausen, F von
Taschenuhren**

von der balkenwaag des mittelalters zur integralunruh der gegenwart, ein handbuch für liebhaber und sammler.

Munich: W. Heyne, 1997 (1993), 21 x 14 cm, 280 pp, 135 ill.

History, collecting (German).

Pocket watches from the foliot of the middle ages to the integral balance of the present. A handbook for collectors.

In three sections:

History: Small clocks, Peter Henlein, Development in 16th century, Spiral spring, English watches and watches from other countries, Precision watches, Japy, Lepine, Breguet, Regional history of development in Italy, Germany, France, Austria, Switzerland, England and the USA.

The mechanism: Drive systems, Trains, Escapements, Karussells, Auxiliary mechanisms, Chronographs, Calendars, Cases.

Collecting: Market report, Buying, Restoration, Fakes.

Biographies of 48 makers from Henlein (1479) to Helwig (1974).

R2004 Osterhausen, F von**Taschenuhren (Battenberg antiquitäten katalog)**

Munich: Bechtermunz Verlag, 2003 (2000), 25.5 x 21 cm, 172 pp, 400 ill.

Catalogue, illustration (German).

Concise general guide to pocket watches from the mid-16th century to the present. It includes a glossary and a short bibliography.

R2005 Osterhausen, F von**Taschenuhren, antiquitäten katalog**

1995, 26 x 21 cm, 240 pp, 480 ill.

Catalogue, price guide (German).

Pocket watch price guide for collectors with actual market prices.

R2006 Osterhausen, F von**The Movado history****Die Movado history**

USA: Schiffer (Munich: Callwey), 1996, 28.5 x 25.5 cm, 234 pp, ill, 270 ill.

History, identification, illustration (English, German).

History of Movado in 3 sections:

The past (155 pages): Early family history, The beginning, 1905, Patents from 1902-1912, 1912 the Polyplan, Catalogues, 15 years of Movado from 1910-1925, Movement calibres, The first world war military or soldier's watch, Art deco, 1926 Ermeto, Chronometer trials, Automatic winding, The museum watch, 1960 the path to El Primero, 1969-1983 the years with Zenith.

The present (30 pages): Acquisition and new start, Organisation, Artist watches: (Warhol, Rainbow collection, Arman's, The color of time; James Rosenquist's Elapse, Eclipse, Ellipse; Max Bill's Bill-time; Romero Britto's The children of the world), The Bauhaus watch, Further models, Specials, Famous owners of Movado watches.

Appendices (38 pages): Movado numbering and reference systems, Complete list of all Movado mechanical watch calibres 1910-1980, Results of Movado pocket/deck watches, Observatory wrist chronometers, Movado inventions and patents, Swiss case makers, Museums in which Movados are found.

Bibliography, and Index.

[1st edition, very good?] Unlike some other single maker books, this survey of Movado is good and, has lots of useful information about the company, its history and its products. Osterhausen strikes a good balance between the need for adulation and a serious study of Movado. Consequently it is well worth reading if you are interested in or collect watches made by this company.

As with others of these books, there is no examination of the context in which Movado existed; this is annoying because it is not possible to understand Movado's place in Swiss watchmaking.

R2007 Osterhausen, F von**Uhren lexikon**

Munich: Callwey, 1999, 25 x 17 cm, 372 pp, 512 ill.

Dictionary (German).

Over 2900 words.

"The standard work for timepiece lovers".

Osterhausen has also produced "Das grosse uhren lexikon", 2005, 372 pp, over 2800 words.

R2008 Osterhausen, F von**Wie kaufe ich eine alte armbanduhr**

Munich: Callwey, 1997 (1993), 22 x 13 cm, 176 pp, ill (180 pp, 149 ill).

Collecting (German).

Two editions.

How to buy an old wristwatch, advice for collectors.

R2009 Osterhausen, F von**Wristwatch chronometers****Armbanduhren chronometer**

mechanical precision watches and their testing

mechanische präzisionsuhren und ihre prüfung

Munich: Callwey; USA: Schiffer, 1997 (1990), 29 x 26 cm, 216 pp, 427 ill, 46 tables (144 pp, 270 ill).

History, illustration, technical (English, German).

Separate German and English editions with price guide.

Contains two sections: Testing procedures and Descriptions of watches.

It includes detailed procedures and standards to gain a Kew or Neuchatel certificate, describes 182 chronometers and lists over 300 Swiss manufacturers.

[Review by Eileen Doudna] *Written by noted watch expert Fritz von Osterhausen and published originally by Callwey (Armbanduhren, Chronometer: Mechanische Präzisionsuhren und Ihre Prüfung) this is available now for the first time in an English translation. This volume continues the excellent quality of horological publications one has come to expect from Callwey publications published in English versions by Schiffer.*

The introduction presents the difficulty, if not impossibility, of distinguishing a mechanical chronometer wristwatch from a normal mechanical wristwatch of the same caliber. The difference, the author explains, lies in the regulation of the watch. The introduction discusses this process and the regulators (people) who did it. A brief section on terminology clarifies the meaning of the words chronometer and chronometry.

An extensive section deals with chronometer testing at Swiss observatories, as well as in Germany, France, England and the U.S. But the greatest attention is given to Swiss testing where the development of testing and the introduction of guidelines took place and where most chronometer wristwatches were manufactured and tested. This section on testing will answer most, if not all, of the questions the collector has on the tests.

The next section deals with collectors' questions; rates of chronometer wristwatches, types of errors, 12 tested chronometer wristwatches, the possibilities of re-regulation to consider before restoration, collecting chronometer wristwatches and forgeries are covered.

More than half of the book is devoted to the watches themselves, presented in alphabetical order. A brief description of each watch is given with two photographs, many in color, of each watch. The watches of sixty companies are shown.

The appendices include a list of Swiss chronometer wristwatch makers, a bibliography, a price guide, and a thorough index.

This is a beautiful book. The photos are clear and detailed. The historical and technical information given is thorough and reflects well the author's knowledge and research skills.

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[Remark] *One source describes it as a pretty picture book.*

R2010 Osterwald, FS**Description of the mountains and valleys of Neuchâtel and Valangin****Description des montagnes et des vallées qui font partie de la principauté de Neuchâtel et Valangin****Voyage en pays neuchâtelois au XVIII siècle**

qui font partie de la principauté de Neuchâtel et Valangin

Australia: Richard Watkins (La Chaux-de-Fonds:) (Berlin: J. Bernoulli) (Neuchâtel: Samuel Fauche), 2008 (1766), (16.5 x 11.0 cm), 33 pp, fld map (94 pp, 60 ill, 1 map) (133 pp, no ill).

History, makers (French, German, English).

First written as an article in the Journal Helvétique (1764, 56 pp) and then an expanded second edition as a separate book in 1766. The second edition probably had a map, but the only copies I have seen do not include it.

There is a 1913 "reprint", "Voyage en pays neuchâtelois au XVIII siècle", edited by A.G. Berthoud and with an introduction by Chapuis. It is listed in Gardner "Catalogue of the Torrens collection", under Osterwald's title Banneret (baronet), and in Tardy. It is also mentioned in a couple of articles. It seems to be rare.

The English translation is a 33 page PDF file and includes the map from Bernoulli "Beschreibung des Fürstenthums Welsch-Neuenburg und Vallengin" (which see).

Description of a trip through Neuchatel and Valangin made by Osterwald and a friend in 1764. Osterwald describes natural features (especially caves) and water-mills, and provides notes on local industries.

There is some mention of clock and watch makers.

[2nd edition 1766, very good] *From a horological point of view, this book is of marginal interest. Makers are mentioned and a couple of clocks are described, but the remarks are general, as we would expect in a travel diary. The most relevant section is where Osterwald describes the origins of watchmaking in Neuchatel and Daniel JeanRichard. Jaquet and Chapuis (in "Technique and history of the swiss watch") state that this book contains the first mention of JeanRichard.*

Despite its limitations, I found the book fascinating. Especially interesting are the descriptions of water-mills and caves, and Osterwald's concern that forests were being destroyed and the land devastated to support industries.

*Parts of this book are quoted in Jaquet and Chapuis "Technique and history of the swiss watch" and Mestral "Daniel Jeanrichard, founder of the Jura watch industry 1672-1741".
Osterwald founded the Typographical Society of Neuchatel and was a baronet of Neuchatel.*

R2011 Ott, J

Germany military wristwatches**Deutsche militärarmbanduhren**

service wristwatches 1935-1945

dienstuhren 1935-1945

Germany: Jens Ott, ca 2003, 45, 49 pp, ill.

Identification, illustration (English, German).

Bilingual German-English text.

The history and compilation of serial numbers of wrist watches issued to the German military during World War II.

R2012 Ottema, N

Geschiedenis van de uurwerkmakerskunst in Friesland

reprint (Assen: Van Gorcum), nd (1923), 23 x 15 cm, 132 pp, 43 ill (38 pp, 4 plates).

Biography, history, makers (Dutch).

Tardy gives the title as "Bijdrage tot de uurwerkmakers in Friesland".

The reprint is of the 1948 edition.

History of Dutch watch and clock makers in Friesland including a listing of makers.

R2013 Otto, H

The first lever watch with free balance

invented and made by Thomas Mudge

London: Terry Herbert & Co., 1931, 22 pp, 20 ill, 1 plate.

History (English).

Reprinted from the Horological Journal, Nov 1929 to May 1930.

Allix "Postal bid catalogue 1" says that Otto incorrectly drew the escapement and later tried to have all copies destroyed. As a result it is rare.

R2014 Overall, F

Catalogue of books, manuscripts, ...

... specimens of clocks, watches in the library and museum of the Clockmakers Company

London: privately printed, 1898 (1875), 205 pp (103 pp).

Collection, bibliography (English).

There seems to be some confusion over the Clockmakers Company catalogues, several having been produced under different titles, the first in 1830. The most common title is "Catalogue of books, manuscripts, specimens of clocks, watches ... in the library and museum of the Clockmakers Company". But the generic title "Catalogue the library of the Clockmakers Company of London" is sometimes used.

See also Nelthrop "A catalogue chronologically arranged ...".

R2015 Overton, GL

Clocks and watches

England: TEE Publishing (London: Sir Isaac Pitman), 1992 (1922), 7.5 x 5 inch, 127 pp, 27 ill.

History, technical (English).

Originally published in the series "Pitman's Common Commodities and Industries".

11 chapters covering time, clock and watch mechanisms, electric clocks and the trade.

An introductory book.

R2016 P, C

Au pays des montres

Le Locle et sa chronométrie

Neuchâtel., 1900, 16 pp, ill.

(French).

Listed in Tardy.

The land of watches, Le Locle and its chronometry.

R2017 Pahlow, S

The classic pocket-watch case**Das klassische taschenuhrehäuse**

design, casemaking, maintenance

Bad Nauheim, Germany: S. Pahlow, 2010 (1987), 4to, 160 pp, 151 ill (99 pp, ill).

Watch making (German, English).

Published in German in 1987 an 2006, both limited editions. Published in English in 2010

Detailed description of how to make a case for a pocket watch.

[2nd edition] *I have not read this book, but I have been told:*

"There are only a few books available on this subject and a DVD of Martin Matthews making one of his cases. I have nothing but high regard for Mr Pahlow adding his book to a very short list.

The book has wonderful illustrations and photographs which enable you to follow the classic method of case construction and which also capture Mr Pahlow's enthusiasm for a subject clearly close to his heart. There are some grammatical errors and the translation has to be read again for clarity every once in a while".

R2018 Pahlow, S

Tourbillon, about my passion**Tourbillon uhr, uber meine passion**

Bad Nauheim, Germany: S. Pahlow, 2008 (2001), 26 x 19.5 cm, 544 pp, ill, plates.

Description, technical (German, English).

Limited edition of 100 copies. Reprinted?

The English translation was published in 2008.

“Steffen Pahlow made some tourbillon pocket watches using the design of Glashütte ... he talks about himself, about relations, about watches ... reports about his passion, about watchmaking ... shows engineering drawings, details, photos, documents and all components in more than 147 drawings and explains the components and their functions, terms dimensions, wheel sizes, materials.”

The book describes the design of Lange & Söhne tourbillons and includes complete information on designing and building tourbillon watches with structural drawings.

Preface (26 pages) followed by 4 chapters: Prolog (46 pages, photographs, Time travel, Books); The tourbillon (328 pages); Handcraft (72 pages, including making escape wheels, spring detents, grinding and polishing, making dials, silvering, gilding and engraving); and Memories (60 pages, including a section on Lorch tools).

The main chapter includes Making the plates and pillars; The winding mechanism; The center-wheel and motion-work; The fusee; Up-and-down work; The barrel, mainspring and fusee chain; The third wheel; The tourbillon cage; The escape wheel; The balance and staff; The spring detent escapement; The dial and hands; and The case.

[1st edition, anonymous review] *“This is a unique book. It was written by an exceptionally-gifted watchmaker who also happens to be extremely passionate about horology and the tourbillon watch. It’s aim is to teach the reader how to make a complete pocket watch with a tourbillon from scratch, but not having read the whole book or made a tourbillon watch, I cannot comment for how complete and effective the instructions are. The book is very technical, fussy and precise, and is profusely illustrated, with all the photos and beautiful illustrations are in colour; even the text is in colour. I have never seen a book with so many detailed drawings on one watch.*

In my opinion, the book is not a blueprint but rather, a detailed discussion on how to make a tourbillon. So many of the details that go into making a regular watch movement are not described adequately for someone unfamiliar with producing an ordinary movement. You have to already know how to make a simple watch.

You have to read the book from cover to cover to really make proper use of it. It does not have an index but does have a very detailed table of contents; only when you have read the book and made notes will you know where to find everything and be able to take advantage of all the information. However, it does have an incredible amount of illustrations to aid look-ups.

The book also has a light side in which the author recounts the history behind the tourbillon and his own personal journey in making his watches.

An amateur can read the book, but making a tourbillon is not at all an amateur’s project. The enthusiast will learn what is involved but will have to “pay all his dues” and learn everything about making simple watches before attempting such a project.

If you are very interested in tourbillons I think you really have no choice but to somehow get your hands on a copy of the book. Price is a subjective matter. It didn’t bother me, but for some people this would come across as an expensive book. Limited run books are always expensive. But on the other hand, if you deem this book expensive then you should also stay away from anything to do with tourbillons.

In my opinion, the author has made a reasonable effort to produce a quality item. The colour photos in this book are not the sharpest but are suitable for the task and I have seen far worse in professionally-published books. The colour technical drawings are excellently reproduced. The printed text is in larger-than-normal font size, and is easy to read at arm’s length (very handy for the retired, older generation of watchmakers).

The book was originally written in German and the English version is a translation made by Steffen Pahlow. He notes that he expects English readers may stumble across a few odd sentences. I find the English translation generally straightforward although sentence structures do often reflect the original German text and so non-German speaking readers will notice it. But idiosyncratic German sentence structure has mainly to do with emphasis constructed by ordering ideas in particular sequences with precise attention to punctuation, and so attentive readers will find it logical and should be able to follow the discussions and get used to this “German accent”. It’s a bit like reading English written in the 19th century and earlier, or like listening to a German speaking good English but with the odd sentence structure from a German perspective, sounding somewhat antiquated and formal in mannerism. A few words in German do crop up in one or two labels inside drawings that were originally labeled in German but everything else is in English.”

[Remark] *The only part of the book that I have read is the Preface. Unfortunately the English is poor, to the extent that I am not sure what some sentences mean. However, the preface expresses opinions which can be difficult to translate into good English. In contrast, the bulk of the book is technical writing which, even if poorly expressed, may be perfectly intelligible. And so I do not know if the language problems cause any serious difficulties with understanding the core material.*

R2019 Paley, W**Natural theology**

Paley's theology with illustrations, or evidences of the existence and attributes of the deity, collected from the appearances of nature illustrated by plates and notes of James Paxton

Boston: Gould Kendall & Lincoln (Boston: Hilliard, Gray & Little, 1860 (1827), 8 x 5 inch, 342 pp, 39 plates (36 plates).

Miscellany (English).

The 1860 edition is available as a Google Book PDF file.

The first plate illustrates the parts of a watch; the barrel and chain, fusee, balance and verge, etc. The other plates illustrate natural "mechanisms" suggesting that a master "watchmaker" has created the elaborate machinery that controls plants and animals.

See also Martin "*Mechanicus and Flaven or the watch spiritualised*".

R2020 Palmer, B**The romance of time**

New York: Clock Manufacturers Association of America, 1954, 11 x 9 inch, 55 pp and advertisements, ill. History (English).

Spiral bound.

A history of the American watch and clock industry with the focus on clocks.

R2021 Panckoucke, CJ**Encyclopédie méthodique**

Paris: Charles Joseph Panckoucke, 1784, folio.

(French).

Panckoucke attempted to produce a revision of Diderot and d'Alambert "Encyclopédie ou dictionnaire raisonne des sciences" organised by subject instead of alphabetically. It was produced between 1782 and 1832 when publication stopped after some 169 volumes of text and 159 volumes of plates had been printed, but with it still incomplete.

The horology section (in Volume 3, 1784) consisted of 68 plates and 206 pages of text by Berthoud, Le Roy, Romilly and others.

Crom "*Horological shop tools 1700 to 1900*" reproduces a few plates.

R2022 Panerai**Panerai style book****Panerai style book II**

Japan:, 2004 (2001), 28 x 21 cm, 111 pp, ill and 127 pp, ill.

Description (Japanese).

Two separate books printed in 2001 and 2004 with English titles.

A catalogue of Panerai watches with a history of the company.

See also Negretti "*Legendary watches, Officine Panerai*" and Zei "*The Panerai in Florence*".

R2023 Panicali, R**Watch dials of the french revolution 1789-1800****Cadrans de la révolution 1789-1800****Zifferblätter der französischen revolution 1789-1800**

Lausanne: Scriptor, 1972, 26.0 x 20.5 cm, 39 pp, 6 fld plates.

History (English, French, German).

Parallel French, English and German text.

Four introductory pages followed by descriptions of 50 watch dials which are illustrated in the plates.

[1st edition, very good] *The introduction gives a summary of the symbolism used in France at the time of the revolution. The 50 dials, each with a clear description, display socio-political mottos and symbolism.*

A beautifully produced, educational book which makes common dials look so boring!

R2024 Pannier, R**Collectable wristwatches**

Paris: Flammarion, 2001, 14.0 x 14.0 cm, 382 pp, about 500 ill.

Illustration (English, French).

Separate French and English editions.

An introduction providing a terse history, a glossary, and 7 chapters (mechanical, chronograph, designer, professional, automatic, electric and electronic, and complex). With an index and references.

[1st edition, mediocre] *The body of the book has one watch (occasionally 2 or more) illustrated on each page with brief general comments. All illustrations are dial views and there is no technical information. A few terms are defined in the glossary including "vortex", which is apparently something Breguet invented (perhaps a whirl-watch?).*

One source describes this as "an acceptable introductory book". In fact it is just a collection of pretty photographs with some fun remarks.

R2025 Pannier, R**La folie des montres**

Paris: Flammarion, 2000, 14 x 14 cm, 378 pp, ill.

Illustration (French).

Watch madness. Mechanical, chronograph, automatic, electronic and complicated watches.

R2026 Pannier, R**Montres, l'inventaire du connaisseur**

2007 (2004), 24 x 18 cm, 224 pp, ill (220 pp, ill).

Illustration (French).

Illustrations of wrist watches from "the most famous" companies with manufacturer histories and price estimates.

R2027 Paris, S; Donat, MH**La réparation en horlogerie**

Paris: , 1949 (ca 1927), 103 pp, 120 ill.

Repair (French).

R2028 Parisi, B**Catalogo dell a collezione delle piane di orlogi da petto e da tasca**

Milan: Ricordi, 1954, 4to, 71 pp and 16 plates, 72 ill slip case, supplement.

Collection (Italian, English).

Limited edition of 500 copies.

There is also a supplement and English translation.

71 pages of text are followed by 19 colour and 72 black and white illustrations which show 146 watches including 16 enamel cases.

Some of the watches came from the collection of von Hartogensis, which had been sold in 1925.

R2029 Parker, PM**The 2007 import and export market in China**

: ICON Group International, 2006, 9 x 7 inch.

Miscellany (English).

A number of booklets covering different aspects of the 2007 import and export market in China. They include:

"Clock and watch glasses, glass for spectacles not optically worked, and hollow glass spheres and segments for sphere manufacture", 38 pages.

"Complete and assembled watch movements", 34 pages.

"Metal watch straps, watch bands, watch bracelets, and parts thereof", 34 pages.

"Pocket watches and other watches with cases made of neither precious metal nor clad with precious metal excluding wristwatches", 52 pages.

"Unassembled or partly assembled complete watch or clock movements, assembled incomplete watch or clock movements, and rough watch or clock movements", 34 pages.

"Watch cases and parts of watch cases", 32 pages.

"Watch straps, watch bands, watch bracelets, and parts thereof excluding metal varieties", 42 pages.

"Wristwatches with cases made of neither precious metal nor clad with precious metal excluding battery-powered watches", 52 pages.

"Wristwatches with cases made of precious metal or clad with precious metal excluding battery-powered watches", 28 pages.

"Wristwatches, pocket watches, stopwatches, and other watches with cases made of precious metal or metal clad with precious metal", 54 pages.

R2030 Parr, EA**The last American whale-oil company**

a history of Nye Lubricants, Inc., 1844-1994

USA: Nye Lubricants, 1996, 10.5 inch, 103 pp.

History (English).

Whale oil was sold by Nye as recently as 1978 and the company is still selling highly refined synthetic oils.

R2031 Parr, M**Saddam Hussein watches**

collection Martin Parr

London: Chris Boot, 2004, 15 x 12 inch, 36 pp, 35 ill.

Collection, illustration (English).

Loose leaf folio containing colourfully printed watch photos, depicted on a pale yellow background; all in a resealable gold-foil mylar bag.

Limited edition of 2000 copies with 500 copies available for sale to the public.

34 full page photographs of watches with photographic portraits of Saddam. Also included is a gold pocket watch featuring Osama Bin Laden and a gold, diamond-encrusted Rolex Oyster. It includes watches made during his reign as dictator of Iraq through to American-made watches with anti-Hussein slogans.

Produced for an exhibition at the 2004 Rencontre D'Arles Photography Festival of watches Parr collected depicting the image of Saddam Hussein.

R2032 Parr, W**A treatise on pocket watches**

London: W Parr, 1804, 8vo, 56 pp, 1 plate.

Description (English).

"Pointing out the defects so generally complained of in their construction. Also stating, from the most

correct mathematical principles, a general rule, adapted to mechanical practice, by which manufacturers may effectually avoid all irregularity in the formation of a watch.”

R2033 Parsons, CS**New Hampshire clocks and clockmakers**

USA: Adams Brown, 1976, 4to, 355 pp, 550 ill.
(English).

This is included because a prominent horological book seller gave the title as “New Hampshire clocks and watches”, thus misleading me for several years. But it may include watch makers.

R2034 Partington, CF**The clock and watch-makers' complete guide****L'art de l'horlogerie**

comprehending the early history of the art, its present progressive improvement, and present state, theoretical and practical.

London: E. Churton (Paris: Audin) (London: Sherwood, Gilbert and Piper), ca 1830 (ca 1825), 21.0 x 13.5 cm, 96 pp, 29 ill, 2 plates.

Description, bibliography, technical (English).

The book is undated but all references give it as 1825. It has been “printed” at least twice, as a separate monograph and as the first part of Partington’s “The mechanics’ library or book of trades” (which see).

Another source lists an extract from the “Mechanics’ Gallery of Science and Art” of 48 pp, which is probably the first half of this booklet (pages 1-48 are self-contained).

Dubois “Histoire de l’horlogerie” indicates it was translated into French in 1827.

Title page (reproducing the illustration from page 45) followed by an advertisement for “The mechanics’ library or book of trades”, table of contents, 2 plates, and the text.

After an 8 page history, pages 9 to 56 discuss clocks: gears, trains, terminology, clock escapements (mainly Vulliamy’s), pendulums (including how to make one), 3-wheel clocks, striking mechanisms and clock-making trades. Pages 57 to 83 cover watches: the common verge watch, fusees, compensation balance, cylinder escapement, tables of watch trains, rolling watch, repeater and alarm. The book concludes with a 9 page bibliography of articles in journals.

[1st printing?, fair] The title is rather grandiose compared with the uninspiring content, about which I can’t think of much to say.

The examination of gearing in the section on clocks is interesting, including a criticism of Derham and an outline of circa 1800 methods. Considering that Hawkins translation of Camus had been available for about 20 years some of the ideas are strange. The section on watches is technically descriptive and most notable for a detailed examination of the cylinder escapement. Finally, the bibliography (titled a chronological account which it isn’t!) is tantalising rather than useful.

One statement deserves citing: “... stack-freed, consisted of two springs, somehow opposing each other’s action alternately, in a way that has never been well described ...”. This ridiculous statement is actually a direct quote from Rees “Clocks, watches and chronometers” and raises the question (which I haven’t researched) how much was simply re-worded from other sources?

Overall it is quite interesting historically, but not inspiring.

R2035 Partington, CF**The mechanics’ library or book of trades**

London: E. Churton, ca 1835, 23.0 x 14.5 cm, 592 and 144 pp, 114 ill, 14 plates.
Technical (English).

I presume each part (see below) was printed separately (the 1st printing) and then combined into a single volume (the 2nd printing). The section on shipbuilding has separate page numbering but the plates are numbered 12, 13 and 14 following on from those of the previous sections.

The advertisement in the separate printing of “Clock and watch-makers’ complete guide” is for the 2nd edition of the “Mechanics’ library” and offers a smaller selection of parts for 7/- bound in cloth. However, the parts listed do not form a sequence of page numbers, omitting engraving, coachmaking and printing which (as well as shipbuilding) are offered as separate monographs. The total cost of all parts was 16/- as against 15/- for the bound set I have. It seems likely that the parts were printed once and sets bound at a later time.

The text incorrectly refers to plates number 2 (watch regulators) and number 11 (painting) suggesting the text and plates were brought together from different sources; there definitely is no evidence that the horology section was revised at any time.

Printed by Knight and Bagster.

“A series of distinct treatises and practical guides on the following subjects: Architecture, Carpentry, Joinery, Bricklaying, Plastering, Masonry, Brickmaking, Painting, Glazing, Plumbing, Clock & watch-making, Coachmaking, Engraving, and Shipbuilding. Combining all the advantages of a large and expensive cyclopaedia at a comparatively small cost.”

There are eleven sections which, in order, are: Clock & watch-making (96 pp, 29 ill, 2 plates), Engraving (48 pp, 7 ill, 1 plate), Coachmaking (48 pp, 4 ill, 1 plate), Printing (96 pp, 32 ill, 3 tables, 2 plates), Building (64 pp, 3 ill, 1 table, 1 plate), Bricklaying (48 pp, 4 ill, 1 plate, including brickmaking), Masonry (48 pp, 1 plate, including plastering), Carpentry (48 pp, 19 ill), Joinery (48 pp, 3 ill, 1 plate), Painting & plumbing (48 pp, 2 ill, 1 table, 1 plate, including glazing by which is meant varnishing), and Shipbuilding

(144 pp, 11 ill, 6 tables, 3 plates).

The section on Clock & watch-making omits the title page, advertisement and table of contents which are in the separate binding (and this presumably applies to the other sections). Otherwise it is identical in all respects.

[3rd printing?] See Partington "The clock and watch-makers' complete guide". Partington also "invented" a water clock; see Brown "Die neuesten erfindungen und verbesserungen in der uhrmacherkunst".

R2036 Parvulesco, C

50 montres qui on fait l'histoire

France: ETAI, 2010, 29 x 24 cm, 160 pp, ill.

History (French).

"Très bel ouvrage de référence pour les collectionneurs présentant dans son contexte historique et horloger, cinquante des montres les plus significatives, qui sont en lien avec une célébrité, par le rôle qu'elles ont joué dans l'histoire du monde ou de l'horlogerie.

De nombreux documents viennent illustrer l'histoire de ces montres, objets personnels, souvent porteuses de charge affective ou d'une symbolique forte que des personnages célèbres ont apprécié: de Marie-Antoinette et sa Breguet à Santos Dumont et sa Cartier en passant par J.F. Kennedy, Elisabeth II, Buzz Aldrin et son Omega Speedmaster, Che Guevara et ses Rolex, Steve Mc Queen et sa Tag Heuer ainsi que tant d'autres.

Sont également évoqués les premiers chronomètres de marine, les montres-bracelet et autres chronographes militaires rendus célèbres par les as de l'aviation."

R2037 Parvulesco, C

L'encyclopédie des montres

France: ETAI, 2000, 11 x 10 inch, 192 pp, ill.

Illustration (French).

Illustrations of about 500 mechanical watches by Audemars Piquet, Baume & Mercier, Breguet, Breitling, Cartier, Bovet, TAG Heuer, A. Lange & Söhne, Piaget, Jaeger-LeCoultre, Longines, Omega, Patek Philippe, Rolex, Zenith etc. With some text.

R2038 Parvulesco, C

L'heure en mer

une histoire de chronomètres

France: ETAI, 2010, 175 pp, ill.

History (French).

"Sans les instruments de navigation, la maîtrise des mers et la découverte de nouveaux continents eût été impossible. De lastrolabe des anciens à la boussole, puis aux octants et aux chronomètres de la compagnie des Indes, l'histoire des instruments de navigation est celle de la conquête des mers et des routes maritimes. Cette formidable aventure est née de la rencontre entre la connaissance des gens de mer et le génie des ingénieurs, horlogers et astronomes. Ce livre nous en retrace l'histoire exaltante, par le récit de l'invention, de la mise au point et enfin du triomphe de ces instruments de précision aussi esthétiques qu'efficaces, et qui ont été des siècles durant les seuls outils des navigateurs."

R2039 Parvulesco, C

Montres à complications

France: ETAI, 2009, 29 x 24 cm, 175 pp, 500 ill.

Illustration (French).

"With this book dedicated to these masterpieces of high precision mechanics, which are certainly the most beautiful part of the history of watchmaking, discover the heights of haute horlogerie yesterday and today."

R2040 Parvulesco, C

Montres militaires

France: Cedex, 2007, 30 x 25 cm, 176 pp, 300 ill.

Illustration (French).

"A description of robust and precise Swiss, German, French, British, Italian and Russian military watches, from a 1760 British chronometer and Napoleon-era timepieces to WWII wristwatches and the Bell & Ross Aeronavale produced in 2007.

R2041 Parvulesco, C

Montres sportives, luxe et élégance

France: Cedex, ETAI, 2004, 29.5 x 24.5 cm, 176 pp, 300 ill.

Illustration (French).

Illustrations of the main brands.

R2042 Pasquier, H

La recherche et développement en horlogerie

acteurs, stratégies et choix technologiques dans l'Arc Jurassien Suisse 1900-1970

Neuchâtel: Éditions Alphil, 2008, 22 x 15 cm, 503 pp, ill.

History (French).

Tracing the history of research and development in the companies Lecoultre, Longines, Omega and Tissot.

R2043 Patek Philippe**R2043 Patek Philippe****Legendary watches from the Patek Philippe private museum****Les montres légendaire de Patek Philippe 1839-1989**

Genève: Patek Philippe, 1989, 25.5 x 20 cm, 136 pp, ill.

Description, exhibition (English, French, German).

Text in four languages.

Exposition de la fabuleuse collection privée de Patek Philippe.

Produced for the 150th anniversary of Patek Philippe; an exhibition at the Musée de l'Horlogerie et de l'Émaillerie Genève.

"The catalog follows the structure of the 1989 exhibition; it is an important source of information and a popular reference work on pocket watches and wristwatches. Numerous photographs, many of them close-ups, show richly decorated dials, elaborate enamel miniatures, and intricate engravings as characteristic details of the horological master pieces that were chosen and acquired for the Patek Philippe private collection."

R2044 Patek Philippe**Patek Philippe & Cie watch manufactory**

no publisher (Switzerland: Patek Philippe), nd (ca 1910), 12.0 x 18.0 cm, 26 pp, ill.

Description (English).

A catalogue of Patek Philippe watches showing several pocket watches and one wrist watch. It includes some movement views.

[facsimile reprint, mediocre] The introduction says "we merely wish to help our customers in making a choice". Which sums up the booklet. A number of dial and case views of different size watches, and a few cuts of movements showing different qualities and complications.

Unpretentious and unexciting.

R2045 Patek Philippe**Patek Philippe Geneve 1920-1965 material catalog**

USA: Clockworks Press (Geneve: Patek Philippe), 2000 (ca 1965), 21.0 x 15.0 cm, 34 pp, ill.

Catalogue, repair (English).

Primarily the book contains, for each calibre described, a photograph of the movement and component parts followed by a list of part numbers, names and prices in dollars. In addition there are descriptions of the Gyromax balance (with poising instructions), repair instructions for the calibre 27SC sweep seconds arrangement, and disassembly and assembly instructions for the calibre 12-600AT automatic mechanism.

It contains information on the calibres 7"70, 8"80, 8"85, 9"90, 10"200, 12"400, 27SC (sweep second), 12-600AT (automatic), 13"130 Chronograph, 17"140, 17"170, 17"210, 17"250, 63/4"60, 9"90, 10"105, 10"110 and 12"120.

[reprint, good] Of little interest unless you are repairing a Patek Philippe watch, but then very useful.

R2046 Patek Philippe**Patek Philippe, the master watchmakers of Geneva**

Geneva: Patek Philippe, nd, 23 min, video tape.

Description (English).

This tape briefly reviews the history of Patek Philippe. A tour of the firm is taken with detailed views of watch production, much done by hand. Traditional repair techniques are still used and these are shown.

R2047 Patek Philippe**Patek Philippe, the seven crafts**

Geneva: Patek Philippe, nd, 20 min, video tape.

Description (English).

This tape reviews the roles of the designer, watchmaker, goldsmith, chainsmith, engraver, enameller and lapidary worker in the production of Patek Philippe watches and clocks.

R2048 Patek Philippe**Star caliber 2000**

Switzerland: Scriptor, ca 2000, 30 x 30 cm, 136 pp, ill, DVD.

Description, illustration (English, Italian, French, German).

"The Star Caliber 2000 is a proud milestone in the history of watchmaking and merits a publication of appropriate import. This richly illustrated and painstakingly detailed work is divided into three chapters: the first sheds light on the development of the watch, the second is dedicated to the poetic aspects of the Star Caliber 2000 and the third chapter presents explanations supported by diagrams and photographs which help the reader to understand the technological aspects and innovations which make the Star Caliber 2000 so unusual."

R2049 Patek Philippe**Timepieces for royalty, 1850-1910**

Geneva: Patek Philippe Museum, 2005, 29.5 x 21 cm, 124 pp text, 31 b/w ill, 119 col ill.

Catalogue, illustration (English, French).

Separate English and French editions.

Catalog for an exhibition held October 21-December 30, 2005.

The book includes a history of the royal families of Europe in the 19th century and their watches purchased from Patek Philippe. There is also a history of the firm and details of their participation in

the Great Exhibition of 1851 in London.

“From the time of Queen Victoria’s reign until today, numerous rulers – Popes, monarchs and State leaders – have owned Patek Philippe watches or have offered such prestigious goods as gifts. Due to the quality of the products, comprising a myriad of technical and aesthetic innovations, and the firm’s presence at numerous Universal Exhibitions, the Genevan watch manufacturer, founded in 1839, acquired a reputation of excellence answering to a well-informed clientele. Produced between 1850 and World War I, the watches presented in this catalogue have a direct association with the crowned heads or descendants of royal blood of old Europe and more distant regions. These royal timepieces are today the exceptional, sometimes intimate, testimonies of the lives of their owners.”

R2050 Patent Office

Patents for invention

abridgements of specifications class 139, watches, clocks and other timepieces 1855-1930

Seattle: Odmarm (London: H.M. Stationary Office), 1979 (1905), 26.0 x 18.0 cm (4to), two volumes of about 1300 pp, ill.

Technical (English).

The reprint is said to be limited to 500 copies, but it is not marked as such.

These patents were originally produced in a number of smaller sections between 1893 and 1934; the sections covered 1855-1866, 1867-1876, 1877-1883, 1884-1888, 1889-1892, 1893-1896, 1897-1900, 1901-1904, 1905-1908, 1909-1915, 1916-1920, 1921-1925 and 1926-1930. Tardy suggests 16 volumes in this format.

Abridged patent specifications giving the patentee, usually a diagram and a brief description. Vol I covers 1855-1900 and Vol II 1901-1930.

[Odmarm reprint, good] It is fascinating to read the unusual ideas proposed and see people still patenting sand glasses and clepsydra! Fattorini wanted to use 384 degrees in a circle instead of 360 (but no explanation is given) and Sharp describes a gas-powered “teasmaid”. But much more important items appear, such as Daniel Buck’s patent for the Waterbury long-wind (1878-2283). The second volume is less interesting in terms of watches, most relevant patents being for cases, unusual (and forgotten) escapements and keyless mechanisms.

Although the abridged specifications leave a lot to be desired, they provide a valuable chronological account of developments. For example, in 1915 Dennison patented a screw-down crown, 10 years before Wilsdorf’s patents that formed an integral part of the Oyster case. Until then the closest he had got was a screw case completely enclosing the watch in 1922; did he have to wait until Dennison’s patent expired? (See my review of Dowling and Hess “The best of times - Rolex wristwatches an unauthorised history”).

R2051 Patent Office

Subject list of works on horology

in the library of the Patent Office

London: H.M. Stationary Office, 1912, 16 x 10 cm, 56 pp.

Bibliography (English).

R2052 Patent Office; Woodcroft, B

Patents for invention

abridgements of specifications relating to watches, clocks and other timepieces, 1661-1876

London: Eyre & Spottiswoode, 1858 to 1883, 8vo, 3 volumes of 430 pp, no ill.

Description (English).

The 3 volumes cover 1661-1856 (published in 1858), 1857-1866 (published in 1871) and 1867-1876 (published in 1883).

I haven’t seen this book, but the absence of illustrations makes it of dubious value.

R2053 Patil, SM

Twenty-five years with HMT

Bombay: Bharatiya Vidya Bhavan, ca 1998, 23 cm, 349 pp.

History (English).

History of HMT and biography of Patil. Amongst other chapters, the contents include: genesis of HMT, birth of HMT Karmik Sangh, India’s first watch factory, HMT watches, small car project, electronic watches in HMT.

R2054 Patrizzi, M; Patrizzi, O

Collecting Patek Philippe watches

Collezione Orologi Patek Philippe

Genoa: Mondani, 2000 (1994), 31 x 24.5 cm (12 x 10 inch), 360 pp, 549 col ill, b/w ill, 32 pp price guide (296 pp, 296 plates).

Collecting, identification (English, Italian).

Text in English and Italian.

A brief history of the company followed by details of 519 watches and clocks, including the calibre 89, and details of manufacturing dates.

The revised edition covers over 600 watches and includes market value estimates.

R2055 Patrizzi, O

Collecting Patek Philippe wristwatches

Rome: Mondiani, 2004, 31.5 x 25.5 cm, 2 vols of 640 pp, 1500 ill, slip case.

Collecting, price guide (English, French, Italian).

English, French and Italian parallel text.

Antiquorum describe the book as: "This new book by Osvaldo Patrizzi is devoted to the wristwatches of Patek Philippe. It aims to provide a panoramic overview that faithfully reflects the range of watches conceived, developed, and produced by Patek Philippe in Geneva, with particular attention given to the 20th century. The book features many new photographs and documents, providing a remarkable addition and complement to the existing literature on this legendary firm."

"Including over 1,500 color illustrations, with full captions and price evaluations given for each watch, based on Antiquorum auction results."

The summary by Antiquorum also says "To wear a Patek Philippe on one's wrist is not only a sign of distinction; it is also a proof of character and cultivation." Which reminds me of Waltham "The Waltham gift book". Apparently, because I don't wear a Patek Philippe I am presumably undistinguished, characterless and crude. Somehow such statements strike me as rather simplistic and suggest that wearers of Patek Philippe watches must be superficial.

R2056 Patrizzi, O**Collecting Rolex wrist watches****Collezione orologi da polso Rolex**

Italy: Guido Mondani Editore, 1995 (1992), 31 x 25 cm, 260 pp, ill (208 pp, 221 ill, 135 plates, price guide, slip case).

Dating, identification, illustration, price guide (English, Italian).

Three editions, all limited.

Text in English and Italian.

In three parts; a history of Wilsdorf and the company, advertising, and descriptions of 136 watches with model numbers, production dates and quantities.

Considered to be more useful than the corresponding book by Gordon, which it would have to be!

See also Patrizzi "Collecting Rolex wristwatches".

R2057 Patrizzi, O**Collecting Rolex wristwatches****Collezione Orologi Rolex**

1998, 31 x 24.5 cm, 400 pp, 633 col ill, 476 b/w ill, slip case.

Collecting, identification, miscellany (English, Italian).

New edition of "Rolex wrist watches, Orologi da polso". Parallel English/Italian text.

Descriptions of about 230 watches with investment tips and market value estimates.

R2058 Patrizzi, O**Collecting wrist watches****Collezione orologi da polso**

Genoa:, 1994, 30 x 25 cm, 296 pp, 476 plates.

Collecting, identification (English, Italian).

Text in English and Italian.

One source gives 302 plates.

A guide for the collector and investor.

R2059 Patrizzi, O**Dictionnaire des horlogers genevois**

Genève: Editions Antiquorum, 1998, 24.5 x 17.5 cm, 416 pp, 10 b/w plates.

History, makers (French).

La "fabrique" et les Arts annexes du XVI siècle a nos jours.

History of horology in Geneva followed by a dictionary of makers with biographical details.

The text (44 pages) is in 3 sections: Origins of horology in Geneva; The regulation of the trades of the Factory in the 17th and 18th centuries; and The division of work in the Factory. This is followed by an 11 page glossary of terms.

The dictionary of makers occupies the rest of the book. It includes modern makers and some entries have biographies or histories of companies.

The plates illustrate 10 watches.

[1st edition, excellent] Like other lists of makers, this is an essential book for Swiss watchmaking.

R2060 Patrizzi, O**Rolex, collecting modern and vintage wristwatches****Rolex, collezione orologi da polso moderni e d'epoca**

Geneva: Antiquorum, Genova: Guido Mondani Editore, 2006, 31.5 x 25.5 cm, 2 vols, 848 pp, 2000 ill, 50 pp price guide, slip case.

Collecting, identification, collection, price guide (English, Italian).

Parallel English and Italian text.

Volume 1 has 420 pages: The men who created the Rolex legend; Important dates; Hundreds of full page illustrations with descriptions; Index.

Volume 2, 417 pages, followed by index. Illustrations of hundreds of Rolex watches.

Volume 1 is said to catalogue the collection of Guido Mondani.

As there are over 2,000 illustrations with "detailed captions" and price estimates, I doubt if there is much space left for text. It is described by the publisher as "a striking coffee-table book that is a pleasure to leaf through".

- R2061 Patrizzi, O**
White Cartier
Cartier bianco
 Geneva: Antiquorum, 2006, 31 x 24.5 cm, 568 pp, 260 ill, 255 plates.
 Collection (English, French, Italian).
 Parallel English, French and Italian text.
 Catalogue of the collection of Georgio Seragnoli of Cartier wrist watches in white metal cases; stainless steel, white gold, platinum, osmium and palladium.
- R2062 Patrizzi, O; Mondani, G**
Collecting Nautilus and Patek Philippe
 modern and vintage wristwatches
 Geneva: Patrizzi & Co., 2010, 31.5 x 25.5 cm, 3 volumes of 960 pp, ill, matching slipcase.
 Collecting, illustration (English, French, Italian).
 The first two volumes cover Patek Philippe wristwatches from their creation to 2003, while the third volume is divided into two parts: the first is about all the Patek Philippe creations from 2004 to 2010, and the second, larger section, is entirely dedicated to Nautilus models.
 More than 2000 watches detailed and illustrated.
"This publication gathers the most important steps of the history of Patek Philippe and represents a safe guide to discover every detail of this brand: prices, market evaluations, different cases, dials, hands and the evolution of the style. Here you can find the valuation of every watch, directly realized by the authors Guido Mondani and Osvaldo Patrizzi. Through this work they allow collectors to understand the market of Patek Philippe wristwatches, turning their passion into investment.
Among the topics of this book: Moon Phases, Perpetual Calendar, Annual Calendar, Split-Seconds, Minutes Repeating, Calatrava, Universal Hours and a whole book on Nautilus. The goal of this edition is to give collectors and enthusiasts every information they need to have a wide knowledge on Patek Philippe wristwatches and understand the real meaning of their value and their beauty."
- R2063 Patrizzi, O; Sabrier, JC; Bull, S**
Breguet
 meisterwerke klassische uhrmacherkunst
 Munich: Callwey, 1991, 28 x 20 cm, 380 pp, 24 ill, 204 plates, slip case.
 Catalogue (German).
 Reprint of the Antiquorum catalogue of the 1991 auction of 204 Breguet timepieces with a discussion of the auction.
See also Antiquorum "Art of Breguet - an important collection of 204 watches, wristwatches and clocks".
- R2064 Patrizzi, O; Sturm, FX**
Watches of fantasy
Montres de fantaisie 1790-1850
Schmuckuhren 1790-1850, handwerkliche phantasie in vollendung
 Geneva: Galerie d'Horlogerie Ancienne, Munich: , 1981 (1979), 26 x 16 cm, 112 pp, 135 ill (150 pp, ill, 48 plates).
 Dating, history, identification, illustration, makers (English, French, German).
 Available in German (1981) and English/French (1979) editions.
 A study of watches in form cases; enamel cases in the shape of musical instruments, fruit, etc.
- R2065 Pearsall, R**
A connoisseur's guide to antique clocks and watches
Montres et pendules
 Paris: Editions Auzou; New York: Smithmark, 1998 (1997), 30 x 23 cm, 128 pp, 104 ill.
 Description (English, French).
 Published in English in 1997 and French in 1998.
 From the earliest history of the clock (sand clocks and lantern clocks), long-case clocks, mantel and wall clocks, to watches and portable clocks and modern timepieces.
A beginner's book.
- R2066 Peate, IC**
Clock and watchmakers in Wales
 Cardiff: National Museum of Wales, 1980 (1945), 8vo, 112 pp, 7 plates (107 pp, ill, 7 plates) (85 pp, 7 ill, 7 plates).
 Makers (English).
 Three editions in 1945, 1960 and 1975 with, apparently, a reprint in 1980.
- R2067 Pedersen, Gustav**
Urmageriet i vor tid toeretisk og praktish haandbog i urmageri
 Kristiana, Norway: H. Aschehoug & Co., 1894, 4to, 287 pp, 25 plates.
 Repair, technical (Swedish).
- R2068 Pellaton, James C**
Complicated watches
Referenced in Fried "Museum of the American Watchmakers Institute". I am sure this doesn't exist and it is presumably an error for Seibel and Hagans "Complicated watches".

R2069 Pellaton, James C

R2069 Pellaton, James C

Le tourbillon

1951.

Technical (French).

Offprint?

R2070 Pellaton, James C

Vingt-cinquième anniversaire de la FH

fédération suisse des associations de fabricants d'horlogerie 1924-1949

Bienne: FH, 1949, 23 x 18 cm, 97 pp, 13 plates with 35 ill.

History (French).

50th anniversary of the Swiss federation of associations for the fabrication of horology FH.

R2071 Pellaton, James C

Watch escapements

Cours d'échappements

Die hemmung

London: NAG Press (Switzerland: Technicum Neuchâtelois), 1951 (1924), 23.5 x 18.5 cm (26 x 21 cm), 125 pp, 269 ill (1 loose), 24 pp advertisements (114 pp, 270 ill) (131 pp, 270 ill).

Repair (English, French, German).

Three editions in 1924, 1928 and 1945 with separate English, French and German editions, the English being based on the 1945 French edition.

My English 3rd edition has one loose illustration (fig 159) and there is no fig 267, but it probably never existed.

"Being the 2nd part of a course in horology for use in the Swiss horological schools".

32 short sections; the lever escapement (sections 2-19, 75 pages), pin-pallet escapement (sections 20-25, 24 pages including notes on jewellery and finishing), cylinder escapement (sections 26-28, 8 pages), detent escapement (sections 29-31, 3 pages) and historical notes (7 pages).

[3rd edition, fair] At first glance I found this book a little odd. It is a technical description of the lever escapement with a few additional notes. The approach is to state facts without much explanation, and not very clearly. Consequently the short sections on other escapements, jewellery and history are lists of facts of little importance and barely worth reading.

The descriptions of the English and Swiss lever escapements are really sets of specifications of angles and sizes. There are remarks about its action, variations, fault correction and finishing, but these are too terse to be of much use. The sections on escapement drawing I found very confusing.

As the title indicates it is a school text, and I am sure it is intended to be a practical manual for use in conjunction with practical classes. In this light, viewed as a guide for use with corresponding practical work and lessons then the book makes more sense. But it is not very good when read on its own.

R2072 Pellaton, Jean

Notice centenaire

de la fabrication de l'assortiment a ancre au Locle 1850-1950

Le Locle: Fabriques d'Assortiments Réunies, 1950, 23.0 x 17.5 cm, 39 pp, 14 plates.

Description (French).

Notes on the centenary of the manufacture of lever escapements at Locle.

R2073 Penfold, JB

The Cumbrian background of George Graham clockmaker

England: Antiquarian Horological Society, 1974, 24.5 x 19.0 cm, 15 pp, 8 ill, 1 fld plate.

History (English).

Offprint from Antiquarian Horology, March 1974.

A genealogical study of the parentage of George Graham.

[1st edition, fair] A detailed examination of available evidence and the derivation of a reasonably firm genealogical table of Graham's ancestry in Cumbria.

R2074 Pergola, C; Mazzariol, S; Dosso, G

Rolex Daytona, a legend is born

Rolex Daytona, dalla nascita al mito

Milan: Best Edizioni, 2006, 30 x 24 cm, 263 pp, ill.

Description, illustration (English, Italian).

Parallel English/Italian text

"A magnificently illustrated production covering Daytona and Cosmographs, including commentary upon distinguishing features and identification and serial number/date tables."

R2075 Perkins, A

The modern watchmakers lathe

and how to use it

USA: American Watchmakers-Clockmakers Institute, 2003, 28.5 x 22.0 cm, 393 pp, 548 ill.

Repair, tools (English).

The book was first published as a series of articles in the Horological Times.

25 chapters. Chapters 1-10 (100 pages) describe the watchmakers lathe, its chucks and attachments, and its maintenance.

Chapters 11-23 (241 pages) provide detailed instructions for using the lathe to make parts and covers pivots, balance staffs, stems, jewel bezels, repivoting, wheel and pinion cutters, and making wheels and pinions.

The book concludes with 2 chapters (44 pages) on the use of saws and files.

Many of the illustrations are monochrome photographs. Each chapter ends with test questions and references. There is an index.

[1st edition, excellent] I think this is the best book on using the watchmakers lathe that I have read. It is detailed, thorough and precise, and it covers just about everything that can be done on such a lathe which is relevant to watch work.

The book assumes the reader is a reasonably competent repairer or a student at least part way through a watch repair course. Perkins notes that it takes years to be good at using hand held gravers, central to most tasks, and the reader needs to be aware of this; although it only takes a few days to read the book, it takes much longer to acquire the necessary skills.

My only complaint is that some topics are presented out of order and some unreasonable assumptions are made.

The chapters on filing and sawing are at the end, but describe preliminary skills, and some tools (notably the swing tailstock) are discussed far too early. Using the lathe is not considered until page 128, where all we need are some split chucks, gravers and a T-rest, and a lot of the preceding descriptions of lathe tools do not make much sense until their practical use is covered. Perkins is aware that most repairers do not have complete lathes, even to the extent of suggesting that "the beginner may not have a specific chuck size"; if the reader doesn't even have a complete set of split chucks there no chance he will have a selection of tail stocks and may not have a slide rest. This admission also means the chapter on lathe maintenance should be an appendix rather than near the start of the book. Most of it concerns re-facing cone bearings, which is very well explained, but as most people have only one lathe it is impossible for them to do it. Perkins also mentions ball bearing headstocks, but he is vague, obscure and does not provide helpful information on them; their care and maintenance deserves as much information as cone bearing lathes. Again, the purely practical nature of the book intervenes. It is stated that angular contact, pre-loaded bearings are used, but what they are and why they are used is not explained. Indeed, throughout the book Perkins expects us to blindly follow instructions and there is no attempt to help us understand why we should do so.

I found this arrangement of topics very annoying, but it is not important provided the reader is aware that he needs to dip into the book rather than read it in order, and hopefully alternative methods will be found for the person who lacks certain tools; for example, I don't have a pivot polisher, so much of the discussion of finishing pivots and staffs is irrelevant for me.

Assumptions are most obvious in the chapter on making tooth cutters. This begins with a few remarks on tooth standards which are totally unintelligible unless other books have been read. Then theory and standards are ignored when explaining how to make cutters and instead they are formed to match existing teeth. However, Perkins does not explain how this can be done successfully; it is easy at the scale of the diagrams but very hard at the scale of watch teeth. Later he demonstrates how to use a pantograph and gives an example of the calculations necessary to determine the shape of the template. But these are presented without explanation and the reader is expected to mindlessly calculate without any understanding of what he is doing, which is most obvious with the "magic numbers" used for addenda factors and the use of circular instead of epicycloidal curves.

As I have already noted, the approach of Perkins is purely practical and the book is devoid of theory or principles, so when some mention of theory is necessary he is vague and inadequate. This practical approach based on a "cookery book" style is sound, but in a few places important tasks are glossed over, tasks which require skill or knowledge of some trick of the trade. For example, he gives detailed instructions for turning graver and file handles (before using the lathe has been explained!) but he does not explain how to shape gravers or how to ensure drill faces are identical, correctly angled and centered. Although he doesn't say so, I suspect such omissions are because the tasks involve skill and feel gained from months of practice and there are no rules or techniques to be followed. Again, learning to turn and using the lathe takes years not days.

This is fine if the student is learning in the company of others and a competent teacher, which is clearly the context in which the book is meant to be used. But people like myself, who have to develop skills in isolation, will find the book frustrating because of what it does not explain and what needs to be discovered by rather painful experimentation and studying the theory presented in other books.

R2076 Perregaux, C

Ecole d'horlogerie du Locle et son histoire

Neuchâtel:, 1893, 32 pp.

History (French).

Listed in Tardy.

The Locle school of horology and its history.

R2077 Perregaux, C

Laurent Megevand

et l'émigration de l'horlogerie neuchâteloise a Besançon en 1793

Neuchâtel: Imprimerie Wolfrath & Sperlé, 1914 (1912), 4to, 38 pp.

History (French).

Offprint from Musée Neuchâtelois.

Laurent Megevand and the emigration of Neuchâtel horologers to Besançon in 1793.

R2078 Perregaux, C**Les écoles professionnelles de France**

notes de voyage

Bienne: J. Millot, 1913 (1912), 20.5 x 13.5 cm, 59 pp, 32 ill.

History (French).

The professional schools of France, notes of a tour.

R2079 Perregaux, C**Les Jaquet-Droz et leurs automates**

Neuchâtel: Imprimerie Wolfrath & Sperlé, 1906, 18.5 x 12 cm, 55 pp, ill.

Description, makers (French).

Jaquet-Droz and their automata.

Includes a section on the collection of Marfels.

R2080 Perregaux, C; Perrot, FL**Les Jaquet-Droz et Leschot**

Neuchâtel: Attinger, 1916, 29 x 21 cm, 270 pp, 70 ill, 6 plates.

Catalogue (French).

Limited edition.

One source says 4 mounted plates.

R2081 Perrenod, A**L'échappement a ancre**

au point de vue des dimensions et proportions

Genève: Administration du Journal Suisse D'Horlogerie, 1917, 43 pp, 11 ill.

Technical (French).

The lever escapement from the point of view of its dimensions and proportions.

R2082 Perret, T; Beyner, A; Debely, P; Tissot, L; Jeanneret, F**Microtechniques et mutations horlogères**

clairvoyance et ténacité dans l'arc jurassien.

Neuchâtel: Editions Gilles Attinger, 2000, 22.0 x 17.5 cm, 333 pp, ill.

History (French).

Volume 28 in the series "Collection des cashiers de l'Institute neuchâtelois".

Microtechniques and mutation in horology, perspicacity and tenacity in the Jurassic arc.

In four parts: Beginnings of horology research in Neuchâtel (58 pages), Development and diversification (98 pages), The invasion of microtechniques (88 pages), and The challenges of tomorrow (42 pages).

[1st edition] A history of horological research in the Jura from the establishment of the Laboratory for Horological Research (LRH) in 1921 to the Swiss Centre for Electronics and Micro-techniques (CSEM), the majority of the book being concerned with the development of micro-technology and electronics.

R2083 Perrin, NL**L'horlogerie savoisiennne**

et l'école nationale d'horlogerie de Cluses

Thon-les-Bains: Raffin, 1902, 8vo, 171 pp, ill.

History (French).

Savoy horology and the national school of Cluses.

R2084 Perron, L**Essai sur l'histoire abrégée de l'horlogerie**

Paris: (Besançon: Bachelier), 1834 (1832), 8vo, 177 pp, 1 plate.

History, repair (French).

See Tardy for a different sub-title description.

Subtitled "Suivi de: 1 la description d'un pendule compensateur a lame bimétallique et d'un échappement nouveau, 2 d'un mémoire sur l'isochronisme des vibrations du balancier, 3 et d'un essai sur le rhabillage sur les causes d'arrêt des montres et des pendules, moyen de les corriger".

Essay on a brief history of horology followed by: 1, the description of bimetallic compensator and a new escapement; 2, a note on the isochronism of balance vibrations; and 3, an essay on repair, on the causes of stopping of watches and clocks, means of correction.

See also Marguerat "Guide des horlogers".

R2085 Perron, L**Histoire de l'horlogerie en Franche-Comté**

Besançon: Chez tous les Libraires, 1860, 8vo, 140 pp.

History (French).

One source gives CFA Perron as the author.

History of horology in Franche-Comté.

R2086 Persegol, JE**Nouvelle manuel complet de l'horloger rhabilleur**

Paris: Laget (Paris: Roret, L Mulo successeur) (Paris: Roret), 1977 (1882), 15.5 x 9.5 cm, two volumes 229 pp, 59 ill and atlas of 15 fld plates (208 pp, 25 ill, 2 fld plates, 52 pp ads).

Repair (French).

First published in 1882, perhaps as "Manuel complet de l'horloger rhabilleur". Other editions were produced in 1895 (1 volume), 1907 and 1917 and 1926.

The facsimile of 1977 is of the 1907 edition and is limited to 500 copies.

"Traité des diverses opérations du rhabillage telles que le rhabillage des montres à roue de rencontre, à échappement à cylindre, à répétition, à remontoir au pendentif et le rhabillage des pendules d'appartement".

New complete manual of repair treating the various repair operations, the repair of verge watches, the cylinder escapement, repeaters, keyless winding and the repair of house clocks.

The 1895 edition is in 2 parts.

Part 1 (140 pages) has 3 chapters: Watch repair (verge, cylinder, lever, repeater and keyless work); House clocks; and Repair topics (including gears, jewels, ruby cylinders, balance springs, oils, and an escapement by Persegol).

Part 2 (65 pages) has 2 chapters: The determination of time (true and mean time, determining the meridian, the equation of time); and Regulation of clocks and watches.

R2087 Pertuch, WA; Hilker, EW

Horological books and pamphlets

in the Franklin Institute library

USA: Franklin Institute, 1974 (1956), 28.0 x 21.5 cm (4to), 185 pp, no ill (106 pp, no ill) (50 pp).

Collection, bibliography (English).

At least 3 editions in 1956, 1968 and 1974. The first two editions were compiled by Pertuch and the third by Hilker.

A list of the contents of the library, which no longer exists (most or all of the collection went to the NAWCC).

[2nd edition, 1968, fair] Each entry gives author, title, place of publication, date and number of pages. Of not much use other than to determine the existence of an item.

[3rd edition, 1974] The collection had expanded to some 3,000 titles, including the addition of the Haschka collection donated by the Hamilton Watch Co. The entries are in the same format as in the 2nd edition.

R2088 Pestalozzi Foundation

Antique automatons, a la veille russie

New York: La Vieille Russie, 1950, 11 x 8 inch, 69 pp, 49 ill, 5 plates.

Exhibition (English).

Limited edition of 2000 copies.

Loan exhibition of antique automatons including watches.

R2089 Peter's School of Horology

Training units with student notes

Washington, DC: Peter's School of Horology, ca 1948, loose leaf pages, ill.

Repair (English).

R2090 Petersen, M

Description d'un échappement libre

Florence:, 1878, 11 pp, 1 plate.

Technical (French).

Description of a free escapement.

R2091 Pfeiffer-Belli, C

365 klassische armbanduhren

Germany: Deutsche Verlags-anstalt, 2006, 25 x 17 cm, 744 pp, 365 ill.

Illustration (German).

"Christian Pfeiffer Belli, one of the most expert connoisseurs of the watch scene, selected and commentated on 365 wrist-watches in outstanding photographs, outlines the most important companies and provides prices. Beauty and use unite in this book just as impressively as in each good wrist-watch."

R2092 Pfeiffer-Belli, C; Konrad, CB

Uhrenmuseen und bedeutende sammlungen

in europa und ubersee

Germany: Nikol Verlagsgesellschaft, Munich: Callwey, 1992, 24 x 14 cm, 160 pp, 153 ill.

Collection (German).

A guide to museums and collections throughout the world, but especially in Europe. Each entry gives the address, opening times and types of timepieces.

See also Brugger "Musee et collections horlogeres".

R2093 Pfeiffer-Belli, C; Penney, David

Die taschenuhrensammlung von Gerd Ahrens

Munich: Callwey, 2006, 35 x 26 cm, 2 vols, 655 pp, ill, slip case.

Collection, illustration (German).

Limited edition of 1200 copies

A biography followed by 7 chapters describing the 538 best watches from the collection of Gerd Ahrens. The chapters are organised by escapement: 1. Verge escapements (68 watches), 2. Cylinder escapements (75 watches), 3. Duplex escapements (27 watches), 4. Chronometer escapements (65 watches), 5. Tourbillons (8 watches), 6. Specialty escapements (24 watches), and 7. Lever escapements

(272 watches). Each of the seven chapters starts with an illustrated discussion on how that particular type of escapement functions.

[1st edition, review by Fortunat Mueller-Maerki] The pocketwatch collection of Gerd Ahrens, the legendary German collector, who recently passed away in Switzerland, must have been one of the most significant private collections ever assembled documenting the technical history of the pocket watch. Over a span of 50 years, Mr. Ahrens systematically sought out watches with unusual escapements, striking mechanisms or winding systems, covering everything from the 16th to the early 20th century. A total of over 750 significant pocket watches, many of them unique, were acquired over a lifetime. The 538 most interesting of these form the basis of the publication under review.

Christian Pfeiffer-Belli, long-time editor of the magazine "Klassik Uhren", assembled a team of experts, writers and photographers, and led one of the most ambitious projects ever to fully document such a rich collection. The resulting publication is massive in more ways than one (it weighs about 10 pounds). The two large format books were produced on heavy stock, and come in a substantial slipcase. But the "content" is just as imposing as the physical dimensions.

The bulk of the publication is devoted to the individual watches. Each is presented in its own one or two page spread. Each of these 538 descriptions includes a live-size picture of the watch from its dial side, and a picture of the movement (at 100% or 150% of original size). In some cases, there is a third photograph, e.g. of the case back, the signature, or a technical detail. In addition the majority of the entries have their own line-drawing illustrations explaining the escapement (most are from the pen of David Penney, who in the opinion of this reviewer is the most talented horological illustrator alive). About half of each page is devoted to text, describing movement, case, dial and hands in detail, including all signatures and marks. Comments from the handwritten catalog of the collector are quoted, and unusual features are described. Exact dimensions (diameter and thickness) are given in millimeters. The provenance is given, and there are bibliographic references (books and auction catalogs, down to specific pages) for each watch.

It should be clear by now that this is not a pretty coffee table book on pocket watches, but a very serious work of horological scholarly documentation. Befitting the nature of the book there are several indices, by maker, location and type of escapement. The general bibliography in the appendix is not very extensive. This is not the book a novice watch collector should buy to get an overview of what is out there to collect. This is not a book that is easy and pleasant to browse through; studying the history of the pocket watch through this book is hard work; yes there is lot of interesting and useful information, but there is no easy to follow "story".

While the horological scholar in me is delighted that this book was written and published, I can not help but wonder who the intended buyers are. It was published in 1200 numbered copies, and sells at price of Euros 128 (plus shipping). While two hundred US dollars landed cost is not cheap for any book, it is self evident to this reviewer that this price reflects merely the approximate marginal production costs of one set, if that, and that the enormous expense for gathering and organizing the data and creating the illustrations and layout must have been underwritten by a third party.

This catalog was intended as a tribute to Gerd Ahrens on occasion of his 85th birthday in September 2005. Production delays caused this deadline to be missed, and Mr. Ahrens died in December 2005. Maybe it is therefore appropriate to see the fact that the Ahrens collection now is so superbly documented as his most valuable gift to posterity. Horological researchers and scholars for generations will cherish the few copies produced, even the readers who may not be fully fluent in German.

R2094 Pfister, A

L'industrie horlogère dans le vallon de Saint-Imier

St Imier: Georges Favre, 1944, 8vo, 69 pp, plates.

History (French).

The horology industry in the valley of Saint-Imier.

R2095 Pfister, A

Principes de construction des rouages d'horlogerie

Genève: Administration du Journal Suisse d'Horlogerie, 1907 (1897), 24 x 16 cm, 24 pp, 1 ill, tables (23 pp).

Technical (French).

Principles of the construction of trains.

R2096 Pflughart, A

Die schweizerische uhrenindustrie

ihre geschichte entwicklung und organisation

Leipzig: Duncker & Humblot, 1908, 8vo, 215 pp.

History (German).

The Swiss horology industry, its history, development and organisation.

R2097 Pfnor, R

Motifs d'ornements pour roses, rosaces, médaillons, ...

... fonds et panneaux circulaires des XVI, XVII, XVIII siècles Henri II a Louis XVI, plusieurs inspirées de coqs de montres

Paris: Ducher, 1876, 12.5 x 9.5 inch, plates.

Miscellany (French).

Listed in Tardy.

Motifs of ornament for rose windows, medallions, bases and panels.

Includes balance cocks.

R2098 Philippe, Adrien

Études sur l'horlogerie a l'exposition de Paris 1878

Geneva: Philippe, 1878, 123 pp, table.

Exhibition, history (French).

R2099 Philippe, Adrien

Les montres sans clef

ou se montant et se mettant a l'heure sans clef

Paris: Libraire Scientifique, Industrielle et Agricole, Libraire de la Société des Ingénieurs Civils, 1863, 22.0 x 14.0 cm, 308 pp, 3 fld plates.

Technical (French).

Printed in Geneva.

“Origine de ces montres; avantages et inconvenients compares; descriptions des différents systèmes; principes de construction. Les répétitions; montres a secondes indépendantes; a tact, dites d'aveugles, et autres pièces compliquées a remontoir. Du repassage et des réparations. Instrument de vérification; fraises a tailler l'acier et le laiton pour dentures. Réflexions et expériences sur les engrenages ordinaires. Mémoire sur la nécessité d'une réforme dans la pratique de l'horlogerie.”

Watches without keys or its winding and hour setting without key. Origin of these watches, advantages and disadvantages compared, descriptions of different systems, principles of construction, repeaters, independent seconds watches.

In three parts. Part 1 (90 pages) is historical with 4 chapters on the origins of keyless watches, advantages and disadvantages of keyless mechanisms, descriptions of mechanisms including those of Nicole and Lecoultré, and comparison of the merits of mechanisms by moving the crown and Breguet click-work.

Part 2 (90 pages) has 5 chapters and details the design of winding wheels, pinions and hand setting.

Part 3 (124 pages) begins with two chapters discussing the application of keyless work to complicated watches and a third giving advice on repair. These are followed by chapters on making the wheels and pinions, cutters for the teeth and verification of the engagement of the crown wheel.

Part 3 concludes with a discussion of ordinary gearing and an address to the Society of Horologists in Paris on the need to reform horological practice (originally given in 1861).

R2100 Phillips, E

Manuel pratique sur le spiral réglant

des chronomètres et des montres

Paris: Dunod, 1865, 36 pp, 2 fld plates.

Technical (French).

Practical manual on the balance spring for chronometers and watches.

R2101 Phillips, E

Treatise on the balance spring

Mémoire sur le spiral réglant des chronomètres et des montres

On isochronism: a translation of the works of Edouard Phillips on the isochronism of balance springs and pendulums

London: Antiquarian Horological Society (Paris: Dunod), 1978 (1861), 30 x 21 cm (27 x 21 cm), 102 pp, 64 ill (128 pp, 5 fld plates with 64 ill) (107 pp, 5 fld plates).

Technical, theory (English, French).

This first appeared in 1860 in the journal of the “Académie des Sciences” and was published separately in 1861 (and as part of a book in 1863). The English translation of 1978, Antiquarian Horological Society monograph no 15, is a spiral bound typescript of 102 pp, 64 ill, translated by J.D. Weaver.

French authors are often listed as, for example, “M Phillips” because the compiler has misinterpreted the abbreviation for Monsieur.

[Translation, reviewed by Charles Aked] This is the most famous work of Edouard Phillips, a Frenchman born of an English father from Witchurch, Shropshire; and has been made available for the first time to English readers in over one hundred years, thanks to the efforts of Dr. J. D. Weaver of the City University, London. It was last translated from the French for the “American Horological Journal” volumes 2 and 3, 1870-72, where it appeared as a series of articles. Whilst it is a work for the horologist with a mathematical background, and one who is familiar in dealing with watches and chronometers, nevertheless there is much of interest for those who merely accept the results.

Phillips in his celebrated work deduces the laws for isochronism of a balance and its spring, performing for this timekeeping element that which Huygens had done for the pendulum in the latter half of the seventeenth century. Artists such as Arnold, Earnshaw, Dent, and others found out by trial and error how to arrive at practical solutions, although the credit for the first discovery of the isochronal properties of a balance spring properly terminated must go to that genius of horology, Pierre Le Roy.

Opening his work with a short history of the subject, Phillips formulates his problem: “Given a spiral spring attached to a balance wheel, find the laws governing joint motion.”

To simplify the mathematical solution he first considers the case where the influence of oil, friction, temperature, and other external influences are ignored, and where the moments of inertia of the balance spring and the balance remain constant. Dealing with the case of the cylindrical helical spring of the

chronometer; he derives the equation of motion which he finds contains a term depending on the lateral pressure exerted on the balance arbor. If the term can be equated to zero, the equation of motion is easily integrated to give an expression for the period of oscillation independent of the amplitude. He finds that if the centre of gravity of the balance spring can be made to remain at the centre of the balance arbor, and the spring displaces itself equally for any amplitude, the resulting combination will be isochronous. From here he goes on to describe methods of adjusting the upper and lower terminations to satisfy these conditions, giving a number of plates showing theoretical curves, with details of how to form them.

Next the more difficult problem of the flat spiral spring is dealt with, and Phillips shows that with an overcoil of the correct shape, isochronism can be obtained for small changes in amplitude but not for large. It is not possible to obtain isochronism with an outer termination only, later he develops curves for the inner attachment also and satisfies all conditions.

The influence of temperature deforming the spiral form of the spring is considered, Phillips proving that the terminal curves still fulfil the conditions of isochronism. Finally the effect of friction is taken into account, and here Phillips shows that the time of oscillation is not altered, provided the amount of friction is small and the balance amplitude substantial, as is the case in practice.

Chapter 2 deals with the results of his mathematical theory when used in practical cases for six balances and their associated springs, An agreement within 0.5-1.0% is obtained. There is some very interesting information contained in this chapter on actual watches and chronometers, with comments and extracts of Moinet's "Traite d'Horlogerie" of 1855 dealing with isochronism. Moinet was the former President of the Horological Society of Paris.

Dr. Weaver has also included Phillip's "A note on a new flat balance spring for chronometers and watches" and "The Isochronous Pendulum"; probably the first time these two works have appeared in the English language, they were published in 1878 and 1891 respectively. For those with mathematical skill these are of great interest. The latter work is supported by practical results proving that it was possible to achieve isochronism with a pendulum.

Because of the complicated mathematical contents of the book, it has not been possible to set the work in type, the cost would have been prohibitive, hence the original typewritten text has been reproduced by Xerox copying. It must be remarked that the standard of typing is extremely high, and the two ladies who carried out the work, Mrs. Rose Haque (the major part) and Miss Bharti Amin, must be congratulated for their almost perfect results. The text is reproduced on both sides of the paper, these pages being bound in a spiral binder with soft covers so that the work can be open completely flat in use. The plates have suffered somewhat in reproduction since it is difficult to find an original copy of the work that has not been affected by the long period of time since issue.

The low cost of the book is due to the invaluable assistance from Mr. David Nettell in the publication, without this help the book would have cost several times as much. Finally Dr. Weaver must be congratulated for his sterling effort in translating this almost forgotten masterpiece which was never available to English horologists. How they could have afforded to ignore works of such fundamental importance is quite beyond the reviewer.

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[Remark] I haven't read this and so I cannot comment directly on its contents. However, it is interesting to consider the ways in which other authors have dealt with Phillips's theory.

The majority appear to simply note that he is correct. Some indicate that balance springs should be formed on the basis of his curves, although none come to grips with the practical problems of manipulating a tiny spring without sophisticated, precision tools. A few are bold enough to suggest that Phillips has analysed theoretical springs independent of their context and, in fact, such curves are incorrect when real escapements and frictions are taken into account. Indeed one could be forgiven for believing that most authors have no understanding of this work and simply followed it blindly, whereas others recognise the limitations of abstract theory but are unable to do more than suggest arbitrary variations.

R2102 Pholien, F

L'horlogerie et ses artistes au pays de Liège

étude rétrospective

Liège: Editions Nationales, Pierre Aelberts (Liège: d'Art des Imprimeries Nationale), 1975 (1933), 28 x 18 cm, 130 pp, 65 ill.

Makers (French).

The reprint is a limited edition of 800 copies.

Horology and its artists of the Liège district, retrospective study.

Only clocks?

See also Thiry "L'Age d'or de l'horlogerie liégeoise".

R2103 Piaget Watch Co

From the workshop of a minor artisan

to a great line of master watchmaker jewellers

Switzerland: Piaget Watch Company, 1974, 12 x 8 inch, about 50 pp, plates, slip case?.

History (English).

Centenary history of the Piaget family and company from 1874 to 1974.

R2104 Piaget Watch Co; Marcello, F**Montres et merveilles, 200 créations rares**

Milan: Electra, 1992, 24 x 22 cm, 164 pp, 207 ill, 77 plates, slip case.

Makers, collection (English, French, Italian).

English/French and Italian/French text editions.

One source gives the authors as Sturm & Gouten.

Exhibition catalogue of 200 watches from the Piaget private collection and the Genève Musée d'Horlogerie showing women's wristwatches.

An earlier edition of Cologni "Piaget, watches and wonders since 1874"?

R2105 Piaget, HF**The watch - its construction, its merits and defects****The watch, handwork versus machinery**

how to choose it, and how to use it

New York: HF Piaget, 2006 (1860), 18.5 x 13.5 cm (8vo) (16.0 x 11.0 cm) (15.5 x 10.0 cm), 63 pp, 5 ill (37 pp) (88 pp, 25 ill) (59 pp, 22 ill).

Description (English).

Three editions were produced in 1860 (59 pp, ill, 1500 copies), 1868 (88 pp, 25 ill) and 1877 (37 pp), the last being titled "The watch: handwork versus machinery". The 3rd edition reprint of 2006 has been reset and has 63 pages.

The 1860 edition is available as a Google Book PDF file.

1st edition: "... to which is added a short essay on clocks and how to use them". There are a number of short sections: Preface (2 pages), Remarks on timepieces (5 pages), Construction of watches (13 pages), The selection of watches (7 pages), Merits and defects of the watch (15 pages), Advice to wearers (14 pages), and The clock - how to use it (5 pages).

2nd edition: "... to which is added a short essay on clocks and how to use them". There are a number of short sections: Preface (4 pages), Remarks on timepieces (4 pages), Construction of watches (10 pages), The selection of watches (7 pages), Merits and defects of the watch (20 pages), List and description of the different American watches (6 pages), List of principal makers (4 pages), The folly of putting fictitious names on watches (4 pages), Advice to wearers (10 pages), The clock - how to use it (4 pages), Conclusion (2 pages), and a desideratum (5 pages).

3rd edition: This is an essay discussing the state of American and Swiss watchmaking at the time of the Philadelphia Exhibition.

[2nd edition 1868, fair] *The book is basically general advice to watch purchasers and wearers. In it, Piaget discusses the relative merits of English, Swiss and American watches, noting the general good quality produced by American makers and supporting the American watch industry. It is saved from being mundane by Piaget's criticisms (particularly of taxes, imported and bad watches, and false names) and his suggestions to American manufacturers on how to improve their watches. Unfortunately some of his statements are wrong and his knowledge of history is poor. But the advice is good and the writing clear, although the result is of little consequence.*

[1st edition] *The second edition is fundamentally the same as the first edition with some re-arrangement and additional material. Most of the interest in the book lies in the material added to the second edition, so the first edition is less desirable and mainly attractive for the gilt illustrations on the covers.*

[3rd edition, fair] *This is best described as a "stream of consciousness" tirade against American watchmakers and repairers. It seems that Piaget has jotted down thoughts and had them published without any attempt to organise them coherently; consequently it is difficult to read and very difficult to comprehend. In stark contrast to the second edition, he condemns American makers, but for their impact on the Swiss rather than the quality of their products.*

It seems Piaget was inspired to write this essay as a result of two things. First, he accuses Americans of unfairly criticising and slandering him and his earlier books. Second, he quotes Favre-Perret, who criticises the Americans for deliberately mistranslating his speech to give a different impression from what was intended.

The main theme is an attack on American watchmakers who were damaging the Swiss industry. Piaget, despite having lived in America for 45 years, is a Swiss national through and through. He believes that American and Swiss watchmakers should co-operate and not compete. He does not mind the Americans driving out the British, but they should share the world with the Swiss. Early on he writes "I ... will endeavor to help with my pen, the working classes of Switzerland in their struggle against capital, bombast and many false representations, particularly after they had toiled for so many years, to improve themselves ..." Thus his concern is that the American industry of this "progressive age" is harming the Swiss and putting people out of work, and he repeatedly attacks the American capitalist system and the replacement of labour by machinery. However, he does recognise the inevitability of change and urges the Swiss to establish training schools and to develop machinery for watchmaking.

Associated with this, there is a lengthy tirade against American repairers, whom Piaget considers incompetent.

Underpinning all is Piaget's belief that watches cannot be made completely by machinery and hand finishing is essential. He points out that the Americans could not produce interchangeable pivots, levers and other parts, and well trained, highly skilled watchmakers are essential. However, he argues that, because of manufacture by machinery, young people were not being trained properly, and so there was

a dearth of competent repairers and a glut of incompetent ones. Piaget believes the necessary skills can only be achieved by an apprenticeship of many years, but watch manufacturers provided the minimum training required for operating machines.

Although based on fact, Piaget's attacks on the American industry are simplistic and his conclusions wrong. The Swiss industry survived and prospered until it was devastated by the quartz revolution. (See Oppliger "Quand nous étions horlogers, images-portrait de mon pays". Fallet "Tissot, 150 years of history 1853 - 2003" mentions how large trenches were dug and whole factories of watchmaking machinery were buried. She also provides a photograph showing vast quantities of mechanical movements before they were sent to rubbish dumps.)

For the serious horological historian, the book is saved because of two tidbits. The first is the quote from Favre-Perret mentioned above. The second is a passing remark about Ingold: "For it is certainly a fact that the machinery of Ingold (who is still living in Switzerland), was first used in Boston in the year 1852 where the first American watches were made." It is a great pity Piaget did not add any details. Being a Swiss in New York, it is possible that he met Ingold and had good reason for this statement. But his avowed Swiss-ness, together with his almost irrational attacks on Americans, must cast doubt on anything he has written, and I am not sure that we should place too much weight on his claim that Ingold's machinery formed the basis for the Roxbury factory.

[Remark] Although the contents of this book are of little value, it does raise three interesting side issues. First, there is a well-entrenched myth about Henry F. Piaget. I suspect this probably began when a book seller wanted to justify asking a high price for a small, unimportant booklet. One such advertisement states "Piaget was considered by many the premier watchmaker of the 19th century" and another, a little more truthfully, considers it to be a "late nineteenth-century essay by a master craftsman". The modern third-edition reprint goes further by assuring us that "Henry F. Piaget holds a prominent place in both Swiss and American manufacturing. Today the Piaget brand is widely heralded as some of the best craftsmanship in the world". These statements deliberately and incorrectly associate H.F. Piaget with the Swiss watch manufacturer Piaget et Cie, founded by Georges Piaget.

Henry F. Piaget was born in Switzerland, educated in England and lived in America from 1832. Both his grandfather and his father were clock makers, not watch makers. He says he trained for 13 years from the age of 7 and he worked for his uncle (a maker of musical and repeater watches) in London for 15 years; unfortunately he does not tell us who this person was. He also says he worked on a repeater ring watch for George IV. There is simply no evidence that he is in any way related to Georges Piaget, and if he had a relative of such importance we can be certain he would have mentioned it. To suggest that he "holds a prominent place in both Swiss and American manufacturing" is ludicrous, and if he had not produced three editions of his little pamphlet he would have sunk into obscurity long ago.

Second, why was the third edition of this book reprinted? It is a confused rant by an unimportant person, which is hard to read and harder to understand. Admittedly it does contain some interesting material for serious horological historians (particularly the mention of Ingold), but the number of such people could probably be counted on one hand. The vast majority of watch collectors would most likely stop reading after a couple of pages and decide that they had wasted their money; a view supported by the large numbers of copies for sale on internet book sites.

This is not a new phenomenon. Back in 1860, Booth "New and complete clock and watchmakers' manual" was published by John Wiley and reprinted 5 times. But it should not have been published in the first place, let alone reprinted! And similar criticisms can be made of many books, including some of the opulent, modern coffee-table books, which bedazzle but are vacuous.

It seems that some publishing has very little to do with quality and content and a lot to do with making money. And I can only presume that such publishers never read the books and so just don't know what they are foisting on the public.

Finally, I have always found the word "edition" confusing. I believe that a second or later "edition" is similar to, but different from a first edition; indeed the ISBN numbering system requires 10% or more changes to justify a new edition and hence the allocation of a new ISBN number. But reality is very different.

For example, Reid "A treatise on clock and watch making, theoretical and practical" went through seven "editions" between 1826 and 1859 (not counting at least one American edition). But they are all identical in content, except for incorporating the first edition errata and the addition of an insignificant paragraph on month going clocks to the last page. As far as I can tell, there was one edition reprinted six times; which is not surprising as Reid died before the second edition came out. Similarly, it appears that Kemlo "Kemlo's watch repairer's handbook" has been printed about ten times, but all "editions" from the first in 1869 to the 1908 printing are facsimiles. This book is another example of one that should not have been published, let alone reprinted some nine times.

Piaget's three "editions" are at the other extreme. The third edition is so completely different that it should be regarded as a separate, independent book.

Thus, although book collectors may desire first editions, people who buy books for their content want the best edition. This is often not the first or, in the case of Reid, it can be any edition.

R2106 Pickford, C

Bedfordshire clock and watchmakers 1352-1880

England: Bedfordshire Historical Record Society, 1991, 8vo, 252 pp, 2 ill, 35 plates.
Makers (English).

Gives detailed information on 350 makers from this region.

"An excellent, well researched book about the clock makers of Bedfordshire with lots of biographical information as well as a brief history of timekeeping in Bedfordshire."

R2107 Pickford, I; Jackson, CJ

Jackson's silver and gold marks

of England, Scotland and Ireland

England: Antique Collector's Club, 2000 (1905), 28 x 22 cm, 768 pp, ill.

Dating, makers (English).

At least 3 editions with many printings. The third edition fully revised and enlarged, with over 10,000 corrections.

Standard work for makers' marks. The most complete record of English, Scottish and Irish hallmarks available up to c.1900, and the best reference work available for the period up to c.1830. Records over 15,000 marks, complete with 400 illustrations.

R2108 Pictet, MA

Instructions pour tracer une méridienne et un cadran solaire

et pour suivre la marche d'une montre. Contient aussi une Table des arcs horaires compris entre la méridienne et les lignes horaires, et des cordes de ces arcs, pour un rayon de 1000 parties. Pour la latitude de Genève (46° 12').

Genève: Bonnant, 1814, 8vo, 14 pp, 1 table.

(French).

"extraites du cours particulier du Prof. M. A. Pictet". Containing an equation table for regulating a watch by a sun dial.

R2109 Pieper, W

Geschichte der Pforzheimer uhrenindustrie

Die Pforzheimer schmuck und uhrenindustrie

1767 - 1992

Baden-Baden, Piepenstock (Gernsbach: Casimir Katz Verlag), 1989, 8vo, 344 pp, ill.

History (German).

There appear to be 3 related books:

"Die Pforzheimer Schmuckindustrie", 1989 (1967), 303 pp, ill. (Also titled "Geschichte der Pforzheimer Schmuckindustrie")

"Geschichte der Pforzheimer Uhrenindustrie", 1767 - 1992, (1992), 411 pp, ill.

"Die Pforzheimer Schmuck und Uhrenindustrie", nd, 344 pp, ill.

The Pforzheim jewellery and horology industries.

Includes pocket watches.

R2110 Pierret, VA

Horlogerie, outillage et mécanique

de V.-A. Pierret

Paris: Société anonyme des imprimeries ruines, 1891 (1885), 8vo, 86 pp, ill (80 pp, 28 ill).

Technical, tools (French).

Horology, tools and mechanics, including some invented by the author. A planetary clock, calendar watch and skeleton clock. Horological tools. Seven non-horological items.

R2111 Piguet, M

Histoire de l'horlogerie a la Vallée de Joux

Sentier: J. Dupuis, 1895, 8vo, 87 pp.

History (French).

History of horology in the Vallée de Joux.

R2112 Pimenta, Dimas De Melo

O relógio sua historia

Sao Paulo, Brazil: Dimep, 1976, 10.75 x 10.75 inch, 154 pp, 167 ill, col plates.

History (Portuguese).

Limited edition.

Timepieces, their history.

[Review by Henry B. Fried] Because few books on horology have been published in the Portuguese language, we should give some details of this volume as it appears to be a serious and worthy effort. Its author, Prof. Dimas de Melo Pimenta, is an internationally known horologist and engineer, collector and author. Among other achievements, he is founder and president of the Brazilian Horological Institute and editor of Brazil's "Relojoeiro e Joalheiro". Since this reviewer does not list Portuguese among his languages, this will be more in the nature of a report on its visual impact and making something out of its similarity to Spanish.

The heavy stock quality paper, excellent binding and hard covers make it a fine recipient of the superior artwork and illustrations in this limited printing, serialized copy production. The illustrations are almost all in color with the majority of the color illustrations in rich water color and with draftsmanship bordering on photographic verisimilitude.

The clocks pictured cover table clocks from the mid-16th century up to modern times. Many of these are from the horological museum in Sao Paulo operated by the author. This volume follows the development of time-telling history with heavy emphasis on ancient, famed sundials and clepsydrae of all types and

ages, scientific and decorative. Oil lamps, Chinese dragon, fire clocks, rope and candle clocks, inclined plane and others are covered. The development of early mechanical timepieces is illustrated and described in the text. One illustration shows the Nuremberg statue of Peter Henlein, perpetuating the legend of his invention "relogios de bolso" (pocket watch) and "ovos de Nuremberg" (Nuremberg eggs) both of which by now have been put into a more correct perspective (Morpugo, "L'origine Dell'Orologio Tascabile" and Baille "Watches").

The story of watches has not been neglected with examples of early fusee and enamels. The escapement, its development, Galileo's and Huygens' contributions as well as those of Tompion, LeRoy, LePaute, Earnshaw, Breguet, Harrison, Graham and others is covered in a special chapter.

In another chapter on curiosities in clocks, skeleton clocks, gravity, mystery, talking, turtle and novelty clocks and an example of the Record Watch Company's sector watch are all illustrated. A final chapter on electrical and electronic timekeepers brings us up-to-date with digital watches.

A chronology of horological history starting from 1500 BC to the present introduction of quartz watches followed by a fine index completes this volume.

The book is one commemorating the fortieth year of the author's various horological enterprises and as such, great care has been lavished on its production.

There are collectors who gather horological books of all nations and languages. This Portuguese edition can stand on its own as well as being an outstanding and representative example for that language and subject.

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R2113 Pingaud, L

Besançon et ses environs

Besançon: Paul Jacquin, 1902 (nd), 20.5 x 13.5 cm, 472 pp, ill, map.

Miscellany (French).

R2114 Pinot, R

Paysans et horlogers jurassiens

Genève: Grounauer, 1979 (1889), 25 x 17 cm, xxvi, 352 pp, ill.

History (French).

The original printing of 1888-89 was in the periodical "La science sociale".

Peasants and horologers of the Jura.

R2115 Pipe, RW

The automatic watch

London: Heywood, 1952, 19.0 x 12.5 cm, 156 pp, 89 ill, 10 pp ads.

Description, technical (English).

A detailed, technical description of self-winding mechanisms with information about action, disassembly, assembly and lubrication.

After an historical introduction, the book examines 30 mechanisms: Harwood, Rolex, Bidynator, Longines, Eterna-matic, Omega, Le Coultre, Zodiac Autographic, Admes Indimatic, Buren, the first French automatic, International, Roamer, Cyma, Revue, Movado, Record, Alpina, Juvenia, Wyler, Breitling, Laco Duromat, Rotomatic, Zenith, Baume, new LeCoultre and Tudor Prince.

The book finishes with general conclusions, watch part numbers and a table of English, Swiss and American terms.

[1st edition, good] This book, as the contents indicates, explains the actions and disassembly of specific automatic mechanisms, and provides some repair notes. Each mechanism is illustrated by photographs and there are some diagrams where more detail is needed. The explanations are clear and, where necessary, cover other points such as opening cases and assembly.

Like the books by de Carle and Humbert, it is very useful for the calibres covered.

R2116 Pippa, L

Masterpieces of watchmaking**Chefs d'oeuvre de l'horlogerie****Meisterwerke der uhrmacherkunst****Orologi nel tempo**

Lausanne: Scriptor, Milan: Sperling & Kupfer, 1966, 28.0 x 22.5 cm, 236 pp, 238 b/w ill, 114 col ill.

Collection, illustration (English, French, German, Italian).

Parallel English, French and German text. A translation of "Orologi nel tempo".

The book is subtitled "volume 1" but there is no evidence of a second volume being printed.

Illustrations of 192 items (139 watches, 40 clocks, 1 clock/watch, 1 clock with an orrery, 1 sphere and 10 sundials). There are very brief notes describing the pieces.

[1st edition, good] Said to be a description of the Falck collection, but nothing in the book indicates this; perhaps it is stated on the dust jacket.

The descriptions of the pieces are summaries of the case features with only a few remarks on the movements. The black and white illustrations are quite good, but most are barely adequate. In contrast, some of the colour illustrations are excellent, especially those of enamel paintings. Overall, it is a pretty "coffee table" book, worth looking at to admire the pieces and then put aside for more useful works. Like Cardinal "The watch from its origins to the XIXth century" (which is a much better book) this book should be called "Masterpieces of horological case making".

I am not sure what the purpose of the book is. There is a short preface on the art of collecting, but as very few collectors are rich enough to buy such pieces it is not relevant to the majority of viewers. I say "viewers" because there is nothing to read and the book has little educational value. So I suppose it was printed so the collector (Falck) or the collection could receive the admiration and plaudits of others.

R2117 Pipping, G; Sidenbladh, E; Elfstrom, E**Urmakare och klockor i Sverige & Finland**

Stockholm: Norstedts Forlag, 1995, 11 x 8 inch, 570 pp, 265 b/w ill, 69 col ill.

History, makers (Swedish).

The illustrations have English captions.

Watchmakers and clockmakers in Sweden and Finland; historical overview and index of craftspeople who were watchmakers and craftsmen before 1900.

Described as: "What fascinating, intricate, and ornately decorated objects old clocks are! Clockmaking is an art in Sweden that goes back to medieval times. This book features dozens of clocks, from 16th century church tower works to 19th century calendar clocks, grandfather clocks, 18th century gold stopwatches, neo-gothic wall clocks, and more. A comprehensive list of clockmakers and firms that manufacture clocks is provided."

R2118 Plan, D**A. Constantin, peintre sur email et sur porcelaine**

Geneva: Editions de Genève, 1930, 23.5 x 17.5 cm, 203 pp, 28 plates.

History (French).

Limited edition of 550 copies.

Monograph on the 19th century French enamel and porcelain painter, Abraham Constantin, with documents (including many letters), notes and index.

May be irrelevant?

R2119 Planchon, M**L'évolution du mécanisme de l'horlogerie**

depuis son origine

Bourges., 1918, 8vo, 46 pp, 25 ill.

History (French).

The evolution of clock and watch mechanisms from their origins.

R2120 Planchon, M**L'horlogerie son histoire rétrospective**

pittoresque et artistique

Paris: Montres Zenith (Paris: Renouard), 1923 (1898), 8vo, 264 pp, frontis, 150 ill (232 pp, 107 ill, slip case?).

History (French).

The second edition was produced by P. Brateau.

Clepsydras; Bell clocks; Jaquemarts and automata; House clocks; Renaissance clocks; Pendulum clocks; Diverse clocks; The clockmakers; Time in Japan; Time in China.

Only clocks?

R2121 Planchon, M**Musée rétrospectif de la classe 96, horlogerie**

a l'exposition universelle internationale de 1900 a Paris

Paris., ca 1900, 28.5 x 20 cm, 152 pp, 125 ill, 3 plates.

(French).

Museum retrospective of class 96, horology, at the 1900 Paris exhibition.

R2122 Plaut, HG**Taschenuhren**

von Nurnberg bis Glashütte

Germany: Lanterna Magica, 1988, 28 x 24 cm, 174 pp, 1027 ill.

Collection, description, history (German).

Catalogue of the Plaut collection of pocket watches.

One review notes that some dating is incorrect.

R2123 Player, JW**Watch repairing**

London: Crosby Lockwood, 1952 (1945), 19.0 x 12.0 cm, 157 pp, 77 ill including 4 plates.

Repair (English).

Both the first and second editions were produced in 1945 with reprints in 1946 and 1952.

Eight chapters; tools and their use, examination, repairs, cleaning, timing and complicated watches (derived from Hillmann "La reparation des montres compliquées").

[2nd edition 1946, good] The preface says the book "is to help the beginner to develop manipulative skill" with "everything that a student needs to know to enable him to work with confidence". Obviously my concept of a beginner is radically different from Player's! The book is almost totally unintelligible unless the beginner has already had extensive experience of using the turns and pivot polishing, has detailed knowledge of watches and disassembly, and has a teacher sitting beside him to guide him. The book does begin by "teaching" how to file and turn, in four pages, but this is merely an outline of exercises to be done under supervision. Clearly it was written for use within the English apprenticeship system.

Ignoring this problem (which otherwise would make the book mediocre), Player has provided a very good description of repair processes. But his text is terse, assumes a lot and has few useful illustrations.

The first chapter lists the tools required, explains filing, gets the student to make a ferrule, and explains polishing, hardening and tempering. The second briefly outlines fault finding before disassembling the movement.

The next 3 chapters (the bulk of the book) give very precise repair instructions. These include keyless work, barrel uprighting, fitting mainsprings, fusees, pivot repair and hole bushing, replacing jewel holes, wheel depths, lever and cylinder escapements, and making a chronometer escapement detent. I found most of this very good, but I would have had some trouble understanding it if I hadn't previously had experience or read other books. The main reason is because Player explains what to do but says very little about how to do it. As an aside, I again read how to make a stem from a gramophone needle. But I have never seen a gramophone needle large enough. Did any 78 record players use 1.5 inch needles as thick as a match? Also, I found measuring everything in douziemes in 1945 a bit odd.

Chapter 6 describes cleaning by hand, gives details of fitting watch hands and then a few remarks on crystals. Chapter 7 describes vibrating and fitting flat and Breguet balance springs. There is nothing on timing other than some discussion of pinning points. The last chapter describes some chronograph mechanisms with a few comments on repair. The chapter ends with cleaning and repair of repeaters without illustrations, making it pretty difficult for the student.

Definitely an interesting book packed with information, but not for the faint-hearted. There are much better sources for the methods covered.

R2124 Playtner, HR

Analysis of the lever escapement

England: TEE Publishing (Ontario: E & A Gunther) (Chicago: Hazlitt & Walker), 1995 (1895), 20.0 x 13.5 cm, 57 pp, 34 ill (88 pp, fld plate).

Description, theory (English).

The first edition of 1895 is 88 pp, but it may be the same as the 1910 edition (plus advertisements?).

The 1910 printing of 57 pp is in both hard cover and paper wraps; the reprint is of this edition.

The 1895 edition is available as a Google Book PDF file (USA only?).

The 1910 edition is available as Project Gutenberg files (html and images).

A lecture delivered before the Canadian Watchmakers' and Retail Jewelers' Association. A technical discussion of the design of lever escapements followed by instructions for escapement drawing.

[1910 edition, fair] The book begins with the metric system and degrees (which are apparently not understood by most people), definitions of escapement terms, and the necessity of being able to draw (but no actual reasons why are given). The bulk of the lecture (pages 3 to 38) is a detailed discussion of aspects of the lever escapement; number of escape wheel teeth, equidistant and circular pallets, drop, draw, lock, run (slide), lift, fork and roller action, and safety action. This includes consideration of the dimensions of actual escapements.

After 2 pages on the Savage two-pin escapement Playtner provides detailed instructions for drawing an escapement to particular specifications. Included within this are an illustration of and brief remarks on an adjustable escapement model. The drawing section could not usefully be delivered in a lecture unless the book was distributed to the listeners.

R2125 Pleissner, R

Dresden in der geschichte der uhrmacherei

erinnerungsgage zum 50 jahr, jubilaum der firma Robert Pleissner

Dresden., 1924, 29 x 23 cm, 32 pp, ill, 8 plates.

History (German).

Also given as 32 pp, 1 fig, 16 plates.

Dresden in the history of horology, recollections of 50 years, jubilee of the Robert Pleissner company.

R2126 Poche, E; Uresova, Libuse

Hodiny a Hodinky

Prague: Panorama, 1987, 4to, 190 pp, ill, 85 col ill.

History (Czech).

Guide to vintage clocks and watches.

Possably another edition of Uresova "European clocks".

R2127 Podswapinski, W; Bartnik, B; Wawrzyniec

Zegarmistrzostwo

Warsaw., 1962, 8vo, 402 pp, 422 ill.

Repair (Polish).

A compilation of extracts from books by de Carle, Fried, Jendritzki and Levin.

[1st edition review by Henry B. Fried] "Zegarmistrzostwo" translated freely means workshop technology. It is a book in the Polish language by three authors, Wawrzyniec, Bartnik and Podwapinski. Perhaps again, these three should not be called authors but rather compilers with very good taste. They have copied from the best English, Swiss and German texts and have used the illustrations from these books freely. DeCarle, Jendritzki, Samuel Levin and one from this reviewer's books have "contributed" to both text and drawings of this book. While there are many ideas in this book which seem original to this author, for the most part, the drawings and text are familiar.

The book, however, is a clever compilation of processes for the watchmaker in making parts such as wheels,

pinions, the polishing of pivots, the lapping of metals, threading and drilling. Lathework is extensively covered in the book's 400 pages and about the same number of illustrations. Although unfamiliar with the language, the numerous drawings give ample clue to the instruction and with the help of a Polish speaking watchmaker, who helped with some of the pages, an understanding of the contents was possible. Actually, despite the plagiarism, there are few books in watchmaking that cover the making of parts as thoroughly as this book seems to.

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See also Zegarki "Praktyczny podręcznik fachowy".

R2128 Pohl, H

L'homme à la poursuite du temps

Paris: Plon, 1957, 19 x 13 cm, 358 pp, 53 ill.

(French, German).

"Fourmillant d'anecdotes pittoresques, de visages illustres, de machines étranges et de merveilleux bijoux, nous retrace, à travers les siècles et les pays, la passionnante histoire de la plus ancienne et de la plus singulière curiosité des hommes."

R2129 Pohl, H

Wenn dein schatten sechzehn fuss misst

Munich: William Andermann Verlag, 1955, 21 x 14 cm, 359 pp, ill.

(German).

Listed in Kahlert "Wristwatches, history of a century's development".

2nd edition in 1955.

When your shadow is 16 feet long.

"The author presents a fascinating study regarding the history, methods, and secrets of time measurement. The title of the book is taken from part of an ancient Egyptian letter that read: When your shadow misses by 16 feet (is 16 feet long) Bernike, Amasis will wait for you in the olive grove."

R2130 Polte, W; Hein, J; Windoffer

Clocks and watches from the Landrock collection

Uhren der sammlung Landrock

Munich: Callwey, 1987 (1986), 24 x 18 cm, 296 pp, 180 ill.

Collection (English, German).

Foreword; Collecting historic timepieces, the Landrock "legend"; The collector Horst Landrock, his background, career and development; Collecting, the adventures and the rewards; Ung geared or primitive timekeepers, sun-dials, sand-glasses, oil-clocks; Iron clocks, astronomical clocks; Friesland clocks; Black Forest clocks; Swallow-tail or apron clocks; Travelling clocks; Night clocks; Plate-clocks; Horizontal table clocks, mantel clocks, boulle cases, bracket clocks; Gravity clocks, cartel clocks; Picture clocks and Viennese picture-frame clocks; Clock-cases in bronze and other materials; Viennese zapplers clocks with rotation and torsion pendulums; Porcelain clocks; Marine chronometers; Time-clocks and time-switches; Watches; Historical clockmakers, machines and tools.

With an appendix, bibliography and index.

Described as: "The man we encounter in the pages of this book is unpretentious and straightforward; he is by nature modest, reserved and unassuming. The watchmakers profession, to which he owes his technical expertise, has won his total devotion. His great passion in life has been collecting historic timepieces, and his collection of clocks and watches, which is of great historical value, is the crowning achievement of his life's work."

R2131 Polzi, AZ

L'orologio, manuale dell'orologiaio

Milan: Antonio Vallardi, 1948, 23 cm, 194 pp, 199 illus.

History, repair, technical (Italian).

Part of a series titled "Tecnologia meccanica".

In three sections (history, theory and repair) covering both watches and clocks.

R2132 Pomella, F

L'orologio da portare addosso

art e tecnica nell' orologio tascabile dalle origini al 1820-30

Torino: Ivrea, Priuli & Verlucca, 1978, 25 x 22 cm, 289 pp, 200 ill, 34 plates, slip case.

Illustration (Italian).

R2133 Pomella, F

Orologi dal 1500 al primo 1900

Les montres du XVIe siècle au début du XXe siècle

Italy: Priuli & Verlucca, 1989 (1986), 163 pp, 56 plates.

Bibliography, history, illustration (Italian, French).

Book for collectors.

R2134 Poncet, C

L'horloger, le livre de la profession

Paris: Eyrolles, 1924 (1922), 8vo, 312 pp, ill (307 pp, 198 ill).

Repair, technical (French).

The horologist, the work of the profession.

R2135 **Poncet, C**R2135 **Poncet, C****L'horloger, sonneries d'horloges et de montres**Paris: Léon Eyrolles, 1922, 4to, 222 pp, 133 ill.
Technical (French).

Also given as 307 pp, ill.

The horologist, chimes of clocks and watches.

R2136 **Pons, G****Temps Chanel**

New York: Assouline, 2003, 4to, 148 pp, ill.

Advertising (English).

*[1st edition, mediocre] Simply an advertisement for Chanel watches. Photographs of wrist watch dials and bracelets with minimal, uninteresting text.*R2137 **Pons, H****Pons clock and watch manufacture**

1823.

(English).

Robertson also lists Pons "Timekeepers", 1846, without any details.

*Is this "Pons" the same as that mentioned in Booth "New and complete clock and watchmakers' manual"?*R2138 **Ponsford, CN****Devon clocks and clockmakers**

England: David & Charles, 1985, 8vo, 360 pp, 12 ill, 47 b/w plates.

Makers (English).

*"A good book with lots of information about clock and watch making in Devon with notes on Devonshire makers."*R2139 **Ponsford, CN****Time in Exeter**

a history of 700 years of clocks and clockmaking in an English provincial city, with details of more than 300 former makers

Exeter: Headwell Vale Books, 1978, 22.5 x 16 cm, 200 pp, 9 ill, 50 b/w plates.

Makers (English).

R2140 **Ponsford, CN; Scott, JM****Clock and watchmakers of Tiverton**

Tiverton: Maslands, 1982 (1977), 84 pp, 33 ill (64 pp, 10 plates).

Makers (English).

There is a supplement.

Includes biographical information.

R2141 **Poppe, JHM von****Ausführliche geschichte der theoretisch-praktischen uhrmacherkunst**

Nürnberg: Deutsche Gesellschaft für Chronometrie (Leipzig:), 2008 (1797), 8vo, 564, (20) pp (576 pp).

Bibliography, history (German).

Two editions in 1797 and 1801 with a modern facsimile reprint of the 1801 edition.

The 1797 edition is available as a Google Book PDF file, but some pages are badly scanned.

"... seit der ältesten art den tag einzuheilen, bis an das ende des achtzehnten jahrhunderts."

Detailed history of the theoretical and practical clockmaker's art, since the oldest art to the end of the 18th century.

The reprint includes a 15 page review of the original book.

*The second edition of "Versuch einer geschichte der entstehung und fortschritte der theoretisch-praktischen uhrmacherkunst", which see.**Baillie holds this history in high regard and notes that it "has the great virtue of giving references for most of the statements made".*R2142 **Poppe, JHM von****Der wecker für jedermann****Wackaren, eller den wiktiga uppfinning**

(Jonkoping: Lundstrom) (Frankfurt: JHM von Poppe), nd (1809), 30 pp, 1 plate (47 pp, 1 plate).

History, miscellany (German, Swedish).

The second edition was published in 1811 and there is a modern reprint of it. The Swedish translation

(30 pp, 1 plate) was published in 1815.

*"The alarm for everyone, or the art of being woken by any pocket watch, accurate to a quarter of a minute. Including hints as to how you can use the same device to detect thieves as they break in and to drive them away; and how to immediately notice the awakening of the apparently dead when they are not being supervised."*R2143 **Poppe, JHM von****Die englische uhrmacherkunst**

Pesth., 1819, 88 pp, 3 plates.

(German).

A translation of the horological section from Martin "Circle of the mechanical arts".

R2144 Poppe, JHM von**Die uhren und die uhrmacherkunst**

auf der höchsten stufe der jetzigen vervollkommnung
1829, 8vo, 528 pp, 12 plates.
(German).

Listed in Robertson "The evolution of clockwork".

Timepieces and horology in the highest degree of present perfection.

Described as "clocks and the art of clockmaking and their construction repair and assembly", and so it may have nothing on watches.

R2145 Poppe, JHM von**Die wand, stand und taschenuhren**

Frankfurt:, 1822 (1818), 14 x 13 cm, 176 pp, 4 fld plates.
Repair, technical (German).

The mechanisms, maintenance, repair and regulation of standing clocks, wall clocks and pocket watches.
A pocket book for horologists.

R2146 Poppe, JHM von**Praktisches handbuch für uhrmacher, ...**

... uhrenhandler und für uhrenbesitzer. Oder vollständiges lexikon und erklärung der begriffe und der kunstwörter, welche bey der verfertigung, bey der reparatur, und bey dem gebrauch aller arten von uhrwerken, nebst denen dazu gehorigen werkzeugen und andern einrichtungen, vorkommen.
Leipzig: Sommer, 1810 (1800), 8vo, 2 volumes 412 pp and 546 pp, 12 plates.
Dictionary, repair (German).

Second edition in 1810. Robertson "The evolution of clockwork" also lists a 2 volume "Theoretisch-praktisches wörterbuch der uhrmacherkunst" (1800) which I presume is the 1st edition.

Practical handbook for clockmakers, users and owners; or theoretical and practical dictionary of horology; an explanation of the most important terms which are used in making, repairing and using clocks and watches, including tools and other mechanisms.

R2147 Poppe, JHM von**Versuch einer geschichte**

der entstehung und fortschritte der theoretisch-praktischen uhrmacherkunst
Gottingen:, 1797, 7.5 x 4.5 inch, 90 pp.
Bibliography, history (German).

Study of a history of the origin and progress of theoretical-practical horology.

Baillie holds this history in high regard and notes that it "is far ahead of any other of the older histories. It has the great virtue of giving references for most of the statements made".

See Poppe "Ausführliche geschichte der theoretisch-praktischen uhrmacherkunst" for the second edition.

R2148 Portal, C; Graffigny, H de**Les merveilles de l'horlogerie**

Paris: Librairie Hachette, 1888, 18 x 12 cm, 296 pp, 112 ill.
Description (French).

Robertson indicates there was a second edition by Graffigny, but gives the same date and no details.
Robertson also notes "the Journal Suisse d'Horlogerie says that it is full of technical mistakes".

R2149 Porter, GR**A treatise on the manufacture of porcelain and glass**

Philadelphia: Gihon and Smith (London: Longman, Rees), 1846 (1832), 17.0 x 10.5 cm, 252 pp (324 pp, 50 ill, frontis).
History, technical (English).

The full title is "A treatise on the progressive improvement and present state of the manufacture of porcelain and glass"

A volume in the Cabinet Cyclopaedia by Dionysius Lardner.

The frontis plate is a decorative second title page with an illustration.

The 1832 and 1846 editions are available as a Google Book PDF files.

Two parts, glass and porcelain manufacture. It includes a 2 page description of making watch glasses (which is quoted in full by Weiss "Watch-making in England 1760-1820") and 4 pages on the manufacture of clock and watch dials.

[1st edition, very good] Each part provides a brief history and then gives detailed information on materials, manufacture and products, primarily in relation to English industries.

Only 6 pages are directly relevant and these descriptions of dial and watch glass making are very good. Also, there is a fascinating history of the involvement of Droz and Guinand in the development of glass for telescope lenses.

It is a well organised, well written and absorbing book. I would regard it as excellent if it had more relevant material.

R2150 Porter, Robert D**How to make tiny drills quickly, easily & accurately**

USA: Robert D. Porter, 1996, 21.5 x 13.5 cm, 16 pp, 10 ill.
Repair, tools (English).

Instructions for making small drills followed by 3 tables giving drill blank and tap drill sizes.

[1st edition, good] A pin vice is modified for use on a tip-over T rest so that rods can be ground in a lathe to make drills. The description is clear with good diagrams.

R2151 Porter, Robert D**The art of repivoting watch wheels and pinions**

USA: Robert D Porter, 2002, 21.5 x 14.0 cm, 20 pp, 51 ill.

Repair (English).

“Also includes how to make two new lathe attachments for making micro-drills, small cylindrical components, and the like.”

Instructions on how to make two lathe attachments (5 pages); How to make a micro-drill (4 pages); Repivoting a third wheel and putting in a new seconds bit (8 pages); A useful support attachment (2 pages).

[1st edition, good] Porter describes two, hand-made attachments to hold and accurately grind small cylindrical objects on a watchmaker's lathe. The descriptions are inadequate (but make sense with a bit of effort by the reader) and the photographs are too small.

He then describes modifying a pin-vice to grind spade drills; this is an abbreviation of the instructions in his booklet “How to make tiny drills quickly, easily & accurately”. These attachments enable the user to make drills and replacement pivots accurately.

Repivoting is described clearly. Porter recommends cutting the new pivot to a close fit to the hole and attaching it by loctite. Although I normally object to such methods, Porter gives good reasons for this approach; many watch arbors are very hard and split if a slightly oversize pivot is driven in.

Although requiring effort, this book provides some very good ideas for the task of pivoting.

R2152 Porter, Robert D**The clock and watch makers guide to gear making**

USA: Robert D. Porter, 2006, 28.0 x 21.5 cm, 192 pp, ill.

Repair, watch making (English).

“... and other machines.”

16 chapters.

Chapter 1 (12 pages): History, gear forms, and recommended measuring tools.

Chapter 2 (8 pages): Indexing.

Chapter 3-4 (12 pages): Making form tool and sine bar lathe attachments for making gear cutters.

Chapter 5 (16 pages): How to make gear cutters.

Chapter 6-9 (18 pages): Making a centering device, a support attachment, a center distance tool (for clock making), and providing power to a milling attachment.

Chapter 10 (44 pages): How to design and make a weight driven clock.

Chapters 11-13 (22 pages): Design sheets for making gear cutters.

Chapter 14 (8 pages): Making lantern pinions.

Chapters 15-16: Making winding and setting clutch pinions.

[1st edition, fair] Porter's introduction states: “This guide does not pretend to be a complete treatise on horological gearing, but does focus on several useful gear types to provide the ambitious watch and clock maker, inventor, or model maker with enough basic information that he or she will be able to design gears and the cutters to make them.”

The purpose of this book is simple. Given the number of teeth and leaves for a wheel and pinion, and the tooth module, the reader can look up the tables provided and calculate the dimensions of the cutters required. Then, using the tools described in the first half of the book, these cutters can be made.

The approach to designing cutters is mindless. There is no explanation of the tables and no information on the theory of gears, so the shape of the required cutters is determined without any understanding of why they need to have particular forms. The longest chapter, specifying the design for a clock, provides worked examples of the process together with information on making other parts of the movement.

Making the tools needed to make cutters, in first part of the book, is adequate, but again Porter provides little explanation of why these tools are needed or what they do. Enough information is given for the competent machinist to make the tools and then make gear cutters. So the book achieves its objectives. I don't like the approach, preferring to understand “why” as well as “what”, but it does provide the “ambitious watch and clock maker” with the necessary information to make wheels and pinions.

R2153 Powell, F**On the dynamics, geometry and energy flow of the verge escapement**

USA: F Powell, 1981, 11 x 8.5 inch, 64 pp, no ill.

Theory (English).

A mathematical examination of the verge escapement.

[Review by Bill Pritchard] The author has rendered students of antique horology a real service with his comprehensive analysis of the theory of the verge escapement. His book will be welcomed by a growing number of horologists who are interested in the theoretical aspects of horology, e.g., the physics of timekeeping and the engineering of timekeeping mechanisms. Because the theory of time is a major branch of both astronomy and theoretical physics, there is no lack of professional activity in that field. The situation is quite different insofar as the engineering of timekeeping devices is concerned. The theory of atomic clocks and other ultra modern developments is amply researched, but the theory of obsolescent and long obsolete mechanical devices is non-existent in the professional literature. At the same time, the amateur literature, especially in the United States, tends to keep away from such work as being too

difficult for the average collector.

There is little doubt that the verge escapement arrived at its ultimate form as a result of several hundred years of trial and error and the passing down from master to apprentice of design details acquired in that tedious manner. The introduction of the balance spring in the 17th century produced the first tuned circuit natural timekeeper and a concomitant increase in accuracy of two orders of magnitude. During the same period, mathematical techniques appeared that made possible the analysis of this performance. but little was written on the verge. The theoreticians were, of course, greatly interested in the pendulum, and later in the lever and chronometer escapements, but the verge received relatively little attention.

Powell has proceeded with his analysis in a straightforward and exhaustive way. He starts with the standard differential equation for an oscillating system, with one degree of freedom and viscous damping. It is a piecewise linear equation with discontinuities in the applied torque term because of the locking and unlocking of the escapement. The complete solutions are rather complicated algebraically, but Powell succeeds in simplifying them nicely and in summarizing the results in a compact form. The principal parameters - balance inertia, spring constant, coefficient of friction, energy per impulse, and rate - are related to each other. He gives a family of curves for the balance amplitude and rate as a function of the damping with drive torque as a parameter.

There is also a related discussion on the escapement geometry and a set of curves relating the flag radii and angles with the escapement wheel geometry. The monograph finishes with a refined version of the author's previous studies on the equation for the fusee shape.

It is clear that verge watches were not designed and built using this type of analysis, nor were fusee engines cut in accordance with the modern theories. Powell's analysis makes it possible for us to assess just how well the old craftsmen succeeded, by experience and intuition, in arriving at the correct designs from a modern theoretic point of view. We can hope that in some future work, Mr. Powell will use his considerable mathematical skills to study and compare his conclusions with the watches as they were and perhaps to comment on the differences.

Because this book is mathematically based horological research at an advanced level, it may be of interest to only a few. Nevertheless, it is a scholarly and important work, the type of which we should encourage. (Reprinted by permission. NAWCC Bulletin No. 236, ©1985 by the National Association of Watch and Clock Collectors, Inc.)

R2154 Powell, F

The dynamics of the verge watch, a scientific treatise

USA: F Powell, 1975, 11 x 8.5 inch, 134 pp, 18 ill.

Theory (English).

[Review by D. H. Shaffer] Modern scientific inquiry into a physical system will frequently require the building of mathematical models that reflect the relevant structure of parts of that system. The task that Mr. Powell has posed for himself is to model and analyze the mechanical system we know as the verge watch. He has further tried to accomplish this through the use of mathematics that is not above the college freshman level. His treatment of the mechanics of the verge watch is thorough, and is largely done with mathematics at the advertised level. However, this reviewer's 25 years of experience in teaching mathematics at a university causes me to wonder how many college freshman will familiar with "The LaGrange equation for conservative dynamical system," (page 67) or a second order ordinary differential equation that is linear in its homogeneous part but carries a nonlinear forcing function (page 80). (I am reminded of a book by George Gamow, the well-known physicist, whose foreword told that he started the book with the intent that his 12-year-old daughter should be able read it. After its completion he allowed that she could, indeed, read it, provided only that she had had a good course in complex analysis.)

Mr Powell's book is divided into two main parts. The first 49 pages are expository and contain no material of technical difficulty. He discusses the development of the watch in its earliest form, then with the bristle regulator, and finally with the balance spring. He has modeled each of these forms, and describes a number of properties of these watches that emerge from his analyses. For example, he notes that, since the balance in a verge watch is nearly always engaged with the power train, the timekeeping rate of the watch is in part dependent on the mainspring torque together with the train friction and inertia. This characteristic alone renders the watch incapable of consistent performance. But his analysis of the watch mechanics does reveal some interesting features that could help restorers of these early pieces get the best possible service out of them. For example, he finds that, if one is installing a new balance spring, a spring that vibrates about 17% slow should be selected (page 14); the mainspring's effect will be to increase the beat frequency about 20% when the watch is assembled. Because the balance is almost constantly engaged with the train, the fusee or its predecessor, the stackfeed, was essential. The analyses done here included consideration of both the fusee the stackfreed.

The second part of the book is a collection of appendices which contain the detailed mathematical derivations involved in the analyses. The work reported in these appendices not only provides the support for conclusions stated earlier in the book, but also gives more detailed structure to the analyses than is found elsewhere. Although the presentation of the appendix material is well done and not difficult to follow for a reader who enjoys mathematics, the technical content is high. I suspect that not many will persevere through even a small part of the appendices.

Collectors with a special interest in the verge watch would find the first third of this book well worth reading.

The quality of the exposition generally high. There is repetition between sections (the same seven line

quotation from Rees' Cyclopaedia is given on pages 18 and 39) that is so extensive the reader wonders why he is being subjected to the same material twice. Perhaps this is a pedagogical device used by the author to drive his points home. In summary, Mr. Powell very definitely has something to say, and says it well, but is talking to a limited audience who have a specialized horological interest and mathematical enthusiasm.

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R2155 Powell, John**The depressed state of the watch trade**

1817.

History (English).

Listed in Robertson and Tardy.

The full title is "A letter to Peter Moore, Esq., M.P., chairman of the committee appointed to inquire into the state of the watch-trade, on the distressed state of those employed in that profession, with some suggestions for its improvement."

R2156 Prang, L**Alphabets plain ornamented and illuminated**

a selection from the best ancient and modern styles, particularly adapted for the use of painters, engravers, marble workers and illuminators

Boston: L. Prang & Co, 1873, 14 pp, ill.

Miscellany (English).

R2157 Preud'homme, LB**Considérations pratiques sur les engrenages**

de roues et pignons en horlogerie accompagnées de la description et des usages d'un compas de proportion de nouvelle invention

Genève: JP Bonnant, 1780 (1778), 16 cm (4to), 95 pp, 1 fld plate, 1 fld table.

Repair, watch making (French).

From "Mémoires de la Société de Genève", vol 1, part 2. One source gives the page numbering as 81-140 (60 pp), presumably without the description of a sector.

Practical considerations of trains of wheels and pinions in horology with the description of a sector of new invention.

See Dubois "La tribune chronométrique scientifique et biographique" which reprints a version of this work. The plate is reproduced (albeit minutely) in T.R. Crom "Horological shop tools 1700 to 1900".

R2158 Price, Ron**Origins of the Waltham model 57**

evolution of the first successful industrialized watch

USA: National Association of Watch and Clock Collectors, 2005, 27.5 x 21.5 cm, 52 pp, 69 ill, 112 pp tables.

History (English).

NAWCC Special Order Supplement No. 7.

NAWCC Special Order Supplements 5, 6 and 7 were first published as a set under the title "Boston: cradle of industrial watchmaking".

40 pages of text examining the evolution of the Model 57, followed by 12 pages of references and notes, and 112 pages of tables providing information about known watches (the last page blank).

[1st edition, excellent] The basic argument in this book is the same as that in the article "Evolution of the first industrial watch" in NAWCC "Boston: cradle of industrial watchmaking"; and so see that for my review. It is expanded by providing much specific information on watch designs.

The substantial differences between this book and the article are the presentation of sources and the extensive lists of watches which provide specific information for each movement included. These two parts, which form the backbone of Price's research, show the very large amount of work which he has done, and they provide an excellent basis for future research. It is essential reading for anyone studying the early manufacturing at Waltham.

[Remark] I do not know why the article and the book were published together. The book is a much more significant work in which the extra details and data offset the basic problems which I have commented on. And so the article is redundant.

R2159 Priestley, Philip**Aaron Lufkin Dennison**

an industrial pioneer and his legacy

USA: National Association of Watch and Clock Collectors, 2009, 28.0 x 21.5 cm, viii, 156 pp, 252 ill.

History (English).

Nine chapters (96 pages): Aaron Lufkin Dennison, family and early career (8 pages); Aaron Dennison and American watch manufacturing 1849-1861 (16 pages); Aaron Dennison and European watch manufacturing 1864-1874 (8 pages); Aaron Lufkin Dennison and watchcase manufacturing 1874-1895 (8 pages); Dennison Watch Case Company Limited 1905-1934 (16 pages); Dennison Watch Case Company Limited 1934-1967 (10 pages); Dennison watchcase styles (10 pages); Punch marks on Dennison watchcases (10 pages); and Denbro Limited and miscellaneous products (10 pages).

The text is followed by: Reference key (2 pages); Notes (4 pages); Chronology (4 pages); Archive

papers in chronological order (14 pages); Addendum 1, Dennison & Company silverware; Addendum 2, Beidemans/Weidenmanns in Winterthur; Aaron Lufkin Dennison's will; Appendix A, Dennison inventions and patents; Appendix B, Dennison mainspring gauge; Appendix C, American and European watch movements sizes; Appendix D, Price guide to Waltham movements in Dennison cases; Appendix E, Gold alloys; Appendix F, Watch glasses: history, types, sizes and manufacture; Appendix G, Evan Roberts, a nineteenth century prolific watch collector.

There is a 5-page index.

[1st edition, good] *This book is an extensive biography of Dennison, describing his involvement with different watch making and case making ventures.*

The first three chapters cover Dennison's early life and his involvement with watchmaking; the Waltham, Trenton, Melrose, Anglo-American and English Watch companies. These provide a competent history and biography, but they do little more than repeat, in a convenient form, information that has already been published. Priestley makes no real attempt to critically evaluate the information, restricting his opinions to a few interesting, but peripheral issues.

The remainder of the book covers Dennison's involvement with watch case manufacturing in England. Only chapter 4 actually deals with Dennison, and three of the remaining five concern case making after Dennison's death.

The appendices include some interesting and useful information, most notably the detailed examination of watch crystal sizes

I read this book just after reading Newman "The Christchurch fusee chain gang" and found it rather dull by comparison. This is a bit unfair. Newman has written a fascinating social history, looking at the lives of people (although I must be honest and recognise that some of the later chapters in Newman's book are less than thrilling), whereas Priestley is concerned with describing events, which is necessarily less exciting.

Overall, this book is competent, well-written and necessary in the libraries of those interested in Dennison.

[Remark] *I was disappointed by the first two chapters, which cover Dennison's early life and his involvement with American watchmaking. Priestley has constructed his book from original documents and earlier studies. But, like many other "historians", he has done so without any real attempt to evaluate the evidence, and he has blandly presented information as fact without bothering to assess its significance or validity.*

For example, on page 3 we read that by "1832 he had constructed an automatic machine for cutting clock wheels". Yet the startling word "automatic" is ignored by Priestley who, it seems, thinks there is no need to comment, even though I expect he knows that automatic machinery was not developed until many, many years later. Then, on page 15, Priestley notes the abject failure of Dennison's watch wheel-cutting machine, commenting "by some accounts Aaron was not a great mechanic". However, Dennison himself, in a letter reproduced on pages 117-118, states he was not a machinist or tool maker. Despite examining another part of the same letter, it appears that Priestley has considered admission to be unimportant. And he cites another letter in which Dennison states "it is now my purpose to turn my engineering talent and experience ...", but the contradiction is not mentioned.

Likewise, on page 5 he describes the workshop of Luther Goddard as "the first American watch factory" without any attempt to explain what he means by the word "factory"; clearly a "factory" may be any place where watches are made by any method. Glossing over such points means that it is very likely the less knowledgeable reader will develop an erroneous view of what Dennison and Goddard actually did. Also on page 5 we learn Dennison "devised a gauge system ... based on 1/100 parts of a millimetre according to his biographical notes ... and later Swiss engineers were credited with the invention". I am confused. The invention of the metric system; surely not! The invention of the gauge (which was actually based on inches); not as far as I know and, anyway, the gauge is not very interesting.

This is not nit-picking, because the uncritical repetition of information can lead to significant misinterpretations. For example, on page 15 we read that by October 1854 "the company was making five watches per day and employed about 90 workers." But this represents a rate of production of 18 man-days per watch, a figure that must be recognised as not significantly, if at all different from the rate of production by the old-fashioned hand methods. So after 4 years Dennison, described as "the father of the American system of mass production", cannot possibly have been using machine-based, mass-production techniques. Also, as Priestley notes on page 21 "in 1857 there were only 75 operatives making 5 watches per day" which is only a marginal improvement to 15 man-days per watch. So mass-production still had not arrived.

The most important example of failure to analyse and interpret concerns Howard when he moved back to Roxbury after the bankruptcy; pages 18-19. Priestley notes that "about 500 watches were made from the old Boston Watch Company material, and engraved Howard & Rice or E. Howard & Co." Which is fine, but then he goes on "Serial numbers 6003 through 6853 have been noted", referring to a private communication. What does this mean? The Boston Watch Company produced only 5000 watches, so where do these numbers come from? And the range encompasses far more than 500 movements. Were these Boston movements 4003 to 4853 renumbered? Or are they simply irrelevant, being Howard production after he returned to Roxbury? So an off-the-cuff remark raises important questions which should have been addressed.

R2160 Priestley, Philip**Early watch case makers of England, 1631-1720**

USA: National Association of Watch and Clock Collectors, 2000, 28.5 x 22.0 cm, 89 pp, 48 ill, tables. Dating, history, identification, makers (English).

NAWCC Special Order Supplement No 3.

Seven chapters: Introduction and historical perspective (8 pages); The guild system and the Clockmakers' Company (3 pages); The watch box and case makers (20 pages); Punch marks and the Goldsmiths' Company (7 pages); Marks of the box and case maker (7 pages); Review of marks on boxes and cases (5 pages); Social and economic factors (9 pages).

Followed by references and notes, bibliography and 8 appendices (the last two, of 12 pages, update his previous book "Watch case makers of England").

[1st edition, very good] The core of the book are chapters 3 and 5. The former provides "family trees" of case makers and an alphabetical, biographical list of them. The latter tabulates makers marks and their attribution, the primary data for watch case identification.

The other chapters provide historical context, details of the research methods and sources, and discussions of relevant issues.

Like his previous book, this is a significant and very important piece of research (fortunately in cloth boards).

R2161 Priestley, Philip**Watch case makers of England**

a history and register of gold and silver watch case makers of England, 1720-1920

USA: National Association of Watch and Clock Collectors, 1994, 27.5 x 21.5 cm, 216 pp, 126 ill, 8 maps. Dating, history, identification, makers (English).

NAWCC Bulletin Supplement No 20, Spring 1994.

The first 88 pages contain ten chapters describing case and bow styles, case making, a history of hallmarking, geographical data, biographies of makers and details of hallmarks.

The bulk of the book contains listings of London, Birmingham and Chester case makers, their marks, dates and addresses.

The book concludes with a list of watches examined by the author.

[1st edition, excellent] If the value of a book is measured by how often it is referenced, then this book has to be one of the most important I have seen. It is one of the very few that discusses cases in detail (with excellent photographs of case makers at work) and it is an essential reference for identifying and dating watch cases (and indirectly, watches) made in England.

Priestley does not waste words. He provides a very clear, direct examination of watch case manufacture in England and every page contains important, useful information. It is a pity it was produced as a paperback because it will be a valuable reference long after its covers have worn out.

See also Priestley "Early watch case makers of England, 1631-1720", which contains appendices updating this book, and Moore and Priestley "Some account of Liverpool watch case makers 1785-1798".

R2162 Priestley, Philip; Ridgway, Maurice**The compendium of Chester gold and silver marks**

1570 to 1962 from the Chester assay office registers

England: Antique Collectors Club, 2004, 11 x 8.5 inch, 520 pp, 10,000 b/w ill. Makers (English).

This is the first publication in a single work of all known Chester punch marks.

The compendium has four sections:

The preface provides historical background and details of all extant records and copper plates.

Part 1 is devoted to assay office marks, with a full set of date letter tables to assist the reader in dating.

Part 2 covers nearly 10,000 entries for makers' marks, including pictograms and monograms. Over 2,000 of the entries have Birmingham addresses.

Finally, the appendices include items on assay volumes and charges, thimble makers, and Liverpool watchcase makers.

R2163 Prignitz, C**Erotische uhren, zeit fur die liebe**

Ulm: Ebner Verlag, 2004, 25 x 25 cm, 204 pp, ill.

Illustration (German).

Erotic timepieces, time for lovers. Erotic motifs on clocks and watches from the 18th and 19th century.

R2164 Primault, E**L'industrie horlogère suisse**

problèmes actuels et perspectives d'avenir

La Chaux-de-Fonds: CSH (Zurich:), 1949 (1946), 8vo, 29 pp (32 pp). (French).

The Swiss horological industry, current problems and future perspectives.

R2165 Pritchard, Kathleen**Swiss timepiece makers 1775-1975**

USA: National Association of Watch and Clock Collectors, 1997, 23.5 x 16.0 cm, 2 volumes of 883 and 875 pp (paginated in sections), ill, slip case.

Makers, bibliography, history (English).

An alphabetical listing of makers and brand names with the brand name entries cross referenced to the makers.

The maker entries provide other names used, letter abbreviations, trade marks, bibliography, history, awards and records, and types of timepieces made. Also included are some documents of note or interest (for example, the Atmos clock patent).

There are four short appendices: Vocabulary and spelling (3 pages); Abbreviations (1 page); Early exhibitions of interest to Swiss timepiece manufacturers (2 pages); and Bibliography (9 pages).

[1st edition, review by Fortunat Mueller-Maerki, excellent] *"Swiss Timepiece Makers, 1775 - 1975" is destined to become a "must-have" reference book on the shelf of any serious collector of watches and the dedicated student of horological history. The two encyclopedic volumes list - in strictly alphabetical order - detailed entries for about 2000 Swiss based makers of timepieces, covering a 200 year timespan. The entries are fully cross-referenced covering individuals, companies, brand and model names, trademarks, as well as names of the US importers that often appeared on the dials. A typical entry will include name, location, dates active, personal or corporate history, logos and brand names used, model names, types of timepieces produced, as well as bibliographical references. The majority of entries, of course, are cross-references from brand-, trade- and model-names to each maker's main entry. Most main entries are about a dozen lines long, but they range from the short, such as e.g. "Patenoste, Jean: Geneva, Master watchmaker, 1775-1792", to a 25 page monograph on e.g. "Patek, Philippe & Co", which includes 8 variations of their corporate name, a list of 30 model names, its own two page bibliography and an extensive history of the maker, including the names of key executives and craftsman.*

This book is the result of a 30-year labor of love by one of the most knowledgeable and diligent scholars of the history of Swiss horology. Kathleen Pritchard is a well-known author and researcher in U.S. horological circles; she is a Star Fellow of the NAWCC, and a long-time former Trustee of the NAWCC museum. Ms. Pritchard is clearly aware that the broadness of her topic is such that the listings are not complete - they never can be complete, one can always find one more source, one more name. But after assembling this information for several decades she felt that the time was ripe to share her data with her fellow horological enthusiasts. She states in the introduction that she intends to continue her reading of the horological literature, to correct, update and expand the book (incorporating readers' suggestions) in the future. Given today's computer technology there is no longer any need for the big print-runs that used to cause decades to pass between successive editions of such specialized books.

It is my impression that the book in its current form is more thorough on the watch side than regarding clocks, which, given the smaller production runs and how little has been published on them, are a lot more difficult to research bibliographically. The physical presentation of the books is good and solid: These are not flashy volumes for the coffee table, but serious reference and research tools, which are sturdily bound (the 2 volumes held in an attractive cassette), using small typeface, and jam packed with useful information, logically presented.

Pritchard's "Swiss Timepiece Makers" is destined to become a perennial classic on the researcher's bookshelf, a tool nobody will want to miss, taking its well deserved space of honor beside - and complementing - such classics as Britten, Baille, Loomes, and Kochmann.

[Remark] *The definitive work on Swiss makers and an essential reference.*

The only obvious omission is information on Swiss patents to complement the American and English listings (see Aked, Eckhardt and Patent Office), but these are so numerous they need a separate work.

The only Swiss names listed in my index are those not covered by Pritchard or for which additional information is available.

R2166 Proctor Arts Institute

Watches, the Proctor collection

Utica, NY: Munson Williams Proctor Arts Institute, 1986, ill.

Catalogue (English).

Reprint of Proctor "The Frederick Towne Proctor collection of antique watches and table clocks"?

R2167 Proctor, FT

The Frederick Towne Proctor collection

of antique watches and table clocks

New York:, 1913, 11 x 14.5 inch, loose pp, ill, 38 plates.

Collection (English).

R2168 Prostler, V

Handbuch der uhrentypen

von der armbanduhren bis zum zappler

Munich: Callwey, 1994, 24 x 21 cm, 211 pp, 321 ill.

Dating, identification (German).

Handbook of watch types from the wrist watch to the quartz. A handbook for identifying and dating watches by type and style.

"Zappel" means to move convulsively, which is descriptive of quartz watch behaviour.

R2169 Puffelen, JV

Watch repair course

USA: JV Puffelen, 1946 to 1947, 28.0 x 22.0 cm, 176 pp, 255 ill.

Repair (English).

Six sections: Lathe work (25 pages), General watch construction (37 pages), Replacing parts (35 pages),

Balance staffing (27 pages), Hairspring work & jewelery (30 pages), and Related subjects (22 pages).

[1st edition, mediocre] This course provides a pedantic, cookery-book explanation of how to carry out basic watch repairs. It covers contemporary American pocket watches, paying little more than "lip service" to other types of watch.

The first section on lathe work seems out of place. It is adequate, but the student would probably need to do the work under supervision, whereas most of the rest of the course appears to be oriented towards home study. In addition, Puffelen explains repairing in the context of using parts ordered from suppliers and there are very few references to the lathe elsewhere. So the tasks described (making balance staffs, stems and keyless wheel hubs) are not made use of in the rest of the course.

The second section, General watch construction, briefly describes a watch mechanism with a Swiss lever escapement (the only escapement mentioned), followed by disassembly, cleaning and assembly. There is some discussion of fault finding, but it is inadequate; for example, end and side shake should be checked, but the terms are not defined and the correct amount is not mentioned.

The third section explains how to replace parts; mainsprings, mainspring hooks, stems and crowns, pendant sleeves, wire springs, hands, canon pinions, pallet arbors, regulator pins and guard pins. Quite correctly, Puffelen states that parts should be made to fit the watch, and the watch must not be altered to fit the part. Unfortunately, in a later section he ignores his own advice!

The fourth section, balance staffing, explains how to replace a staff using purchased materials. Both riveted and friction staffs are covered, but it is assumed that the new staff will fit without adjustment; there are no instructions on what to do when it doesn't fit.

The fifth section covers replacing balance springs, balance staff endshake, replacing friction set plate jewels, and replacing lever escapement roller and pallet jewels. As before, the process simply involves following instructions without much understanding required.

The final section is an odd mixture, perhaps of bits that Puffelen forgot to include elsewhere. It contains lubrication, American lever escapement examination (poorly explained), the center of gravity of balance springs, and workshop practices. The most startling aspect is that Puffelen apparently considers his students to be sufficiently trained to work as watch repairers.

Overall this is a mediocre, basic course of not much use today as far better books exist.

R2170 Puraye, Jean

Les porte-montre des XVIII et XIX siècles

La Chaux-de-Fonds: Musée International d'Horlogerie, 1982, 23 x 16 cm, 104 pp, 83 ill, 12 col plates. Collection, exhibition (French).

100 pocket watch stands from the Jean Puraye collection, now in the Musée International d'Horlogerie, La Chaux-de-Fonds.

[Review by Charles Aked] An exhibition of watch stands, the first in the world highlighting this neglected aspect of horology, was held at the Musée International d'Horlogerie, La Chaux-de-Fonds, Switzerland, from June 5th to August 28th, 1982. It was opened officially by the Belgian Ambassador to Berne, the reason being apparent when it is revealed that the owner of all the watch stands exhibited is M. Jean Puraye, former curator at the Musée des Armes de Liège, Belgium. Thanks to the great generosity of the Longines Watch Company, a catalog was published with the above title.

Its 104 pages commence with a preface by Mademoiselle Chantal de Schonlapnikoff, who quotes from Goethe "that collectors are a happy breed." The remaining pages carry one (and occasionally two) illustrations of watch stands from the exhibition; mostly black and white, but twelve in full color. Below each illustration is a description of the item, its dimensions and, all too rarely, background details and references in the literature.

It may be disconcerting, at least to the uninitiated, to discover that, as with so many other aspects of horology, very little is known about the subject of watch stands. Since it is likely that M. Puraye supplied the details, it is a little surprising that he did not give some preliminary detail as to the reason that watch stands were first created. There is no real hint as to the makers or methods of manufacture, nor their numbers, except in a few cases. But it is difficult to obtain details, much is lost in obscurity, and it is very difficult to date examples.

One of the fascinating aspects of watch stands, which the excellent illustrations in the catalog reveal to the reader, is the astounding variety of shape and size. There is apparently no limit to the material and form of these once everyday objects. The reviewer has been interested in the subject for some time, hence he has been able to see sufficient examples to know that some must have been produced in relatively large quantities, while others are clearly "one-off."

Having paid a visit to the exhibition when it was open, and being greatly impressed by the splendid displays, the reviewer can state that the next best thing (and very much cheaper) is to purchase a copy of the catalog. The fine illustrations on art paper are worthy substitutes for the real thing, and it is again a first time for a publication covering the subject. Up to now there have been occasional short articles and nothing more.

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R2171 Purdom, Charles

The American watchmaker

USA: Charles Purdom Products, 1949 to 1950, 23.0 x 15.0 cm, 148 pp, ill. Advertising (English).

Journal published in 1949 and 1950.

Short articles and advertisements, including how to make a Swiss stem, Esemblograph (photos and testimonials), and details of the Oklahoma regulations relating to the practice of watchmaking, **[Volume 1, number 2, poor]** *This magazine can be safely ignored. Its primary purpose is to advertise the wonders of the Watchmaster timing machine. The articles are superficial and uninteresting.*

R2172 Purdom, Charles

Watchmaster formula

for adjusting and rating three position commercial watches

USA Charles Purdom, 1948, 59 pp, ill.

Repair (English).

R2173 Purdom, Charles

Watchmaster watchmakers

Oklahoma: Charles Purdom, 1949, 23.0 x 15.5 cm, 184 pp, ill, 16 pp ads.

Repair (English).

16 sections: Center lines, Individual thinking, Escapement functions, Balance poising and motion, Hairspring (inner pinning, overcoil), Regulator pins, Combination friction forces, Statements, Watchmaster groups, Three and four position phase, Assorted statements, Five and six position phase, Ten position phase, Proof in reverse, Watchmaster records, and Purdom products.

[1st edition, poor] *Like Purdom and Hagans "Scientific timing", this book is meaningless rubbish.*

Much of it is simply wrong. Three examples are the description of the lever escapement (the diagrams are wrong and the explanation borders on ludicrous), balance poising (Purdom has no idea of static and dynamic poising), and detecting mainspring power variations (which are not visible from the instantaneous rates produced by timing machines). In addition, the basic principle, of "center lines" is irrational.

Some of it might contain correct statements, but the approach is superficial, largely unintelligible and of no practical use. In particular, the few timing machine charts shown are meaningless because the principles of timing machines are not discussed and no explanation of chart analysis is given.

The most interesting feature of the book is that balance spring needling, prominent two years earlier in "Scientific timing", has disappeared; presumably enough ridicule was directed at it to force Purdom to dump the idea.

As it is impossible to understand his books, I wondered if it might be possible to understand Purdom. This book gives us a few hints. First, he was an employee of American Time Products, the company which manufactured the Watchmaster rate recorder and the book suggests he was a travelling salesman. Second, he wrote "If it were not for the Watchmaster, in all probability I would know less about all of this than any other person". So we can reasonably conclude that he never trained as a watchmaker and his knowledge of watch repair was picked up from visits to watchmakers as he tried to flog timing machines. Third "The only reason that I write books is to make money", a rather startling admission.

So it is likely that Purdom's ideas are the result of listening to watchmakers and reading a book or two on adjusting; and, not surprisingly, failing to understand any of it. Then, with this background and the need to glorify the product he was selling, he produced a couple of books which try to explain what he did not comprehend by utterly incorrect pseudo-science. The result is bare-faced, incompetent advertising.

In one respect this book is better than "Scientific timing"; it does not contain Hagans' incredibly stupid statement.

R2174 Purdom, Charles; Hagans, OR

Scientific timing

Denver: Roberts Publishing Co, nd (1947), 21.5 x 14.0 cm, 144 pp, ill, 1 plate.

Repair (English).

It appears to have been reprinted.

The book considers the adjustment to position of good watches. It covers action of the lever escapement, causes of rate variation, static balance poising, dynamic balance and balance spring poising, putting in beat, regulator pins, balance arc of vibration and example timing machine traces.

[1st edition, poor] *In his introduction, Hagans writes "The 17th century gave the world John Harrison; the 18th, Thomas Mudge; the 19th, Louis Breguet; and the 20th brought Charles Purdom". The inappropriateness of this sentence is stunning.*

The book is much more a cabalistic experience than a scientific study; I feel that kneeling and praying before a Watchmaster timing machine will bring my watches to time more easily than reading it.

Having read the book twice I still fail to understand it. For example, static poising is tersely described and then followed by ten pages of incomprehensible text and unnecessary diagrams. This is followed an equally vague consideration of balance spring mass and distortion, more meaningless diagrams and a most strange discussion of dynamic behaviour. Interleaved are exhortations to join a Watchmaster study group. Nowhere are there credible explanations or clear-cut descriptions of methods. And Purdom's idea of "needling" is presented as a fact; or I should say, as religious dogma.

There may be some valid ideas about adjusting, but Purdom fails to explain and justify them. Some bad books are interesting and fun (see Britten "The watch repairers' instructor"). I think this book is simply bad. Indeed, it is one of a very select few competing for the worst book ever written. A must for every library!

[Remark] *One bookseller listed this book for \$114 and stated the "author is outstanding authority on*

precision adjustment". A nice example of deceitful advertising which, unfortunately, is all too common in the second-hand book trade.

R2175 Quick-Check

Look ... Look ... Look ... and Learn

nd, ill.

Repair (English).

Anti-shock systems chart containing an index to factory signs (Aho to Zenith) and details of shock proof systems from Antichoc to Vibrax.

R2176 Quill, H

John Harrison the man who found longitude

London: John Baker, 1966, 23.0 x 14.5 cm, 255 pp, frontis, 33 plates.

History (English).

22 chapters: The longitude and the act of 12 Queen Anne; The early life of the Harrison family, John Harrison's early interest in clocks and music; The precision regulator clocks of John and James Harrison; The evolution of the sea-clock; The sea-clock (H1) is tested in HMS Centurion; James Harrison and the completion of a second longitude timekeeper (H2); John Harrison's third longitude timekeeper (H3); John Harrison's early watches and his fourth longitude timekeeper (H4); The conditions for the trial of John Harrison's watch (H4) on the first voyage to the West Indies - Jamaica; The trial of H4 to Jamaica; The result of the trial of H4 to Jamaica; The events leading up to the second trial of H4 to the West Indies; The second trial of H4 to the West Indies - Barbados; The £20,000 prize is withheld from John Harrison; The disclosure of the mechanism of H4; John Harrison's plans to make copies of his watch; The trial of H4 at the royal observatory; Larcum Kendall and John Arnold; King George III and John Harrison; John Harrison and parliament; John Harrison's final years.

There are four appendices: The act of Queen Anne; The minutes of the first meeting of the Board of Longitude; William Harrison's declaration of the rate of going of H4 prior to the trial to Barbados; and The Harrison family tree. These are followed by a Chronology, Bibliography and index.

[1st edition, excellent] There is not much I can say about this book, other than it is brilliant and should be read by everyone interested in horology. There are two reasons.

First, it is a superb biography of John Harrison and non-technical history of his timekeepers. It is by far the best I have read.

Second, Quill is a wonderful historian. He has meticulously researched the subject and clearly presented his findings, being always careful to distinguish between fact and opinion. And where lack of evidence requires him to express an opinion, he does so impartially and with great skill.

Consequently, this book should be read by anyone who aspires to writing books or articles on horology, because it provides, indirectly, excellent guidance on how to undertake research and then present the results of that work.

Overall, I think this is the best horological book that I have read.

R2177 [Ramade, F]

Cent montres de légende**100 legendare uhren**

Rastatt: Moewig, ca 2000 (1999), 30 x 24 cm, 143 pp, 266 ill.

Illustration (French, German).

The book presents "100 legendary models from renowned manufacturers with the history and the characteristics of these collectors pieces". It covers Alain Silberstein, Audemars Piguet, Baume & Mercier, Bell & Ross, Blancpain, Boucheron, Breguet, Breitling, Cartier, Chopard, Corum, Daniel Roth, Dunhill, Ebel, Eberhard, ETA, Eterna, Franck Muller, Gerald Genta, Girard-Perregaux, Hamilton, Hanhart, Harwood, IWC, Jaeger-LeCoultre, Lange & Söhne, Lip, Longines, Mauboussin, MDM, Movado, Officine Panerai, Omega, Oris, Parmigiani Fleurier, Patek Philippe, Piaget, Pulsar, Revue Thommen, Rolex, Seiko, Swatch, Tag Heuer, Tissot, Ulysse Nardin, Universal Geneve, Vacheron Constantin and Zenith. With a glossary.

R2178 Rambal, G

Enseignement théorique de l'horlogerie

vol 1 notions générales

Geneva: Journal Suisse d'Horlogerie, 1889, 8vo, 344 pp, 118 ill.

Theory (French).

No references to other volumes have been identified.

"Cours préparatoire suivies d'une annexe historique des progrès accomplis dans la mesure du temps".

Theoretical education in horology, volume 1 general information; preparatory course with a general history of progress in time measurement.

R2179 Rambal, G

Etude théorique et pratique des engrenages

pour les pignons de bas nombre

Genève: Journal Suisse D'Horlogerie, 1880, 18 pp, 2 ill, 2 fld plates.

Repair, technical (French).

Extract from Journal Suisse D'Horlogerie.

Theoretical and practical study of trains for pinions of base number.

See also Hugon "Etude théorique et pratique des engrenages".

R2180 Rambal, G**Instructions pratiques sur la tenue d'une feuille de réglage**

Genève: Administration du Journal Suisse D'Horlogerie, 1904, 24 x 16 cm, 20 pp.
Repair (French).

Extract from the Journal Suisse d'horlogerie.

"La comparaison des chronomètres et des montres suivies d'une table répertoriée pour le calcul de leur marche diurne".

Practical instruction for keeping a timing sheet, the comparison of chronometers and watches followed by a table for calculating their daily rate.

R2181 Rambal, G**Perfectionnement a la méthode courante de vérification de la grosseur des pignons**

et application du procédé au choix d'une fraise Ingold

Genève: Journal Suisse d'Horlogerie, 1916 (1882), 24.5 x 16.0 cm, 11 pp, 3 ill.

Repair (French).

Offprint from Journal Suisse d'Horlogerie.

Perfecting a method of verifying the size of pinions and its application to the use and choice of an Ingold fraise.

R2182 Randall, AG**The Time museum catalogue of chronometers**

Illinois: The Time Museum, 1991, 28.5 x 21.0 cm, 366 pp, 197 ill, 34 figs, loose errata sheet.

Collection, dating, description, identification (English).

In 3 parts:

Part 1 is a 54 page chronology divided into 3 sections: The heroic period 1500-1800, The golden age of chronometry 1800-1900, and The eclipse of the chronometer 1900-1989.

Part 2 (254 pages) gives descriptions of 157 marine and pocket chronometers in the Time Museum, most with spring detent escapements, and a George Daniels watch with his double wheel independent escapement. It includes examples by Mudge, Arnold, Earnshaw, Berthoud, Breguet and Motel, and information on the serial numbering and dating of Earnshaw and Ulysse Nardin chronometers. Not all entries are illustrated, but those that are have multiple, sub-numbered illustrations; there are far more than 197 separate illustrations. Many entries include biographies of the makers.

Part 3 (46 pages) contains a glossary (with 34 figs), bibliography, concordance and index.

[1st edition, very good] For a catalogue to be of lasting value, it should be independent of the collection, auction or exhibition which prompted it. This is clearly shown by the sale and dispersal of the Time Museum collection, in consequence of which many of the watches and chronometers shown in this catalogue and in Hoke "The Time museum historical catalogue of american pocket watches" may no longer be publicly accessible. And, anyway, for many people living far away, the collection would not have been accessible previously.

This catalogue describes 157 items of which 116 are illustrated. Of these I feel that 74 are excellently portrayed and 42 have not particularly useful photographs. Interestingly 55 of the first 90 items are well illustrated and only 9 have just adequate photographs. In contrast, of the remaining 67 only 19 have good pictures and 33 are just satisfactory, suggesting that the project may have run out of steam or money before completion.

All items are accompanied by detailed descriptions with some information on provenance, and there is an extensive bibliography which Randall expects the reader to use for further information. However, I think the descriptions leave a lot to be desired and have limited value without access to the particular watch, except where they detail features of general utility. In contrast, Penney's excellent drawings of escapements provide much useful information. Despite these mixed feelings, the book does document many watches that may never be seen publicly again, and so it is an important contribution to horological history.

I find it hard to classify this book. Anthony Randall and David Penney have done an excellent job and the book contains much important information about the items and their makers. However, Randall says it is "not just a catalogue, but tries to tell a story" and unfortunately this is not true. The items are listed by maker's name, in effect randomly, rather than chronologically or by type; as a result the entries are often fascinating but disjointed. Also, unlike Hoke's catalogue, it does not have an important essay on horology, despite the chronology being a detailed, very good summary of events. So I don't think it is quite good enough to deserve an "excellent" rating.

R2183 Randall, AG; Good, Richard**Catalogue of watches in the British museum**

volume VI pocket chronometers, marine chronometers and other portable precision timekeepers

London: British Museum, 1990, 275 pp, 25 ill, 176 plates.

Collection, description (English).

"With about 900 photographs, technical diagrams, technical data, abbreviations, bibliography, concordance, glossary, index."

"There were supposed to be 6 titles in the series. Sadly, only book 1, described here, and book 6 were actually published."

However, I can only find book 1, Tait and Coole "Catalogue of watches in the British museum, volume I the stackfreed", and book 4.

R2184 Randell, WL**Watch repairing and adjusting**

(London: Percival Marshall, 1992 (1929), 18.5 x 12.5 cm, 64 pp, ill (46 pp, 25 ill).

Repair (English).

Robertson gives the earliest date as 1925. It has been reprinted in 1992.

[nd, mediocre] Written for the amateur, it is a simple introduction to watches with a rather grandiose title. Adjusting, for example, refers to fiddling with the regulator.

This book is for the collector who insists on having every book written on watch repair, but otherwise best left on the bookshop shelf; which I did, my desire for bad books having been sated by Purdom.

R2185 Randier, J**L'instrument de marine**

: Maîtres du Vent, 2006 (1977), 28 x 21.5 cm, 219 pp, 250 ill.

History (French).

“L'Instrument de marine retrace en même temps la passionnante épopée des pionniers de la mer, dans leur insatiable recherche des moyens de se diriger et de se situer à travers l'immensité des océans. En partie grâce au perfectionnement des instruments de marine, l'art de naviguer mène à la conquête géographique du Globe. Incontestable ouvrage de référence, abondamment et solidement documenté, ce guide précieux pour l'historien et le collectionneur autant que pour le curieux est une véritable encyclopédie du matériel de navigation du bord.”

R2186 Raulet, S**Van Cleef & Arpels**

portrait d'une dynastie de joailliers

New York: Rizzoli, France: Editions Du Regard, 1991 (1986), 4to, 328 pp, 450 ill, plates.

History (English, French, Spanish, German).

Separate language editions.

R2187 Rawlings, AL**The science of clocks and watches**

England: British Horological Institute (London: Isaac Pitman), 1993 (1944), 24.0 x 16.0 cm (8vo), 393 pp, ill, loose errata sheet (303 pp, ill) (236 pp, ill).

Theory (English).

Three editions: 1944, 1948 and 1993. The third edition has the original text interspersed with comments and corrections by nine advisors: Bateman, Daniels, Fried, Griffiths, Nicholson, Randall, Steele, Weaver and Woodward.

The third edition has 18 chapters: Time and its measurement (16 pages); Oscillatory motion (8 pages); The pendulum (52 pages); Dissipation of energy by a swinging pendulum (27 pages); Escapements and other impulse devices (22 pages); Electric clocks and watches (35 pages); Escapement errors (23 pages); Balance wheel clocks and watches (20 pages); Isochronism of balance-wheel movements (44 pages); The marine chronometer (17 pages); The four-hundred-day clock (5 pages); Gear trains (10 pages); Weights, mainsprings and their accessories (17 pages); Friction and lubrication (12 pages); Striking clocks (13 pages); Perpetual calendars (5 pages); Synchronous electric and quartz clocks (24 pages); and Measurement of clock performance (16 pages).

There are 3 appendices: Harmonic motion in a cycloidal path and the calculation of circular error (5 pages); The linear theory of vibration (5 pages); and Arthur L Rawlings (a 2-page biography).

There is a 13 page index.

Less than a third of the book (121 pages) are directly relevant to watches and marine chronometers. The remainder, other than the introductory chapter on time and short sections on electric and quartz clocks, deals with pendulum systems and clocks.

[3rd edition, good] “The first edition of this book was produced 1944, the second slightly updated edition in 1948. The book quickly became the standard textbook wherever professional watch and clockmaking was taught in academic institutions. Mr. Rawlings died in 1959, and the book had been out of print for decades when the BHI embarked on a thorough updating and revision (incorporating new discoveries of the last decades in a distinguishing typeface). The longtime editor of the BHI *Horological Journal*, Tim Treffry, coordinated the tasks, which involved some of the most eminent horological scientists in the world. The resulting third edition was finally published after much delay in 1994.”

As with many books, the first task of the reviewer is to understand the aims of the author. Only then can the book be considered in its correct context.

Rawlings' preface to the first edition states: “The present volume ... is concerned primarily with the scientific principles of horology.” He goes on to write: “Some elementary mathematical demonstrations have been introduced ...” and “where rigorous methods have involved difficult algebra, approximate methods have been used freely ...” He also notes that the book “contains enough descriptive matter to be self-contained.” About 50 years ago I studied mathematics and, although I have forgotten most of it during the intervening years, I am still able to understand “elementary” mathematics and reasonably complex algebra. So this book should be no problem.

However, the preface to the third edition suggests this might not be enough, George Daniels stating: “The prime object to the book is to analyse the dynamic forces and functions involved in the mechanism of the watch and clock”. And he also notes that there has been “gentle criticism of some of (Rawlings) ideas”, suggesting the reader needs to be very careful and thorough.

This becomes apparent before we have even started! The editor, Timothy Treffry, makes the surprising statement: "Science is only rarely a dispassionate account of a universally acknowledged truth. It often consists of firm statements of opinion - this is especially true of horology." Such an attitude, which must be rejected as unacceptable, suggests the book may contain more pseudo-science than genuine study, again reinforcing the need to tread carefully.

A fundamental problem becomes apparent when we ask the question: What level of mathematical and physical knowledge is the reader expected to possess? Near the beginning of the book, Rawlings states: "If the mass were spread along the rod, its I (moment of inertia) would not be so easy to calculate. We should have to take each little particle, multiply its mass by the square of its own radius from O (the pivot point at the end of the rod), add all the products together ... (and) we should find that this aggregate I was $mr^2/3$." Because Rawlings felt the need to provide a simplistic explanation of how to find I , he is telling us that we don't need to have studied differentiation and integration to read his book. The implication of this is that we must view the above formula as descriptive, for without understanding its derivation we must blindly accept it as a fact. Actually, deriving the formula for the moment of inertia of a rod pivoting at some distance from one end is quite trivial, involving a very simple integration and some easy algebra. So if Rawling had not outlined the concept of integration, we might assume he expected that level of skill from the reader.

In contrast, Appendix 2 relies on second-degree differential equations! Again the solutions to these much more advanced problems, including approximations, are given without derivation, raising the question: are we expected to be able to solve it ourselves, or are we expected to treat the formula as descriptive magic?

The important point is that mathematics is a progression from the simple to the difficult. At each step the student learns proofs of the relevant formulae so that the knowledge is not descriptive but based on formal and precise demonstrations of validity. So if we assume a certain level of competence, we can presume the reader understands the mathematics involved in prior levels and focus on proofs at the current level. This progression implies that the student can never be satisfied with the presentation of "facts". Either the fact has been previously demonstrated or the student must derive it. So Appendix 2 is implicitly stating that the reader must be able to solve second-degree differential equations; if that were not so then providing a formula without derivation would be unacceptable. Which means Rawlings and the writer of Appendix 2 seem have completely different ideas of the reader's competence! And Rawling himself is confused. Even though he appears, from the above, to only require a basic knowledge of algebra, later in the book he is happy to work with derivatives. As anyone who has learnt differentiation has almost certainly studied basic integration, there is an obvious discrepancy and he could have provided the proof of the inertia of a rod.

So it seems Rawlings and the people who revised his book have no clear idea of who they are writing for. Finally, before reviewing this book, Rawlings wrote that it "contains enough descriptive matter to be self-contained." Indeed, significant parts are just descriptions of mechanisms and these descriptions are most certainly not science, let alone mathematics. Consequently the reader and reviewer must distinguish between these two aspects and apply different assessments to each.

Most of Chapter 1 concerns modern methods for the determination of time. It is interesting, but I found the explanations of complex mechanisms, such as the photographic zenith tube, inadequate for the reader with no knowledge of the relevant subjects.

Chapter 2 introduces the basic theory of oscillators by providing a descriptive explanation of harmonic motion, in which much is stated without proof, and giving a number of examples. Damped and forced harmonic motion are not mentioned. The related Appendixes 1.1 and 2 give better, if somewhat magical examinations.

Chapters 3 to 7 (159 pages) are on pendulums and clocks. Strangely, there is a brief mention of the cylinder escapement which is otherwise ignored.

Chapter 8 examines temperature adjustment and balance poising. It contains four "theoretical" topics: Analysis of temperature errors in a plain balance and spring which is satisfactory; Middle temperature error in the context of bimetallic balances (with some comments on monometal balances) which is wrong due to excessive simplification; Balance poise errors, where some graphs are given without adequate derivation; and Dynamic poise, which is incorrectly discussed. There are some vague and inadequate remarks on regulators.

Chapter 9 begins with an incomplete description of the lever escapement and a good, approximate analysis of rate errors caused by unlocking and impulse in a lever escapement. This section depends on the reader having studied at least part of Chapter 7 where escapement errors in clocks are discussed. Rawlings then considers the practical problem of adjustment to positions, beginning by listing 6 "dodges": shaping balance pivots to equalise friction; putting the balance out of poise; increasing the centrifugal force of the balance; adjusting the curb pins; pinning flat springs at full turns; and using a non-isochronal overcoil balance spring to compensate for escapement errors. Two points stand out. First, Rawlings states "frictional force is practically independent of the area of contact." This is counter-intuitive, but nowhere does Rawlings include the theory of friction. Second, his suggestions for adjusting curb pins, removing one of them and even removing both (which would require shortening the balance spring) are, at best, dubious. Rawlings then gives a 3 page summary of watch adjusting, which is a vague, general description. His brief notes prompted an additional 6 pages of comments which are also vague and of little use. At one point "theory" is mentioned, but it is just "magic" because statements are made without

analysis. The chapter concludes with some notes on watch performance, tourbillons, Smiths watches, the Mauther escapement and barometric error. These parts are rather uninteresting general notes devoid of "science".

Chapter 10 contains general notes on marine chronometers devoid of "science" and often lacking desirable detail.

Chapter 12 begins with a general discussion of the requirements for gear teeth and then examines involute teeth. It is irrelevant to watches.

Chapter 13 includes an interesting examination of mainsprings (although I prefer the practical approach of Berner "Practical notes for the watchmaker"), an incorrect explanation of the shape of fusees, and some vague and uninteresting remarks on self-winding mechanisms.

Chapter 14 on friction and lubrication is descriptive, vague and unhelpful

Like Swinburne ("The mechanism of the watch"), Rawlings was an engineer who developed an interest in horology and there is some similarity between the two books. Both present mathematical analyses of things they can quantify successfully. And both, when theorising becomes too difficult, slip into semi-informal discussion. This is seen when Rawlings examines and quantifies temperature effects on a plain balance and balance spring, but somewhat carelessly discusses the bimetallic balance. However, although there are several places where he has had to be corrected, the analysis of escapement error, the only good bit of theory relevant to watches, is stimulating and provides valuable insights into escapement behaviour and adjustment.

Overall, I found the watch content of the book uninspiring.

R2188 Reardon, John

Patek Philippe in America

Geneva: Patek Philippe, 2008, 33 x 30 cm, 360 pp, ill.

History (English).

"Patek Philippe in America reveals the history of Patek Philippe and its relationship with the American market through an extensive collection of company advertisements. It features over 500 Patek Philippe advertisements, archive images, technical drawings and original company documents. An ideal reference tool for historians, watch collectors and Patek Philippe enthusiasts, this book offers a historical tour of the aesthetic and technical evolution of Patek Philippe watches from the mid 19th century through the 1980s."

R2189 Reckless, RA

Verge watches and clocks

London: , 1914.

(English).

R2190 Redfearn, J

Indiana silversmiths, clock makers and watchmakers

1779-1900

USA: Americana Publications, 1984, 4to, 271 pp, b/w ill.

Makers (English).

Edition of 1,000 copies.

The first section provides biographical accounts of the earliest craftsmen through 1850; the second section focuses on those in business from 1851 to 1969; and the third section on tradesmen from 1870 to 1900. A glossary of marks, all illustrated, is included. With bibliography. Generously illustrated with b/w photos, newspaper advertising facsimiles, and maps.

The list of makers is mainly concerned with silversmiths, but with some clock and watch makers. The illustrations primarily deal with silverware and early advertisements, and include makers' marks. There are a few pictures of watches and clocks.

R2191 Redier, JJ

Notice historique sur l'horlogerie

suivie des moyens de reconnaître facilement une bonne montre et de conduire et régler soi-même les montres et les pendules

Paris: J. J. Redier, 1845, 12mo, 69 pp.

History (French).

Listed in Tardy.

Historical notice on horology followed by the means of easily determining a good rate and its use to adjust watches and clocks.

R2192 Reed, TB

The adventures of a three guinea watch

: Dodo Press (London: Diploma) (London: Boys Own Paper) (London: Religious Tract Society), 1974 (1881), 19.5 x 13.0 cm, 340 pp (312 pp) (226 pp, ill) (350 pp).

Prose (children) (English).

At least two printings, one with illustrations, and modern reprints in 1974 and 2007. It may have been translated.

An adventure story for children where the watch is the personified storyteller.

[1st edition?, very good] The book starts with the purchase of an English key-wind lever watch about 1848, when it is given to a boy leaving home to go to a boarding school. The story then follows the watch through a succession of adventures and owners, culminating in the liberation of Lucknow in 1858 and its

return to the first owner. A final chapter set some 15 years later dates the book to circa 1880. I read this 45 years ago as a child and thoroughly enjoyed it. I have just re-read it and again thoroughly enjoyed it. A little moralistic of course, and a "tear-jerker" with a happy ending (all of which it has in common with most of Dickens). Reed has a command of English and a credible, fast moving plot that makes it a pleasure to read. Indeed, it was far more enjoyable than the poorly written adventures with bad plots currently on TV.

See also Borsendorff "Histoire d'une montre racontée par elle-meme".

R2193 Rees, Abraham

Clocks, watches and chronometers

Newton Abbot: David & Charles (London: Longman, Hurst, Rees, Orme & Brown) (Philadelphia: Samuel Bradford), 1970 (1820), 28.5 x 22.5 cm, 295 pp, 54 plates.

History, description, technical, theory, tools (English).

Rees "The cyclopaedia or universal dictionary of arts, sciences, and literature" was published in parts in alphabetical order between 1802 and 1818-1820 with the latter dates (when the title pages, preface and additional plates were published) usually given. The complete encyclopedia consists of 39 volumes of text and 6 volumes of 1170 plates.

Cross references suggest that the basic format and text of the articles were probably created circa 1800 or earlier. For example, the article on Beats released in 1804 references Escapements released in 1809.

The "correct" number of plates and their contents is a bit difficult to ascertain. Rees provided a plate list at the end of Volume 39 in which he lists all plates and provides a few fascinating comments on why certain plates do not exist (in one case because the responsible author died). Despite there being a little ambiguity, a comparison of Rees' list with my copy of the Cyclopaedia shows that the expected number of plates is 1170 and a complete set should contain no fewer. But there are at least 5 places where the number of plates might vary:

Architecture: There are two plates XV in my set which are distinctly different, but the second is not mentioned by Rees in his plate index. This additional plate XV is included in the total of 1170.

Cycloid (1 plate): This plate exists (I have it) but it is identical to another plate and Rees omitted it from some (most?) sets.

Midwifery: The article does not refer to plates, but Rees notes that all the plates were withdrawn from publication (and probably the article rewritten). I have Midwifery plate XIV so some of these plates seem to have escaped.

Mineralogy: There are apparently no plates, but Rees refers to two plates, one or both of which appear in the Natural History section. Rees is ambiguous, but I assume there are no plates under this heading.

Ancient Atlas: Some copies have a plate I which was replaced by a new Plate I.

In addition, it seems the American edition may have some plates which were never part of the English edition, including an atlas.

Rees states in his preface that the horology and astronomical instrument articles were written by the Rev Dr Pearson, and Baillie "Watchmakers and clockmakers of the world" notes that Rev W Pearson published a treatise on horology in 1791 in Rees Cyclopaedia (this latter is presumably his edition of Chambers Cyclopaedia); certainly plates I have seen from the 1700's are identical. Hawkins "A treatise on the teeth of wheels" suggests part was written by Thomas Reid, but this is unlikely as there is little similarity with his book and Hawkins may be confusing this with Brewster "Edinburgh Encyclopedia".

There are some selections from the original in existence. One, in my possession, consists of five volumes extracted and bound by Malcolm Gardner, Horological Bookseller in London, in 1947. This contains 1378 pp and 282 plates and includes all the horology information and many other relevant topics, some of which probably should have appeared in the reprint. Tardy lists what appears to be another extraction of 750 pp and 129 plates in 3 volumes.

The plates (all?) are available as a Google Book PDF file (USA only?).

A facsimile reprint of horology articles extracted from "The cyclopaedia or universal dictionary of arts, sciences, and literature". It includes the 54 horology plates and the text under the heads Bob (1 page), Chimes (4 pages), Chronometer (35 pages), Clepsydra (5 pages), Clock (60 pages including clock-making, clock-movement, clock-tools and clock-work), Compensation (11 pages), Dial (18 pages including dialling, dial-plate and dial-work), Escapements (25 pages), Fusee (6 pages including fusee engines), Maintaining power (1 page), Pendulum (15 pages), Remontoir (7 pages), and watch (18 pages). A number of relevant articles in the Cyclopaedia do not appear here or in Rees "Manufacturing industry". These include biographies (mainly of important astronomers whose work related to the longitude), short notes overlooked in the reprints, and general entries more relevant to other industries but which overlap into horology.

[1st edition, excellent] My personal opinion is that Pearson's articles form the most important, comprehensive contribution to horology from Great Britain and it is unfortunate that over 150 years had to elapse before they appeared separately in a book; if they had originally been published as a monograph undoubtedly more copies would still exist.

In addition to the extensive, thorough descriptions and theory, the writing is liberally laced with contemporary examinations; in particular of clockmaking (much of which is applicable to watchmaking)

and the design and performance of early chronometers. As Pearson notes “the English language is yet without a book descriptive of the various constructions of a machine, which, in one form or another, is now in the possession of almost every house keeper”. With the exceptions of Rees, Reid and the translations of Saunier, the situation is little different today.

The description of manufacture is especially illuminating. As Pearson says “... if we wish to be introduced to the workman who has had the greatest share in the construction of our best clocks, we must often submit to be conducted up some narrow passage of our metropolis, and to mount into a dirty attic, where we find illiterate ingenuity closely employed in earning a mere pittance, compared with the price which is put on the finished machine by the vendor of more easy circumstances, though the latter has had little more trouble in the construction than to order his name to be inserted before it is placed for public notice in his bow-window”.

Unfortunately many other heads in Rees are relevant to horology but not reprinted. Of most importance are cutting engine (Hindley and Rehe wheel cutting machines), diagonal motion (dividing engine by Ramsden and a cutting engine), engine (more cutting and dividing), expansion (of metals), file (including manufacture), lathe, rose engine, spring and turning machines. Of these cutting engine, file, lathe and rose engine appear in Rees “Manufacturing industry”, but the rest will be hard to find. Additionally, although not relevant to watches, Rees contains major articles on graduation of instruments, orreries (including calculation of trains and details of existing machines), longitude finding, pyrometers and quadrants. Which is to ignore the multitude of other sections on metals, glass blowing, etc.

Some extracts from Rees are given in Weiss “Watch-making in England 1760-1820”.

R2194 Rees, Abraham**Cyclopedia - watch information**

(London: Longman, Hurst, Rees, Orme & Brown), nd (1820).
(English).

A modern reprint of some part of Rees “Cyclopedia”.

R2195 Rees, Abraham**Manufacturing industry**

England: David & Charles (London: Longman, Hurst, Rees, Orme & Brown), 1972 (1820), 28.0 x 22.5 cm, 5 volumes of 457 pp and 12 plates, 411 pp and 26 plates, 516 pp and 64 plates, 499 pp and 13 plates, 511 pp and 24 plates, slip case.

History, description, tools (English).

A selection of articles from “The cyclopaedia or universal dictionary of arts, sciences, and literature”.

[1st edition, good] This facsimile selection contains a number of articles directly related to horology which were omitted from “Clocks, watches and chronometers”; cutting engine, enamelling, file, gilding, lathe, rose engine and turning, all with relevant plates. The set also contains several related topics; blowing of glass, brass, copper, drill, flux, furnace, glass, glue, gold, graver, hardening, lac, lead, leather, oil, patents, plated manufacture, polisher, regulator, silver, solder, tempering, tin, vernier, wire and zinc. These supply some of the cross references missing from “Clocks, watches and chronometers”.

Also included is a short biography of Rees and a summary of the printing history of the cyclopedia, which was produced in parts between 1802 and 1820.

Unfortunately only some of the plates referenced in the text have been reproduced, and this seriously detracts from an otherwise excellent book.

R2196 Rees, FH**A practical treatise on the engraver’s art**

with special reference to letter and monogram engraving

USA: Kessinger (Philadelphia: Keystone Publishing Co.), 2007 (1903), 8vo, 205 pp, ill.

Repair (English).

3rd edition in 1909.

[Remark] The modern print-on-demand books are a nightmare. Many, probably very small firms produce these books, But their quality must be suspect. For example, books produced by Kessinger have been described as: “This book may have imperfections such as missing or blurred pages, poor pictures, errant marks, etc. that were either part of the original artifact, or were introduced by the scanning process.” Having never bought one I cannot comment on them, but such a disclaimer must cast doubt on their quality and I suspect it is a matter of “buyer beware”.

R2197 Rees, FH**Modern letter engraving in theory and practice**

USA: Kessinger (Chicago: Geo K. Hazlitt), 2005 (1898), 8vo, 176 pp, ill.

Repair (English).

A manual for the use of watchmakers, jewelers and other metal engravers. Illustrated by the author.

R2198 Reese, JC**Advertising watch fobs**

(not including heavy construction)

USA: JC Reese, ca 1980, 8.5 x 5.5 inch, unpaginated 3-ring notebook, 4125 ill.

Identification, price guide (English).

Illustrations of 4,125 advertising watch fobs, descriptions, rarity guide, value guide. Following the illustrations, the descriptions are divided into subject headings.

R2199 Reid, Thomas**A treatise on clock and watch making**

theoretical and practical

Glasgow: Blackie & Son (Philadelphia: Carey & Lea) (Edinburgh: John Fairbairn, London: James Duncan, Dublin: J. Cumming), 1859 (1826), 25.0 x 16.0 cm (24.5 x 15.0 cm), 466 pp, 20 fld plates (476 pp, 20 fld plates).

Description, technical (English).

The plates are numbered 1, 2, 2A, 3, ... 19.

Seven editions in 1826, 1843, 1847, 1849, 1852, nd and 1859, with all but the first posthumous.

There was also an American edition in 1832. All editions to the 5th are identical except for minor changes and I presume the others are merely reprints as well.

The 1832 (USA only?) and 1859 editions are available as Google Book pdf files, but the plates are scanned folded and so useless.

Twenty-three chapters: Introductory and historical remarks (11 pages); trains and wheels (19 pages); Dial wheels or motion work (18 pages); Numbers of orreries, planetariums, etc, (33 pages); Wheel teeth (39 pages); Pendulums (19 pages); Pendulum vibrations (32 pages); The escapement, the discovery of the pendulum (85 pages); Compensation curbs and balances (6 pages); The balance spring (6 pages); Jewelling pivot holes (5 pages); Various sorts of machines for going in time of winding (6 pages); Mainsprings in box chronometers (4 pages); The dividing and cutting engine (11 pages); Equation clocks and lunar motions (33 pages); Repeating clocks and watches (17 pages); Thermometers and pyrometers (12 pages); Compensation pendulums (30 pages); Sympathy or mutual action of pendulums of clocks (2 pages); Turret clocks (16 pages); Astronomical clocks (3 pages); Church bells and gongs (4 pages); and Clock chimes and bell music (14 pages).

The book concludes with a table of prime numbers (3 pages) and an appendix with letters by Smeaton and Ludlam on turret clocks and some further remarks on escapements and Le Roy's marine chronometer.

[1st edition, very good?] *This book should have been titled "A descriptive treatise of horology with some theory". There is a little theory, being detailed studies of the calculation of trains for clocks, watches and orreries, the shape of teeth and the length of pendulums (with a marked improvement in the estimation of pi from Hatton's value of 3 to 355 / 113). There is very, very little practice (the use and construction of sectors, dividing and making music barrels). And there are some unusual oddments, like an examination of the design of jacks for spit-roasting meat. The majority of the book contains descriptions with not much consideration of watch and clock making as such.*

Reid's book is more a compendium of topics he found interesting rather than a coherent, objective study. The subjects given most space deal with clocks and those where his personal involvement is apparent. For example, division and Hindley's wheel cutting engine are described in detail more because Smeaton sent it to him rather than because of any relevance (especially as there is no illustration and we need to refer to Rees "Manufacturing Industry" to see it). Besides escapements, the only material specifically on watches is the explanation of repeater mechanisms taken from Berthoud's "Essai".

Significant parts, including illustrations, are taken from other books, most notably the works of Berthoud. It is interesting to see that England's pre-eminence did not extend to original writing on horology and one of her major works is, in fact, largely foreign.

It is, however, a fascinating book well worth reading, containing many insights into late 18th century horology.

[5th edition 1852] *There are no significant differences between this and the first edition. The only obvious changes are that the printing plates were re-made (incorporating the errata), an insignificant paragraph on month going clocks added to the last page, and the renumbering of the pages containing the bibliography and list of plates.*

[Remark] *I suspect many books justify the word "theory" in the title by including a section on train calculation. Perhaps this is the only "theory" the authors were capable of grasping.*

R2200 Relin, E**Essai sur l'art de réparer les montres et les pendules**

Nîmes, 1857.

Repair (French).

Listed in Tardy.

Essay on the art of repairing watches and clocks.

R2201 Renault, L**Plaidoirie de M.L. Renault**

devant le Tribunal Cantonal de Neuchâtel pour Mm. Armand Schwob & Frère, affaire Patek Philippe et Cie 1890

Paris., 1891, 8vo, 188 pp.

History (French).

Counsel's speech by Renault to the Tribunal of the Canton of Neuchâtel on behalf of Armand Schwob & Frere in the matter of Patek Philippe et Cie 1890.

Gardner "Catalogue of the Torrens collection" notes "too long ... to read, but would appear to relate to a long-forgotten difference of opinion".

However, Armand Schwob was taken to court by Patek Philippe for producing watches signed Patek & Cie and this book presumably relates to the appeal in 1891. In which case it is most likely both

interesting and significant. See Pritchard "Swiss timepiece makers" and Balfour "The classic watch" for brief remarks about the case.

R2202 Replinger, JG

The jewelry repairer's handbook

Peoria USA: Bradley Polytechnic Institute, 1946 (1902), 7.5 x 5.25 inch, 110 pp, 2 ill, tables.

Repair (English).

Includes tools, chemicals, recipes, ring making, the repair of eyeglass frames, rings, bracelets, earrings, fountain pens and watch bezels, stone setting, and gilding.

Said to contain information on watch repair, but it appears to be almost exclusively jewelry repair and the only relevant part is case repair.

R2203 Resal, HS

Des applications de la mécanique a l'horlogerie

Paris: Gautier-Villars, 1868, 8vo, 240 pp, 4 plates.

Technical (French).

Applications of mechanics to horology.

This is probably one volume of "Traite de mécanique générale comprenant les leçons professées a l'école polytechnique et a l'école nationale supérieure des mines", which consists of at least 7 volumes. Copies of volumes 6 and 7 are dated 1881 and 1889.

R2204 Reutebuch, R

Der uhrmacher

ein lehr und nachschlagebuch für jeden uhrmacher

Ulm: Wilhelm Kempfer (Stuttgart: Ruhle-Diebener), 1997 (1951), 21 x 15 cm, 528 pp, 336 ill, 8 tables. (German).

Reprinted.

"Für den gebrauch an fachschulen, in lehrgemeinschaften, für die vorbereitung auf die gehilfen und meisterprüfung, für den selbstunterricht und ein nachschlagebuch für den uhrmacher".

The timepiece maker, a textbook and reference work for every horologist, for use in technical schools, community schools, for the preparation of assistant and master examinations, for self instruction and a reference book for the watchmaker.

R2205 Reverchon, L

Le graissage rationnel

des montres, horloges, compteurs et autres mécanismes délicats, le rôle du laboratoire

Paris: L'Horloger, 1933 (1931), 27 x 22 cm, 20 pp, 28 ill.

Technical (French).

Extract from journal.

The sensible lubrication of watches, clocks, meters and other delicate mechanisms, the role of the laboratory.

R2206 Reverchon, L

Petit histoire de l'horlogerie

Besançon:, ca 1935, 16 x 12 cm, 172 pp, 4 ill.

History (French).

Undated

R2207 Reverchon, L

Préparation scientifique des huiles d'horlogerie

frottement et graissage

Paris: L'Horloger, 1927, 12 pp, 21 ill.

Technical (French).

Listed in Tardy.

Scientific preparation of horological oils, friction and lubrication.

R2208 Reybaud, F

Watches, the ultimate guide**Montres, le guide de l'amateur**

New York: Assouline, 2010 (2006), 27 x 18.5 cm, 218 pp, 200 ill (216 pp, ill).

(English, French).

Introduction of 7 pages followed by seven sections: What makes it tick (22 pages); The glossary (16 pages); The art of starting a watch collection (32 pages); Brand watches from A to Z (94 pages covering 49 makers); Price guide (26 pages); Upkeep, standing the test of time (4 pages); and The watch lover's address book (8 pages).

[2nd edition] "A watch follows its owner wherever he or she goes, immediately revealing its owner's taste, financial means, and attention to the wheels of time. Over the past 10 years, watches (once merely functional tools) have become true objects of desire. Whether fashion accessories or collectors' pieces, the watches available today span all sectors, from mass-market to luxury. With an increase in the number of trademarks, collections, and styles, the market for watches is growing annually and offering such a vast selection that it is increasingly difficult to understand it and to make one's own choice. Auctions abound, offering astounding, and somewhat confusing, new records: \$3.4 million, for example, for a Patek Philippe watch in 2008. After the success of her first edition, French horology specialist Fabienne Reybaud, returns as your guide in this updated version."

R2209 Reymond, HA**La distribution de l'horlogerie**

de qualité dans le cadre d'une politique de vente
1967, 246 pp.
(French).

R2210 Reymondin, CA; Monnier, G; Jeanneret, D; Pelaratti, U**The theory of horology****La théorie de l'horlogerie****Theorie der uhrmacherei**

Neuchatel: Swiss Federation of Technical Colleges (FET) and Watchmakers of Switzerland Training and Educational Program (WOSTEP), 2003 (1999), 30.0 x 21.5 cm, 368 pp, 939 ill, loose additional sheet. Technical (English, French, German).

Separate language editions. Printed in 1999, 2001 and 2003. The 2003 printing is described as the second edition, but it has the same number of pages.

Fifteen chapters: The concept of time (16 pages); Instruments for measuring time (12 pages); The simple mechanical movement (12 pages); The driving force in a mechanical watch (6 pages); The geared transmission system (48 pages); Escapements (30 pages); Regulating organs (40 pages, including the pendulum); Self-winding watches (20 pages); Calendar mechanisms (28 pages); Striking mechanisms (8 pages); Chronograph mechanisms (28 pages); The exterior of the watch (22 pages); Tribology (24 pages); Clockmaking (30 pages); and The electronic watch (27 pages).

These are followed by 8 pages of exercises with answers and a table of contents.

The book is primarily concerned with watches; there are 4 pages on pendulums and 30 pages on clock mechanisms.

[1st edition, fair?] When my daughter got a dog she took it to a vet and asked him to check it out and give an opinion. After a careful examination, the vet gave a despondent sigh and said "well, it has excellent teeth".

This book has excellent illustrations.

It reminds me of the encyclopedia-style publications for children which have beautiful pictures, a little text and provide an elementary explanation of things technical. It is superbly produced with an attractive, clear layout and not too many words. It also has lots of formulae, some good and some simplistic descriptions, but no theory at all despite its title.

Theory is argument. Theory is the logical deduction of a statement from defined assumptions. It is not the quotation of a mathematical formula. Nor is it the presentation of experimental results. Nor is it the description of a system. For example, in this book equations are presented for the various properties of a mainspring in a barrel, but they are stated without derivation. In consequence they are merely succinct, formalised descriptions which may have a greater air of authority than the equally good "one-third of the barrel", but they are no more valid. Likewise, the excellent photograph and diagram illustrating the equation of time are summaries of experimental data and have nothing to do with theory (which would require a mathematical analysis of the motion of the Earth about the Sun). Finally, the descriptions of self-winding, calendar, striking and chronograph mechanisms are just detailed explanations of particular mechanical systems. It is a book devoid of theory.

This criticism is most clearly demonstrated in the section on gear teeth, headed "norms". After defining basic terminology, formulae are given for the tip and root diameters of a wheel. These introduce magic numbers, addenda factors, without any explanation. The section merely specifies methods for mindless calculation which does nothing to increase understanding, and it is interesting to compare this chapter with Camus "A treatise on the teeth of wheels" and Davis "Gears for small mechanisms". My point is re-enforced by the exercises at the end of the book which require the ability to substitute values into equations and calculate answers; they are typical early high school exercises which are only related to horology by their context.

Another interesting comparison is with Grossmann "Prize essay on the construction of a simple and mechanically perfect watch". Grossmann's book is purely practical and has a totally different purpose, but he is far more theoretical! He rationally and logically argues from assumptions to conclusions about watch design.

The points I am making are very important because of the purpose of the book. The foreword states "Numerous books deal in detail with the various aspects of the theory of horology, but none entirely meets the requirements of the present day. It is for this reason that the Swiss Federation of Technical Schools (FET) has now published a work whose contents are aimed at fulfilling all the needs of today's trainee horologist". From this and the contents I conclude that this luxurious, extremely expensive book is a first-year horology text aimed at school children about 14 years old. Viewed in this context, the book makes some sense and perhaps it does fulfil all the needs of today's junior trainee.

However, the foreword goes on to say "This work lays out all the information used in the industry today - which is everything a student of horology needs to know". Indeed Antoine Simonin, in his foreword to the English edition, states that the book "will quickly become the 'bible' for schools, training centres and even watch specialists". These unrealistic and alarming statements are symptomatic of the information age. Education had two facets when I was a student, knowledge and understanding. Facts are necessary, and rote learning the names of geographical places, spelling and so on is an essential basis. But I was also taught to think through algebra, analysis of newspaper articles and other topics. And teachers developed

in me an appreciation of the need to understand in order that I could effectively interpret the facts that might come my way. But in those days facts were quite hard to obtain, whereas I could create as many as I liked by thinking, by starting with some assumptions and developing a formula.

These days we are buried under facts. Through cheap books, TV and the internet we have so much information thrust at us that it is almost impossible to do more than compile data without verification or criticism. Much education has been reduced to a data gathering exercise, where the student, often thoughtlessly, abstracts from unacknowledged sources. Marks are more related to the ability to gather unedited information than to the ability to analyse.

I feel this book furthers this degradation of education. I was stunned to read that until 1700 "one (watch) hand was used ..." and be offered a picture of a Breguet souscription watch as illustration! To make this bald, if valid, statement without any explanation is bad enough, but to illustrate it with an utterly incorrect example is totally unacceptable. One error does not make a book poor, but this is just symptomatic of the whole. The book is a cavalcade of data, certainly correct data, but just data. Circuit diagrams for electronic watches are given without explanation (I hope the reader has completed an electronics course) but then over the page there are detailed instructions on how to handle batteries! The Swiss lever escapement is covered in great detail and 5 other escapements are dismissed in 3 pages. A formula for the CGS of a spring is given without any explanation of what CGS is, its purpose or its derivation (and the same applies to couple and Q factor). Tools are illustrated with no adequate explanation, but at least you have seen one! The final insult is the bibliography; it says books exist, tells the reader to get copies of horological standards and the reports of chronometry societies, and ends with an advertisement for a book company. As today's watch makers need an engineering degree and today's watch jobbers need a copy of Jendritzki's books I have no idea who this volume is aimed at.

Of course, I am not sitting in a FET classroom. Perhaps the book has to be read in the context of a curriculum and may be the theory and supporting education fills in all the gaps? Perhaps the book is only meant to be a summary of useful formulae, an aide memoire? I don't know. But I do know that by itself it is very disappointing, inadequate and far too expensive.

R2211 Ribeiro, H**Catalogue of an important rare horological collection**

1962.

Catalogue (English).

Auction catalogue including watches and chatelaines.

R2212 Rice, EE**A tribute to business character**

New York: Rice Leaders of the World Association, 1930, 8vo, 47 pp, 4 plates.

Miscellany (English).

A collection of addresses given in 1929 in honour of F.G. Gruen and G.J. Gruen of the Gruen Watchmakers Guild.

The plates include a fine photograph in photogravure of the great hotels of New York at the southern edge of Central Park which were neighbours to the World Association Headquarters: Sherry-Netherlands; Savoy Plaza, and the Plaza.

R2213 Richon, M**Omega saga**

Bienne: Adrien Brandt Foundation, 1998, 31 x 25 cm, 488 pp, 768 b/w ill, 237 col ill.

History (French).

2000 copies.

A detailed history of Omega and its products published for the 150th anniversary of its founding.

[Review by Kathleen H. Pritchard] Several of the most prestigious Swiss watch firms have published their own histories in recent years. Now we have Omega's celebration of its 150th anniversary, and for those who read French, this massive volume covers the company's history from 1848 to 1998. The author is the curator of the Omega Museum in Bienne. His writing, even about the duller financial reports, is colorful and even exciting.

Omega Saga not only discusses every detail of the management, finances, products, and history of the Omega company, but has side bars which remind one of events taking place at the same time in Swiss history, and horological history worldwide. There is a vast number of illustrations of the personnel, the factories, and the watches, including the individual movements. Observatory certificates are reproduced. Truly beautiful advertising and posters are included. We see sports activities, including a complete record of Omega use at the Olympics. Some serial numbers are dated, under the heading, "the numbers jungle." Besides observatory awards, Omega has won much recognition for its aesthetic designs, and those prizes are also listed.

Omega was founded in 1848 by one Louis Brandt as a comptoir in La Chaux-de-Fonds, a mountain town in the Canton of Neuchatel that was already one of the active Swiss horological centers. A comptoir was an establishment that collected all the parts of the watch, and centralized its manufacture and its sale. When Louis Brandt died in 1879, his sons, Louis-Paul and Cesar, moved the operation to Bienne and opened there as Louis Brandt & Fils, watch manufacturers. Success and expansion followed rapidly. In 1891 the name was changed to Louis Brandt & Frere. The company had gained a name for high grade and innovative horology. In 1892 they produced the world's first wrist minute repeater! In 1894 they came out with the 19-ligne "Omega" which was remarkable for its ingenious mechanism at a reasonable price -

so good, in fact, that it won a gold medal at the Swiss National Exhibition in Geneva in 1896. In 1903 the company became S.A. Louis Brandt & Frère - Omega Watch Co. In 1917 the British Royal Air Force chose Omega, and in 1918 the American army bought 5000 Omega wristwatches. The worldwide depression following the 1929 crash caused financial repercussions in the watch manufacturing community; Omega and Charles Tissot & Fils merged to form SSIH; each company kept its own identity. Omega was able to celebrate its centenary in 1948 with the creation of its famous "Seamaster" watch. This was followed in 1952 by the wrist chronometer, "Constellation." One of Omega's finest moments was the choice in 1965 by NASA of the Omega "Speedmaster" as its official chronometer. (The story is well known about the NASA procurement officer just going into a local jewelry store and picking a number of watches to try out, and then choosing the "Speedmaster.") Omega took part in the founding of CEH, the developer of the first quartz wristwatch in 1967. This led in 1973 to the "Megaquartz" and the "Megasonic" and in 1976 to the "Chrono-Quartz." In 1983 SSIH merged with the other major Swiss watch holding company, ASUAG. In 1984 this group assumed the name, SMH. Omega continued to be successful and in 1989 became the official supplier to the Soviet cosmonauts. A preface explains that because Swatch has been SMH's most successful brand recently, there was some talk of dropping Omega. Thank goodness that has not happened! With the weight of much success behind it, one can only hope that Omega will surge on to greater heights.

Besides all the carefully documented history of Omega itself, the author has included an extensive chapter on the synoptic chronology of horology. This is especially interesting to us because it ties in the founding dates of American factories with those in Switzerland. This chapter has its own individual index.

Omega Saga is a splendid undertaking and will be an important resource for years to come.

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R2214 Richon, M

Omega, a journey through time

Omega, voyage a travers le temps

Omega, reise durch die zeit

Bienne: Omega Watch Company, 2007, 32 x 26 cm, 831 pp, 6625 ill.

Illustration, catalogue (English, French, German).

Twelve chapters:

1. Sister brands (20 pages) deals with the various 19th century brands that eventually were merged to create the Omega brand.
2. Pocket watches (50 pages) documents primarily the first quarter of the 20th century, but excludes pocket chronographs.
3. Wristwatches (60 pages) deals with early wristwatches before the creation of specific product lines.
4. High Precision (40 pages) discusses primarily chronometers and related precision timekeepers, such as their submissions to timekeeping competitions at observatories.
5. Official watches (50 pages) includes sections on railroad watches, shooting watches, military watches, and elite watches.
6. Automatic (20 pages) is devoted to the early self-winding watches from the 1940s to the early 1960s.
7. Seamaster (75 pages) deals with this waterproof brand segment, including diver watches, and Omega's involvement in yachting.
8. Constellation (40 pages) is a relatively short chapter in spite of the huge numbers of watches sold under this popular label over the decades.
9. De Ville (35 pages) is devoted to Omega's elegant line, from its beginnings in 1960 to the latest watches with George Daniels' co-axial escapement.
10. Specialties (80 pages) covers small clocks, 24 hour dials, masonic watches, moon-phase watches, the Century, Genève, Dynamic, and Ranchero product lines, Electronics, Central Tourbillon, as well as automobile and aircraft watches.
11. Chronographs (160 pages) is by far the largest chapter and includes a special 35 page section on Olympic timers and a subchapter of 75 pages on the Speedmaster line, with its own 10 page nomenclature index.
12. Creation (100 pages) deals with style and fashion driven watches, including ladies' jewelry watches.

[1st edition, review by Fortunat Mueller-Maerki, good] Each of the twelve chapters consists of a "catalog" of numerous individual watches, ordered thematically or chronologically. Each catalog entry is made up of one short paragraph of text, consisting of the catalog number (corresponding to the inventory numbers of the Omega Museum in the many cases where this is applicable), the "title" or name of the watch, and a one or two sentence description, accompanied by one to four images. Image size varies greatly, from one square inch to full page. The core content of the book is clearly its wealth of images; not only are there a lot of them - I would guess more than 6000 - but they show the details relevant to the collector: dial, case, details of movement, hands, crown, inside case back etc., whatever is relevant. On virtually every page there are additional images of related ephemeral material, most often miniature reproductions of related advertisements; the depth of Omega's corporate archives in this regard is overwhelming.

A 55 page reference section on the Omega calibers concludes the book. This part is an expanded and updated version of the information found on pages 179 to 220 of "Omega saga". It includes a listing of the calibre nomenclature from 1874 to 2007 and a spread of 36 pages of 1:1 images of all omega calibres,

which serves as a user friendly quick movement identification guide.

The whole breadth of the Omega line is covered, from the earliest experimental prototypes, and their marine chronometers, to the modern mass produced marvels and their limited edition pieces, the examples go on and on, and never seem to end.

Clearly this is not a book one sits down with to "read" a chapter, yet alone the whole book. It really is a catalog rather than a narrative. Essentially, this book is a catalog of most of the watches in the Omega Museum in Biemme, Switzerland, that has been selectively augmented by including other important or interesting Omega watches, which the Museum does not own. As a catalog, this publication is for browsing rather than for reading, and it is clearly meant as a documentation and as a reference source, because it contains an enormous amount of information, both in the short text descriptions, but especially in the countless images. However, as a reference tool it has one giant drawback: It lacks an index. The structure of the book allows the information hunter to get to the right general area relatively easily, but for locating a specific watch one wants to research or one remembers an index would have been essential. This book is more than a pretty coffee table book to pick up randomly to enjoy the pictures; it can be used to carry out serious historical research on Omega products, but that is nearly impossible in its current state. This reviewer realizes how enormous the indexing task would be for this book, and assumes that time or budget constraints prevented indexing. (Even as it is the book missed its publication target by four months: It was to be launched during the Omegamania auction in April 2007). But I believe it is never too late: A supplement containing an index could still be created and published, and I believe that both the content of the book and the readers deserve this to happen.

In spite of this major drawback "Omega - A Journey Through Time" is destined to become the most consulted book for any serious collector of Omega watches, and a part of the core reference library of most wristwatch collectors. Omega and Marco Richon deserve the thanks of wristwatch enthusiasts for having created one of the most "content rich" publications on 20th century wristwatches ever published.

R2215 Richon, M

Omega, history of a great brand

Omega, histoire d'une grande marque

Bienne: Omega, 1994 (1993), 48 pp, ill.

History (English, French).

Separate language printings.

R2216 Richter, B

Breitling, the history of a great brand of watches

Breitling, die geschichte einen grossen uhrmarke

1884 to the present

USA: Schiffer; Munich: Callwey, 2007 (1991), 30 x 21 cm, 178 pp, ill (176 pp, 272 ill, 50 plates) (160 pp, 230 ill).

Dating, identification, illustration, price guide (English, German).

Separate English and German editions with price guide. Three editions in 1991, 1994 (with a reprint in 2000) and 2007.

All illustrations b/w?

Illustrates 537 watches, covering all models with production dates. Also included are old catalogues and advertisements.

[2nd edition review by Henry B. Fried] The Breitling name on chronograph watches has appeared since 1884. The founder, Leon Breitling, died in 1914. Continuing on was his son Gaston until his death in 1932 when Willy Breitling took the firm's headquarters from La Chaux-de-Fonds to Geneva. From their start, they finished watches whose basic movements were made elsewhere.

Also, from the start, they produced watches with complicated mechanisms and services. Breitling specialized in chronographs and watches made for maritime activities. Special models included the Navitimer, the Cosmonaute and the Transocean. The Cosmonaute dial had a calculator disc registered at the Swiss Patent office.

Generally, the book contains many reproductions of important trade advertisements going back to the turn of this century. These also include special advertising material reaching well into modern times. To researchers, these very old advertisements contain a great deal of interesting material. The pages of this book show photos of the Breitling founders and current administrative members, factories, shops and staff.

There are many photos of period pocket and early wrist timers with center seconds hands. Movements too are pictured. Descriptions of these early models are reproduced from the German and their descriptions are in that language. Some adjacent texts are in English. Early trade journal reproductions of nurse's watches show these with center seconds but with pendant broach attachments.

There are pages with quality reproductions of watch parts catalogues showing each movement's dial and movement sides together with their individual parts and replacement reference numbers. These reveal movements made from the Venus, Valjoux, Heuer (a self winding calibre), Lemania, Landeron ebauches and others.

There are pages of exploded views of some models, including one with a movement-level rotor, Cal. 11 (which is interchangeable with Heuer and Hamilton). In the latter part of the book is a 25-page listing of all the watches shown in the book with pertinent descriptions and their reference numbers.

A 2-page listing reveals the ebauches used in most models. These include Felsa, Fleurier, Valjoux,

Fontainemelon, Venus, ETA, A.S., Peseux, Lemania, Ronda and Piguet. Another list shows the year of manufacture based on Breitling serialized production numbers on their movements. Another closing page is a chronology of Breitling.

The later section's pages are devoted to closing comments, a good index and a 2-1/2 page listing a price guide in U.S. currency of the watches in this book. The highest estimate is for a Breitling Chronomat in revised form, with a slide rule dial, telemetre, gold case and leather band. This is dated as circa 1945.

For the collector-dealer in vintage and later wristwatches and the products of well-known makers, this book is recommended for the breadth of coverage, quality of illustrative material, paper and binding.

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R2217 Rieben, H; Urech, M; Iffland, C

L'horlogerie et l'europe

Neuchâtel: La Baconniere, Lausanne: Universite de Lausanne, 1959, 19 x 13 cm, 228 pp, few ill, tables. (French).

Publication of the Centre de recherches européennes, Series 7. Etudes sectorielles.

Volume 2 of "De la démocratie industrielle." A survey of horology in Europe in the mid 20th century.

R2218 Riedel, M

Index of manufacturers

Germany: Robert-Mayer-Scholz-Verlag, 2007, 130 pp.

Makers (English).

"Create your own watch brand with tourbillon. Your brand, your logo."

This book contains the address, web site, email address and telephone number of more than 820 watch manufacturers from whom watches can be ordered. The manufacturers are arranged by product category and alphabetically.

There is also a list of "favourites" whom the author has dealt with or considers "interesting".

This book was advertised as: "Create your own watch brand with tourbillon. A small private series or your own brand? You decide which brand name and logo the watches will have! Completely finished watches with brand-name, logo etc are delivered; including warranty!" Presumably for watches made in China.

R2219 Ries, FC

Prize essay on watch cleaning and repairing

with methods of watch examination when taking them in for repairs

USA: Adams Brown (Chicago: Hazlitt & Walker), 1979 (1895), 19.5 x 13.5 cm, 38 pp, no ill.

Repair (English).

Published in 1910 and reprinted in 1979; the earlier date of 1895 may be as a journal article.

Starting with a pocket watch in its case, Ries describes the process of examining and repairing it, covering most problems and their solutions as he goes.

[1st edition 1910, good] A nice discussion of repair techniques written convincingly in the first person.

It assumes a reasonable knowledge and experience to make up for the lack of illustrations.

There are good instructions for dial feet replacing (which explains how to position the new feet accurately, a point often overlooked by other writers) and some other topics are dealt with neatly. So it is worth reading.

R2220 Rigg, E

Watchmaking

London: Society for the Encouragement of Arts, Manufactures, and Commerce, 1881, 8vo, 39 pp, 2 pp ads, 21 ill, 6 tables.

History, description (English).

The three Cantor lectures on watchmaking were presented in February 1881 and then published in a booklet.

Lecture 1 (18 pages): Units of time; Historical sketch; Description of usual forms of watches; Escapements; Conditions of accurate timekeeping, and Arrangements necessary for their maintenance in the higher class of watch.

Lecture 2 (14 pages): Degree of accuracy required in the ordinary watch; Fourteen years' statistics of the clock and watch trade; Systems of manufacture in this country and abroad; Description of specimens illustrative of the various stages of construction; Comparison of the several systems; Suggestions.

Lecture 3 (5 pages): Necessity of efforts to promote the art in this country; Need of education, theoretical and practical, in horology; Literature; Great want of uniformity in gauges, screws, etc.; Exhibition of ordinary and complicated watches, and of watchmakers' tools; Conclusion.

[1st edition, very good] The first 14 pages of Lecture 1 provide a brief history and a description of watches. Although these are good, the same information can be obtained from much more accessible sources. They are followed by an examination of the effects of omitting the fusee, with Rigg arguing that it should be retained in better watches. This is based on a quite detailed, and very good explanation of the variable force produced by the mainspring and the resulting variable rate of the watch, including an explanation of the advantages of tapered mainsprings. However, although having previously discussed isochronism, Rigg is assuming it is too difficult to attain, and so the fusee is necessary in adjusted watches. The lecture concludes with an explanation of temperature compensation and the value of observatory rating of watches as well as chronometers.

At the start of the lecture, Rigg notes that he is facing a “non-technical audience”. I suspect that audience may have found the latter parts of the lecture rather hard to understand. However, there were a number of displays, including escapement models, and there was probably much discussion after the formal presentation.

Lecture 2 is primarily an argument for the adoption of mechanised manufacture in England. Rigg begins by restating his belief that good watches should have a fusee, but it can and should be omitted from cheaper watches. This is followed by 6 tables which provide information about English manufacture, imports and exports for 1867 to 1880 as a prelude to examining the manufacture of cheaper watches using machinery. The extensive discussion of manufacture includes the English cottage and American factory systems, an interesting remark on key winding and dummy fusees, and accommodation of workers.

Lecture 3 is very short, because most of the time was taken up with displays of gauges, tools and watches. It begins by discussing the need for more scientific training, schools and English language books on horology. Included is a general description of the Horological Institute school which was established in 1880. This is followed by a brief consideration of gauges and the suggestion that watchmakers adopt the Whitworth standard. The lecture concludes with the suggestion that the study of watches and watchmaking should be promoted amongst amateurs, “those that amuse themselves with mechanical pursuits”; a view supported by a quote from Adrien Philippe.

Like most authors, Rigg had a purpose in giving these lectures. It was to support the retention of the fusee and hand-work for good English watches, while adopting the going barrel and machine production for the cheaper watches; and he achieves this very well. Although the book is hard to get, the serious historian should make the effort to read it.

[Remark] Rigg (with Tripplin) translated Saunier’s works.

R2221 Riolini-Unger, A

Friedberger uhren

begleitband zur ausstellung Friedberger uhren 17 - 19 jahrhundert
Friedberg: Heimatmuseum, 1993, 8vo, 192 pp, ill.
Exhibition (German).

Catalogue of an exhibition of 195 timepieces including a range of ornate pocket watches. Index of makers and brief biographical detail.

R2222 Riviere, M

Cours d’arithmétique a l’usage des horlogers

Quimper:, 1949, 8vo, 110 pp.
Technical (French).

Course of arithmetic for the use of horologists.

R2223 Riviere, M

Cours de dessin a l’usage des horlogers

engrenages, échappements
Quimper: Impr. Bargain, 1957 (1948), 8vo, 2 volumes 71 pp, 20 plates and 82 pp, 42 plates.
Technical (French).

Part 1 printed in 1948 and part 2 in 1949. Both reprinted in 1957.

Course of drawing for horologists. Part 1 gears and part 2 escapements.

R2224 Riviere, M

Cours élémentaire d’horlogerie théorique

Quimper: Impr. Bargain, ca 1950, 8vo, 64 pp, 23 ill.
Theory (French).
Elementary course of theoretical horology.

R2225 Robert, CF

Manuel d’horlogerie pratique

mis a la portée de tout le monde
Paris: Desloges, 1840, 52 pp, 4 plates.
Repair (French).

Gardner “Catalogue of the Torrens collection” indicates only 1 plate.

“démonstration de l’échappement a cylindre et du repassage des dites montres par les moyens les plus simples”.

Practical manual of horology, the cylinder escapement and the repair of modern simple watches.

See also Deschanalet “Manuel d’horlogerie pratique mis a la portée de tout le monde” which is presumably a later edition.

R2226 Robert, Henri

Description des nouvelle montres a seconde

Description of a new seconds watch

a l’usage des ingénieurs, des physiciens, des médecins, des mécaniciens, des navigateurs, des officiers d’artillerie
Paris:, 1834, 22 pp, 1 fld plate with 5 figs.
Description (French, English?).

Tardy and Robertson indicate that there may be an English translation.

Description of a new seconds watch for the use of engineers, physicians, doctors, mechanics, navigators, artillery officers.

R2227 Robert, Henri**Études sur diverses questions d'horlogerie**

Paris: Henri Robert, les Principaux Libraires, 1852, 8vo, viii, 274 pp, 1 pp errata, 4 plates. Technical (French).

It is available as a Google Book PDF file.

Robertson indicates an English translation in 1852 (under the name N Roberts), but I have seen nothing to show it exists; he may be referring to "Practical considerations on the oil employed in clockmaking".

Studies on various questions in horology in two parts:

Part 1: Du remontoire d'égalité et des échappements a remontoir ou à force constante (30 pages, constant force remontoires for clocks).

Isochronisme des oscillations du pendule par la suspension à lames élastique (24 pages, including escapements).

Des perfectionnements à introduire dans les pendules à secondes (22 pages including escapement proportions, pendulum mass, temperature effects and the use of fir wood).

Considérations pratiques sur l'huile employée en horlogerie (10 chapters, 78 pages: Various types of oils, Procedures for preparing oil, Products containing olive oil, Influence of metals on oil, Action of air, light and heat, Alteration of oil by the machine and means of preventing it, Coagulation, Degree of fluidity, and Comparison of oils).

Considérations pratiques sur la longueur des leviers de l'échappement dans les pendules (12 pages).

Des causes de destruction par le frottement, et des moyens de conserver les parties frottants en horlogerie (36 pages, the causes and prevention of destruction by friction).

Part 2 Communications de divers horlogers: Recherches sur l'échappement à roue de rencontre (17 pages and plate 2 by Claudius Saunier).

Dorure et argenture (4 pages, gilding and silvering by Paul Rocca).

Followed by 43 pages of notes on clock remontoires (Achille Brocot), a constant force escapement (Vérité), isochronism of pendulums (Loseby), clocks (Wulliamy), an isochronous pendulum (Callaud), compensated pendulum (H. Robert), observation on the curseur, observation on fir wood, observation on a mercury pendulum compared to a gridiron pendulum (Kessels), a mobile lever (H. Robert), comparison of the pivoted and spring detents, remarkable alteration in oil, and reports on various work (H. Robert). The section on cleaning silver dials is reproduced in Saunier "The watchmakers handbook".

The only part relevant to watches is Sauniers study of the verge escapement. It contains: The proportions adopted at different times (proportions of Thiout, Berthoud, Tavan, Moinet, Wagner and discussion of them); General considerations; and Summary.

The book is said to contain a comparison of English and French watches, but I cannot find it.

R2228 Robert, Henri**L'art de connaître les pendules et les montres**

précédé de l'art de conduire et de régler les montres de Ferdinand Berthoud augmenté de notes par le même

Paris: Henri Robert, 1849 (1841), 12.5 x 9 cm, 306 pp, 3 plates (270 pp, 4 plates). (French).

With a 2nd edition in 1849.

Graffigny gives the title as "L'art d'apprécier, de conduire et de régler les montres et les pendules".

The art of understanding clocks and watches and the art of examining and adjusting clocks and watches by Ferdinand Berthoud augmented with notes by the same.

With a 12 page report "Extraits des rapports authentiques sur quelques-uns des produits de la fabrique d'horlogerie et machines diverses de Henry Robert": Extracts from authentic reports on several of the products of the horology factory and various machines of Henri Robert, student of Breguet.

R2229 Robert, Henri**Practical considerations on the oil employed in clockmaking****Considérations pratiques sur l'huile employée en horlogerie****Praktische betrachtungen uber das in der uhrmacherkunst angewandte oel**

Paris: Robert Henri, 1855 (1851), 8vo, 80 pp, 4 plates.

Repair, technical (French, English, German).

Part of "Études sur diverses questions d'horlogerie" published separately and translated into English and German in 1855. The original had no relevant plates.

Also given as 50 pages.

R2230 Roberts, Evan; Abbott, Henry G**The Roberts' collection of antique watches**

Chicago: Hazlitt & Walker, 1897, 7 x 6 inch, 19 pp, 45 plates.

Collection (English).

Also given as 42 pp.

Illustrations of cases and movements with short descriptions of each.

Tardy lists two other titles: "Catalogue of historical and antique watches loaned for exhibition at the world's Columbian exposition" (23 pp, Chicago, 1893) and "Historic horology, being a catalogue of a collection of antique watches loaned and exhibited at the jewelers exhibition" (Chicago, 1912).

R2231 Robertson, J Drummond**The evolution of clockwork**

with a special section on the clocks of Japan

England: EP Publishing, England: SR Publishers (London: Cassell), 1970 (1931), 22.0 x 14.5 cm, 358 pp, 92 ill, 8 plates.

Bibliography, history (English).

The title page says "101 illustrations", but I can only find 100.

There appear to be at least two reprints in the 1970's.

In three sections:

The evolution of clockwork (190 pages): Measurement of time; The origins of clockwork; Striking work; Domestic or chamber clocks; Henry de Vick's clock; The Dover Castle clock; The romance of the pendulum; The pendulum clock; The "anchor" escapement; Huygens and the determination of longitude; The balance spring.

The clocks of Japan (98 pages): Introduction; Japanese time measurement; Japanese calendars; Japanese clocks; Conclusion.

Bibliography (60 pages).

There is a 10 page index.

[1st edition, fair] The first part does not discuss watches except for the last chapter which examines the origin of the balance spring and the dispute between Hooke and Huygens. The second part is a detailed study of Japanese timekeeping and clocks with two relevant illustrations; a pocket watch and three inro watches.

The importance of the book to horology in the small lies in the valuable bibliography, which includes the Vulliamy library (see Institute of Civil Engineers "Catalogue of the library bequeathed to the institute") and is "the first attempt in England to present a compendious survey of the literature of horology".

The bibliography is extensive, but frequently lacks adequate information and, like Tardy, it has quite a few dubious entries. The apparently uncritical transmission of information from one bibliography to the next, obvious when one compares different lists, creates serious problems; does an entry represent a real work or have several bibliographers simply copied an error and so given credence to a fictional item or an incorrect description?

R2232 Robinson, SW**A practical treatise on the teeth of wheels**

with the theory and use of Robinson's odontograph

New York: Van Nostrand, 1906 (nd), 6 x 3 inch (5.75 x 3.75 inch), 168 pp, ill (152 pp, 38 ill, 2 fld plates, 6 pp ads).

Technical (English).

The second edition was printed in 1888 and the third in 1906.

Robinson was professor of mechanical engineering at the Ohio State University.

This sounds like fun even if it may be irrelevant.

R2233 Robison, John; Brewster, Sir David**A system of mechanical philosophy**

London: John Murray, 1822, 8vo, 4 vols.

Watch making (English).

Volume 2 is available as a Google Book PDF file, but no plates.

Volume 1: dynamics and strength of materials.

Volume 2: the steam engine, machinery, resistance of fluids, water works, pumps and a theory of rivers.

Volume 3: astronomy, the telescope and pneumatics.

Volume 4: electricity, magnetism, variation of the compass, music, musical instruments, watch mechanics (72 pp, 2 plates including escapements, by TR Robison) and seamanship.

Many of the articles were written for the 3rd edition of the Encyclopaedia Britannica.

R2234 Roblot, C**Collection de cadrans de montres de l'époque révolutionnaire**

Exposition Universelle 1900

Paris: Maison Rapide, 1900, 21 x 13.5 cm, 3 volumes 39 pp, ill; 98 pp, ill; 134 pp, ill.

Exhibition (French).

One source gave a single volume (98 pp, ill). See also Baudon "Nouvelle notice sur la collection de cadrans de montres appartenant a M. Roblot" which may be volume 3 of this.

Exhibition of watch dials.

I haven't seen this book, but like Tardy "Echappements de montre" the pagination may be misleading; it could be 39 pp, 59 pp and 36 pp.

R2235 Roche, JC**The history, development and organisation of the Birmingham jewellery ...**

... and allied trades

Birmingham: Dennison Watch Case Co, 1927, 8vo, 115 pp, tables.

History (English).

Produced as a supplement to "The Dial", the Dennison Watch Case Co newsletter.

R2236 Rockford Watch Co**Identification catalogue 1909 - 1910**

reprint, nd (1910), 28 x 22 cm, 63 pp, ill.

Description, identification (English).

This has not been seen and may be the same book as Ehrhardt "Rockford grade and serial numbers with production figures".

There is also a modern copy of a 1908-09 catalogue which is a 39 pp extract from a C.H. Knight & Co. supply catalogue.

R2237 Rockford Watch Co**Railroad time keepers**

Illinois: Rockford Watch Company, nd (1882), 12.0 x 8.0 cm, 12 pp, 9 ill.

Description (English).

The reprint is undated.

Sales pamphlet for retailers with general descriptions and illustrations of 9 Rockford movements as well as company puff.

[1st edition, fair] A nice piece of ephemera for the collector, if the original printing, but otherwise insignificant.

R2238 Rockstroh, H**Populare anweisung wie thurm, haus und taschenuhren**

in absicht auf gang und zeit richtig zu stellen sind

: W. Schuppel, 1837, 108 pp, 4 plates.

(German).

Listed in Robertson.

Popular instruction in the correct going and regulation of clocks and watches.

R2239 Rodanet, AH**L'horlogerie astronomique et civile**

ses usages, ses progrès, son enseignement a Paris

Paris: C. Donod, 1887, 4to, 208 pp, 26 ill, 1 plate.

Description, history (French).

Astronomical and civil timepieces, their use, progress, education in Paris.

A series of lectures.

"Collected discourses given by author on the use and progress of the art and craft of horology to chambers of commerce, horological academic establishments etc. Includes some technical discussion on escapements, compensated pendulums etc."

R2240 Rogers Thurman**Become an expert watch maker**

and earn \$25.00 to \$65.00 per week

Chicago USA: Rogers, Thurman & Co., 1907, 8 x 5 inch, several booklets of 14 pp, ill.

Repair (English).

At least 6 booklets.

Lesson 3: How to assemble and testing.

Lesson 5: How to fit a mainspring, setting roller jewels, balance jewels, putting in a new balance staff, pivot polishing, escapement adjustment, and how to use a lathe.

Lesson 6: How to set pallet stones, information the canon pinion, how to make a balance staff, how to set plate jewels.

R2241 Rohner, S**Militär taschenuhren**

das handbuch fur sammler

Munich: Callwey, 1992, 22 x 13 cm, 175 pp, 240 ill.

Collecting, dating, description, identification, makers (German).

Military pocket watches, the collectors' handbook. 77 pocket watches from the last 100 years.

"A collectors handbook of watches and deck watches used by the armed forces of several countries."

R2242 Rolex Watch Co**400 years of watchmaking**

an historic exhibition

New York: Rolex Watch Co, 1974, 8 x 8 inch, 58 pp, 70 ill.

Catalogue, exhibition (English).

The pagination has been given as 62 pp, 66 pp or 76 pp. One copy included a "selection of unsolicited testimonials".

Commemorative catalogue of an exhibition at the opening of the Rolex Building in New York. It includes pocket watches from the Metropolitan Museum of Art and the collections of Wilsdorf, Zale and Benis.

R2243 Rolex Watch Co**Every Rolex tells a story**

Switzerland: Rolex Watch Company, 1990, 7.5 x 7.5 inch, 24 pp, ill.

Miscellany (English).

Stories about individual Rolex watches.

R2244 Rolex Watch Co**R2244 Rolex Watch Co****Hans Wilsdorf collection**

Geneva: Rolex Watch Company, 1970, 8.5 x 5.5 inch, 58 pp, plates.

Description, collection (English).

Soft cover and a limited edition of 100 copies in leather and slip case.

Catalogue of 150 watches from the collection of H. Wilsdorf.

R2245 Rolex Watch Co**Hans Wilsdorf, the founder of Rolex**

Geneva: Rolex Watch Company, 1965, 20 pp, ill.

Biography, history (English).

Small biography of Wilsdorf.

R2246 Rolex Watch Co**Jubilee vade mecum****Das Rolex jubilaums vademecum**

Geneva: Rolex Watch Company, Zurich: Fetz, 1946, 21.0 x 14.5 cm, slip case with 4 volumes of 31 pp, 15 ill; 29 pp, 13 ill; 26 pp, 13 ill; and 43 pp, 30 ill.

Description, history (English, French, German, Spanish).

A limited edition of 1000 copies (in each language?).

Separate language editions. Once source gives 1945 for the German edition.

Four volumes in slipcase:

Volume I Step by step: An autobiography of Hans Wilsdorf and a brief history of Rolex.

Volume II Evolution of the wrist watch chronometer: Summary of chronometer trials and description of features of Rolex watches.

Volume III How the waterproof watch came into being: History of waterproof watches and a description of the Rolex screw-down crown.

Volume IV The story of the self-winding watch: History of self-winding watches and a description of the Rolex mechanism.

Except for 2 diagrams in Volume III and 19 in Volume IV, the illustrations are "artistic" line drawings.

[1st edition, fair] *This is a well-written summary of the history and achievements of Rolex, which can be read in an hour. It has no particular merit, everything having been covered better and in much more detail in other books.*

I would recommend Rolex collectors should read this little collection if it were not for the price. Being a limited edition it costs vastly more than the content is worth, and it is now a book collectors' item.

R2247 Rolex Watch Co**Switzerland, life and activity**

Zurich: Werner Reist, 1953, 21.0 x 14.0 cm, 205 pp, ill, plates, map, index, 15 pp addendum.

Advertising (English, French, German, Spanish).

Separate language editions.

An introduction to Switzerland covering Swiss history, politics, culture, industry and tourist facilities. It includes a 4 page chapter on the watchmaking industry by A. Amez-Droz (with 2 plates) and has a 15-page addendum describing how Rolex watches are made.

[1st edition?, mediocre] *I shouldn't include this book. It is self-congratulatory and rather like a tourist guide, but mildly interesting. The information on watchmaking is trite and the Rolex addendum is puff. My copy is "with the compliments of the Rolex Watch Company Geneva". I suspect the book was published with the assistance of different companies, and the "with compliments" and addendum change accordingly.*

R2248 Rolex Watch Co**The anatomy of time**

Geneva: Rolex Watch Company, 1970 (ca 1950), 22.0 x 14.5 cm, 52 pp, 26 ill (53 pp, 21 ill).

History (English).

Originally given away by Rolex. At least 5 editions to 1970.

A brief history of timepieces in 3 sections: First watch (16 pages); Middle watch (24 pages); and Morning watch (9 pages).

[2nd edition circa 1955, good] *First watch is a good descriptive history of elemental clocks; sundials, clepsydra, sand glasses and fire clocks.*

Middle watch, subtitled "The science of mechanics", begins by examining the origins of clocks and the origins of watches, basing their source in Italy on Morpurgo's research. It then provides the history of pendulums and some aspects of the development of watches (jewelling, Harrison, keyless mechanisms, self-winding mechanisms). For such a short book, this is very good.

Morning watch begins with the development of the wrist watch and the need for sealed cases. It then gives the history of the Rolex Oyster, the "Perpetual", ascribing the invention of the rotor to Wilsdorf, and later variants.

Despite the somewhat self-congratulatory history of Rolex, this is a nice book. Indeed, the short history is better than those in many larger books, and it is a pity we do not know the name of the author.

R2249 Rolex Watch Co**The story of Rolex, 1905-1948**

Switzerland: Rolex Watch Company, 1948, 20.5 x 14.5 cm, 27 pp, 12 ill, map.
History (English).

The rear cover has a flap to hold the letter from Rolex sent with the booklet when it was given away (my letter is dated 1951 and is to a watch owner).

Roll of honour and introduction followed by 9 chapters: 1905 (founding); 1914 (wrist chronometers); 1927 (Oyster); 1931 (automatic); 1945 (Datejust); Beauty and the lady; Why good watches will always be rare; The Tudor youngsters; And the future ...?

The book ends with 1 page of "Believe it or not!" and 1 page on "How to take care of a watch".

[1st edition, fair] Written by Hans Wilsdorf, as indicated by the use of the first person.

A nice piece of manufacturer's puff with sweet hand-drawn illustrations. Of no real value, but pleasant.

R2250 Rolex Watch Co**The world of Rolex**

Lausanne: Jean Genoud, 1987, 28 pp, ill.

Description (English).

Manufacturer's puff including photographs of watch making and testing.

R2251 Rolfe, R**E. Howard & Co. watches**

USA: R. Rolfe, 2003, 64 pp.

Identification, price guide (English).

R2252 Rolt, LTC**Tools for the job****A short history of machine tools**

a history of machine tools to 1950

London: Her Majesty's Stationery Office (USA: MIT Press) (London: Batsford), 1986 (1965), 21.5 x 15.0 cm, 274 pp, 103 ill (268 pp, ill).

History, tools (English).

Two editions in 1965 and 1986. I presume "A short history of machine tools", 1967, is the American edition of this book.

11 chapters: Machines in the craftsman's workshop (23 pages); Industrial machine tools of the eighteenth century (28 pages); The first machine shops (16 pages); Henry Maudslay - metal cutting becomes an art (9 pages); Clement, Fox, Roberts, Nasmyth and Whitworth (31 pages); Drives, gears and gear cutting machines (15 pages) The rise of America - interchangeable manufacture (18 pages); American machine tools and their makers (25 pages); The precision grinding machine and its influence (14 pages); Metal cutting becomes a science (22 pages); and Into the twentieth century (32 pages).

There is a bibliography and index.

[2nd edition, fair] Although an interesting history of machine tools, this book is almost completely irrelevant to horology. Chapter 1 has a brief and somewhat dismissive outline of horological tools, suggesting that they had little influence on machine tool development. (This may be justified by the significantly different problems in accurately machining large objects, where the need for rigidity and overcoming gravity pose complications not met in watch and clock work.) There are some later remarks in passing, but nothing of real importance.

Rolt writes in his preface that it "is impossible to tell the story of machine tools without a certain amount of technical description, but I hope this will not deter the layman" and that these technicalities are restricted and "with the aid of illustrations, these should not prove very difficult to follow". Unfortunately either Rolt has failed or I am especially dumb. I suspect he did not appreciate how much basic knowledge and understanding is necessary to recognise the significance of some developments and to comprehend the fundamental behaviours of machines. Often Rolt's description and accompanying illustrations are good, but frequently he slips into technical jargon and gives excessively brief explanations which left me floundering. This was exacerbated by several descriptions for which no illustrations were provided.

Although I found Rolt interesting, the lack of a conceptual framework detracts from the book and is probably the source of some of his dubious assertions. I agree with him that mechanics probably took a practical approach and a conceptual understanding only arose in hindsight, but this certainly could not have been the case all the time. The most obvious example is the influence of gravity. There is no doubt that mechanics were well aware of the problem of distortion caused by gravity; this is shown by the design of vertical machines and attempts to offset it in horizontal machines. But the problem only exists with sufficiently massive objects and long levers (such as when boring large cylinders) and it does not occur at the level of hand gun or clock making.

Another aspect of this lack of conceptualisation is seen when Rolt discusses Hawkins translation of Camus "A treatise on the teeth of wheels". He criticises Hawkins for an important error in the early editions (where the generating circle for epicycloids is incorrectly defined), but he fails to draw the inevitable conclusion that the mechanics who used this book could not have read or understood it; if they had, the error would have been obvious and not have created problems. The failure to use epicycloids in watch and clock making is understandable (there is simply no easy way to make correctly shaped, very small cutters, as is clearly shown by Jaques David "Rapport a la Societe Intercantonale des Industries du Jura"). The failure to correctly use them in large machines must be due to the poor education and lack

of comprehension of their builders.

The most disappointing example of this problem is the too brief section on American interchangeable manufacture. Everyone cites rifle manufacture using go/no-go gauges, but no-one seriously examines the concepts of interchangeability and its underlying principles. Yet there can be little doubt that the mechanics must have had at least some intuitive idea of tolerances and their measurement, just as those at Waltham had a similar feel which led to totally different techniques for trying to create interchangeability. Rolt, like many other authors, talks so vaguely about the "American system" that it is not possible to understand its fundamental aspects and importance.

R2253 Romershausen, H

Das fachrechnen des uhrmachers

Leipzig: Diebener, 1950 (1925), 22 x 15 cm, two volumes 112 pp, 36 ill and 91 pp, 9 ill (two volumes 82 pp, 15 fld plates and 94 pp, 7 ill).

Technical (German).

Produced in several editions in various formats:

Volume 1: 1925 (82 pp, 15 ill) and 1927 (112 pp, 36 ill).

Volume 2: 1926 (94 pp, 7 ill), 1939 (90 pp, 9 ill), 1947 and 1950 (991 pp, 9 ill).

Specialist calculations for the horologist.

R2254 Ronan, C

Clocks and watches

New York: Nelson Doubleday, 1965 (1962), 8.25 x 5.5 inch, 64 pp, ill.

Prose (children), history (English).

A Science Services, Science Program book.

This book starts with man's earliest needs and traces the development of clocks and escapements, the chronometer, pocket watches, wristwatches, electric watches and clocks, and atomic clocks.

Described as suitable for youths and beginners.

R2255 Ronda

Ronda stock catalogue (balance staffs)

: Ronda, 1968 (1953), 21.0 x 15.0 cm, 175 pp, ill (152 pp, ill).

Repair (English).

In four sections: Alphabetical index of watch names; Alphabetical list of watch names, models and Ronda staff numbers; List of staffs in order of overall length, Ronda number, watch name and other dimensions; Numerical list of Ronda staff numbers, manufacturer and calibre. The book lists 3674 staffs.

[5th edition 1953, very good] Although originally used to order replacement staffs, this book contains a comprehensive listing of balance staff dimensions. Given a watch you can find the staff dimensions or given a staff determine what watch it came from; or you can order a Ronda staff from somewhere.

It is also useful for identifying watch trade names.

See also DCN "DCN stock catalogue (balance staffs)".

R2256 Rondeau, R

Hamilton wristwatches

a collectors guide

USA: Rene Rondeau, 1999, 11 x 8.5 inch, 181 pp, ill.

Description, history (English).

A guide to Hamilton wristwatches, 1922-1969:

A brief history of Hamilton wristwatches (15 pages); How to use this book (6 pages); Part 1 alphabetic listing of all Hamilton wristwatches (13 pages); Part 2 Hamilton wristwatches illustrated (105 pages); Notes (24 pages); Appendix 1 American-made Hamilton movements (8 pages); Appendix 2 "Sherwood" wood dial watches (8 pages); Appendix 3 "Hamiltonia" (3 pages).

[Review by Philip Priestley] Rene Rondeau is no newcomer to the subject of Hamilton wristwatches, being the author of "The Watch of the Future, the story of Hamilton wristwatches", first published in 1989 and now in its third edition. He has also contributed many articles about the Hamilton Watch Company to the NAWCC Bulletin

This new book, devoted solely to men's wristwatches, is dedicated to Dr. Robert Ravel, who made available many of the files and material which he acquired from the company when it was being liquidated in the early 1970s. The author, over the past 15 years, has also contacted many former employees who shared their experiences, and has spent countless hours in the library of the NAWCC in Columbia.

The book starts with a brief history of Hamilton, revealing that ladies pendant watches were introduced in 1908, but it took some time to overcome the market resistance to men's wristwatches, considered effeminate. Hamilton's first wristwatch, entitled "Strap Watch for Men," was introduced on November 11, 1922. After a slow start, sales took off and by the 1930s Hamilton wristwatch sales were far outstripping their traditional pocket watches. Some of the greatest classic watches were produced during the 1930s, e.g., Otis, Bentley, Donovan, Pierre, Brooke, Ardmore and Seckron are among the most beautiful watches ever created.

World War II brought an end to the growth period when the factory converted to making military watches, chronometers, fuses and other war materials, but Hamilton kept up its advertising and maintained their name and reputation. They made a slow restart based on pre-war styles, but by the 1950s the styling

had fallen into a rut and it took the introduction of the world's first electric watch on January 3, 1957 to revitalize interest in Hamilton products.

Hamilton's sales declined in the 1960s while the company became increasingly focused on non-watch related businesses. At the start of 1969 Hamilton transferred watch production from Lancaster, PA, to Switzerland and finally split up in 1972. The brand name changed hands a couple of times and today is a division of The Swatch Group, which owns Tissot, Rado, Omega and others, and who market quartz replica watches based on original Hamilton classics.

*The book is truly a collector's guide but does not provide prices. It pictures every Hamilton men's wristwatch offered for commercial sale in the U.S. from 1922 until the end of 1969. It does not include ladies' watches and military Hamilton watches, the latter being partially covered in Marvin Whitney's book *Military Timepieces*.*

The new work is divided into three parts. Part one is an alphabetical listing of every Hamilton wristwatch by name.

Part two consists of original catalog pictures of nearly 1000 men's wristwatches. Precious metal cases are shown separately from goldfilled.

Part three contains notes providing further information on some 110 wristwatches.

The book finishes with several appendices. The first covers the entire variety of wristwatch movements, including the information that most late 1960s watches contained Swiss movements, as was the case with all self-winding movements which were never built in the U.S.A. It is also mentioned that Hamilton bought out the Buren watch factory in Switzerland and made it a subsidiary (Buren was initially started by H. Williamson of England, and later supplied movements for the first Rolex pocket watches in the 1920s.) Ultimately, the Swiss had the last laugh by buying the entire Hamilton company in 1972.

Appendix two covers the "Sherwood" watches with dials crafted entirely of wood, while Appendix three figures three sheets of music entitled "Hamiltonia" written in 1940 by Robert Gunder, Hamilton's advertising director.

The reviewer has no hesitation in recommending this new book as a definitive work on Hamilton wristwatches for men.

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R2257 Rondot, Natalie

L'art et les artistes a Lyon

du XIV au XVIII siècle

Lyon: Bernoux, Cummin & Masson, 1903, 11 x 7 inch, 352 pp.

Makers (French).

"Études posthumes de M. Natalie Rondot correspondant de l'Institut. Publiées par Alfred Cartier et Léon Galle". Published posthumously.

This reference work covers Lyonnaise artists from the 14th through the 18th centuries. It includes painters, sculptors, engravers, decorative artists such as clockmakers, playing card makers, etc.

There is a 40 page alphabetical name index of artists mentioned in the text.

R2258 Rooney, David

Ruth Belville, the Greenwich time lady

Greenwich: National Maritime Museum, 2008, 20 x 14 cm, 192 pp, few b/w ill.

History (English).

[1st edition, review by Fortunat Mueller-Maerki] Most horological enthusiasts know that the Greenwich Royal Observatory provided exact time for navigational purposes, long before time in everyday life was standardized, and in 1833 - with its time ball - installed the first 'time signalling device' distributing accurate GMT or Greenwich mean time to ships captains laying at anchor on the Thames below. But how did the chronometer makers in the city of London, who were out of eyesight of Greenwich, get accurate time which they needed to regulate the many chronometers they built?

This charming little book recounts the seldom told story of Maria Belville, the widow of an observatory employee, who in 1856, before telegraphic time signals were feasible, established a small, semi-official business 'carrying' every week the exact GMT (in the form of a superb pocket chronometer by John Arnold set to exact GMT time by the observatory) to a list of clients throughout greater London. The truly amazing part is that this little business, carried on by Maria's daughter Ruth Belville from 1892 onward, survived for 84 years, until 1940, in spite of mounting competition from telegraphic, telephonic and radio time signals.

In the course of the narrative the author also tells the story of the standardization of time in the United Kingdom, and, using this horological example, an instructive tale how a traditional product or service can sometimes survive against all odds as the optimal product for its niche market even if it seems completely outside the mainstream of technological progress and innovation.

The book is more an amalgam of vignettes illustrating the role of time, time distribution and time standards in British society from 1850 to 1950, than it is a book on horology in the narrow sense of the word. Nevertheless most readers with a general interest in the history of timekeeping will find it to be an entertaining and enlightening human interest story with a strong horological undercurrent.

R2259 Roret**Librairie encyclopédique de Roret**

Paris: Laget, 1977 (1830).

Repair (French).

Roret produced a number of volumes by different authors over many years. Some confusion about them exists in catalogues and the most comprehensive listing is in Leroy "Collection Léon Leroy".

I have listed the relevant ones separately by author and under Roret in the author index. They are:

Berthoud & Janvier, Fontenelle & Malepeyre, Garnier, Le Normand et al, Maigne & Mathey, and Persegol.

R2260 Rosenberg, C**American pocket watches**

their source and identity

USA: Traders Publishing Co, 1965, 21.5 x 14.0 cm, 62 pp, b/w ill.

Collecting, history, collection (English).

"A ready reference for establishing the age and identity of early American pocket watches".

It contains: Introduction (3 pages, the text of a talk on collecting); Early American watchmakers (35 pages, an alphabetical list of American watchmakers); 18 pages of b/w photographs; Fakes (1 page); and Serial numbers and dates of manufacture of Waltham watches (1 page).

The illustrations are from the Hauptman and Kalish collections (the Kalish collection was sold by Sotheby in 1994).

[1st edition, mediocre] Written for beginners, this book tries to give some basic information about how and what to collect.

The introduction is a bland, not particularly helpful explanation of what can be collected. The company summaries (including some people and watch model names) provide some basic information and many end with a note on collectability (but without explanation). The large number of black and white photographs of dials and movements are generally poor and they are not related in any way to the text. Finally, the note on fakes is of no use, and the Waltham serial numbers unnecessary.

This is an uninspiring book that might have had a little value when it was first published, but now it has been superseded by far better works.

R2261 Roskopf, L**Une histoire de famille**

Genève: Editions Metropolis, 2002, 21 x 13 cm, 315 pp, no ill.

History (French).

A small part is quoted in Schaefer "The proletarian watch".

R2262 Ross, MC**The art of Karl Faberge and his contemporaries**

USA: University of Oklahoma, 1965, 9.5 x 6.5 inch, 238 pp, ill, 75 plates.

Description, illustration (English).

"Russian imperial portraits and mementos; imperial decorations and watches". The collections of Marjorie Merriweather Post.

Described as a "small but fierce book", whatever that means.

R2263 Rossler, M**Zenith, Swiss watch manufacturer since 1865****Zenith, prazisionuhren seit 1865**

Germany: Ebner Verlag, 2008, 29.5 x 21.5 cm, 328 pp, ill.

History (English, German).

A history of the firm and a well illustrated survey of the pocket watches, deck watches, chronometers and wristwatches produced. The company also made a small number of clocks and precision pendulum regulators which are documented.

"This volume retraces the history of the famous Swiss watch house Zenith, documenting events and production over the course of the past 140 years. Setting out from the first pocket watches, which after the 30s gradually gave way to more modern wrist watches - accessories initially seen in a very negative light - the book documents the invention of both the revolutionary 17 ligne movement and one of the sector's best-known calibers, the legendary El Primero. With more than 700 illustrations with detailed captions, the book includes the increasingly specialized models of later years, including waterproof casings, chronometers, chronographs with special dials and timepieces for the military, sport and medical sectors. Not to mention anecdotes, memorabilia and rare period advertisements."

R2264 Roth, D**Masterpieces in the art of watchmaking since 1989**

England: Rotherham Municipal Libraries, 1994.

Description (English).

Large size color photos of about thirty watches made by Roth, with minimal text.

R2265 Rothmann**Die werkstattarbeit des uhrmachers**

erfahrung und beobachtungen aus der praxis

Halle: , 1936, 21 x 15 cm, 80 pp.

Repair (German).

Workshop methods for horologists.

R2266 Rotzek, R**Der armbanduhrenmarkt in Deutschland**

Germany: Verlag Dr. Müller, 2009, 22 x 15 cm, 208 pp, ill.

History, investment (German).

The wrist watch market in Germany.

The market for wrist-watches has - in particular in Germany - has changed in the past years, changes distinguished by consumer behaviour; new products, intensification of competition and substantial is diversification. A detailed analysis of marketing follows an historical and technical introduction.

R2267 Rouillé, P**Le grand livre des montres**

: Editions Solar, 1997 (1991), 31 x 24 cm, 144 pp, ill.

Bibliography, history (French).

History and technique of pocket and wrist watches to today.

One source says that, in addition to watches and jewellery made from watch parts, there are details of escapements and tools. This sounds peculiar.

R2268 Rowell, H**Manual of instruction in hard soldering**

with an appendix on the repair of bicycle frames

England: Holyoake Press (London: Spon & Chamberlain), 2008 (1891), 8vo, 66 pp, 14 ill, (56 pp).

Repair (English).

Also printed in 1905 and 1910.

The Franklin, NAWCC and Torrens libraries had copies, perhaps recycled from one to the other, so maybe something is interesting. But, on the basis of some of the other books in horological collections, it is quite likely to be totally irrelevant.

R2269 Rub, G; Chapuis, A**L'horlogerie au Val de Travers****Le Val-de-Travers industriel**

de ses origines a nos jours

Fleurier: Montandon, 1937, 8vo, 101 pp, 16 ill (2 volumes 61 pp and 37 pp, ill).

Makers (French).

Volumes 5 and 6 of "Le Val-de-Travers industriel" published between 1935 and 1937. The complete set (of 282 pp, ill) contains:

- 1: La fabrication des machines à tricoter à Couvet, de ses origines à nos jours.
- 2: L'industrie de la confection à Fleurier - Les vins mousseux du Prieuré St-Pierre, à Môtiers.
- 3: Les mines d'asphaltes du Val-de-Travers, de leurs origines à nos jours.
- 4: L'industrie du ciment Portland à Saint-Sulpice, de ses origines à nos jours.
- 5 and 6: L'horlogerie au Val-de-Travers (by Gaston Rub and Alfred Chapuis).

Horology of the Val de Travers from its origins to today.

The pagination is continuous. Gardner "Catalogue of the Torrens collections" lists a 2 volume book by Rub and a single "volume 2" by Chapuis of 101 pages, but it is only 37 pages. Tardy lists a 101 page volume by Rub and Chapuis which may be both volumes, but it may be only volume 6.

R2270 Rudoe, J**Cartier 1900-1939**

London: British Museum Press, New York: H. N. Abrams, 1997, 11 x 9.25 inch, 344 pp, 450 ill.

Catalogue, history (English).

Catalogue of an exhibition at the Metropolitan Museum of Art and the British Museum.

Traces the history of individual jewels, identifying the clients who commissioned or purchased them and the process from initial designs to finished pieces. Includes sketches and archival photographs.

R2271 [Russia]**Antique timepieces of the 16th to the 19th century**

Russia:, 1991, 21.5 x 16.0 cm, 17 pp, 26 ill.

Description (English, Russian).

Parallel English and Russian text.

A selection of watches from the Kremlin museums in Moscow, mainly illustrated by their cases, with a very short history.

[1st edition, mediocre] Some interesting pieces illustrated by just adequate photographs of cases and dials. Other than ascribing the accuracy of watches to the pendulum, the text provides a brief history of watch cases. And apparently an Englishman called Prestu invented "heads" for setting the mechanism, and someone called Philipps improved it.

Inconsequential and not worth reading.

R2272 Sabel, CF; Zeitlin, J**World of possibilities**

flexibility and mass production in western industrialization

England: Cambridge University Press, 1997, 23.5 x 16.0 cm, 510 pp, no ill.

History (English).

A 33 page introduction by Sabel & Zeitlin followed by 11 articles in three parts:

Part 1, The modernity of tradition: Fashion and flexible production: the strategies of the Lyons silk

merchants in the eighteenth century (Carlo Ponti, 38 pages); The fate of collective manufactures in the industrial world: the silk industries of Lyons and London, 1800-1850 (Alan Cottureau, 78 pages); The rise and decline of flexible production: the cutlery industry of Solingen since the eighteenth century (Rudolf Boch, 35 pages); Manufacturing flexibility in nineteenth-century Switzerland, social and institutional foundations of decline and revival in calico-printing and watchmaking (Beatrice Veyrassat, 49 pages).

Part 2, The battle of the systems: Between flexibility and mass production: strategic ambiguity and selective adaptation in the British engineering industry, 1830-1914 (Jonathan Zeitlin, 32 pages); The lost paradigm: an Italian metalworking empire between competing models of production, 1900-1920 (Alain Dewerpe, 37 pages); "Have a heart for the manufacturers!": production, distribution and the decline of American textile manufacturing (Philip Scranton, 34 pages); The small-holder economy in Denmark: the exception as variation (Reer Hull Kristensen & Charles Sabel, 34 pages).

Part 3, The resurgence of flexible production: In search of flexibility: the Bologna metalworking industry (Vittorio Capecchi, 38 pages); Local industry and actors' strategies: from combs to plastics in Oyonnax (Jean Saglio, 42 pages); Producing producers: shippers, shipyards and the cooperative infrastructure of the Norwegian maritime complex since 1850 (Hakon With Andersen, 40 pages).

There is a 10 page index.

[Introduction: mass production versus flexibly-specialized industry, fair] Before reading Veyrassat's contribution I decided it would be necessary to put it in context by reading the 33 page introduction to the book, titled "Stories, strategies, structures: rethinking historical alternatives to mass production". Unfortunately, like some other books written by historians, it is very difficult to determine just what is its purpose. For example, Sabel and Zeitlin write: "To avoid confusion among those readers who, like ourselves, are not fully habituated to the postmodern notion that all texts, being commentaries on preceding ones, are in the end produced by them, and that given such inter-textuality the distinctions between reading and writing or commentating and composing, or even different texts, becomes negligible, we need to clarify at the outset who we are." However, we do not learn who they are and, although giving the impression of content, such gross generalisations are vague (and pompous?) utterances of philosophy which are of little or no practical use.

Most importantly, they lead to intellectual inaccuracy. So the editors can write "every epoch rewrites history according to its own preoccupations", with, apparently, not the slightest concern that such a view is ridiculous. History cannot be "rewritten", being the immutable result of past events. Of course, it can be re-interpreted, especially when new evidence becomes available or different aspects are examined, which is presumably the aim of the book. Also the editors state that "most firms in nineteenth- and early twentieth-century Europe and the United States, neither mired in tradition nor blinded by the prospect of a radiant future, carefully weighed the choices between mass production and ... flexible specialization. Where possible, they developed sophisticated hedges for reducing their risks ...". It is very hard to relate such a view to Swiss watchmaking of that period, where the main influences are clearly the historical and cultural environment, and the concept of hedging almost certainly did not exist. And, of course, it is utterly irrelevant to American watchmaking which clearly falls outside the domain of this book.

I have heard that many women, when they discover that some cosmetic aid (such as wrinkle removing cream) does not work, blame themselves and consider they are inadequate in some way, instead of recognising that the product simply does not work. So I cannot avoid the impression that some historians try to re-interpret history simply in order to get published and, as a result, do so in ways that are obscure and unhelpful. But the reader, struggling to understand opaque and convoluted writing, assumes he is at fault and the authors must be vastly superior intellects. Unfortunately it usually the authors who have failed.

Two fragments from the introduction deserve repeating.

First: "As every observer of financial markets knows, on any given day there are in circulation sophisticated prognoses of everything and the opposite of everything. Consequently, the next day regardless of what happens, there is always a sophisticated prescient account of why that and only that occurrence could happen; and it is easy but clearly incorrect to assume that the account was prescient because sophisticated". This is the most succinct condemnation of economic theory that I have read! It can also be reworded: As every reader of economic histories knows, on any given day there are in circulation sophisticated texts on everything and the opposite of everything. And the next day, regardless of what is read, there will always be another, different account of everything.

Second: "Given that the studies here are narratives, it should not be surprising that they use narrative techniques more common in works of fiction than in historical monographs. Flashbacks, for example, are used in Boch's account of Solingen cutlery ..." This also succinctly explains my concerns with other historical accounts that I have read. It is not the narrative style that I object to. I am in favour of writers using whatever techniques best suit their purpose and which, as a consequence, best enable the reader to understand the "story" being told. But narrative is only one of a triumvirate of requirements. Much more important than style is the need for the author to tell the whole truth; that is, to present the evidence for past events as completely as possible, including that which does not agree with the writer's aims. And equally important is for the historian to use his or her education, experience and skills to interpret the evidence. Without an accessible (enjoyable) narrative, the work will be unpleasant and difficult. But no matter how skilful a wordsmith, if considered and satisfying interpretations are missing the work will be largely pointless. Thus I find the focus on story-telling unsettles me as it is often the prelude to historical inadequacy.

Despite these reservations, the introduction seemed to be interesting and thought provoking. But I had difficulty teasing out even a vague understanding of the aims of the study from beneath the excessively complex language. Much of the problem is that the purpose is couched in vague generalities, and although such hypotheses may indicate trends, they often have little relevance to specific cases.

Although largely hidden from the reader, Sabel and Zeitlin are concerned with the economic success of flexible firms using multi-purpose machines and skilled labor to make specialized products for niche markets; that is, flexibly-specialized industries in contrast to mass production. Veyrassat, unable to avoid verbosity, defines flexible specialisation as “a production system able to respond to changing markets by an innovative diversification of products, thanks to the extension of flexible and multivalent technologies that put a high priority on professional qualifications and autonomy of labour”!

[Cutlery manufacture, British engineering and Danish milk] *I was prompted to read Boch’s article on cutlery manufacture by the remark in the introduction that he used “flashbacks” in his narrative style. I discovered that Sabel and Zeitlin’s remark is a meaningless and obfuscating attempt to categorise narratives, which in no way enhances understanding. Yes, Boch uses one “flashback”, but he is simply presenting information in an order which suits his argument and he is not deliberately using a literary device as such. Much more importantly, compared with the stultifying opacity of the introduction, Boch’s writing is simple, direct and incisive; whereas it took me several days to read the former, it only took an hour or so to digest the latter.*

Not only is the article a pleasure to read, it has some relevance to watchmaking, in that manufacture was based on skilled artisans, trained in the master-apprentice system, who worked independently. And so the structure is similar to etablissage. However there were basically only three trades: forgers, who were unskilled, and grinders and hafters (and jointers?), who were skilled artisans. This is a much simpler manufacture. However, despite simplicity, mechanisation did not occur until about 1915, because of a complete and deliberate lack of product standardisation, and because of difficulties met in trying to design and build successful machines. When mechanisation came, standardisation came with it: “where mechanical devices cannot be adjusted to the production of the traditional product, the product must be modified to the demands of the machine”. And such mechanisation was only economic with very large series production. Boch argues that the switch to mass production was forced on the industry because the master-apprentice system collapsed and there simply were not enough artisans to continue the old production methods; this did not occur in watchmaking.

Continuing my quest to understand the purpose of the book, I read Zeitlin’s contribution on British engineering. Although good, the article fails because Zeitlin does not categorize activity by the type of product. For example, textile machines use large numbers of interchangeable components suitable for mass production, whereas ships and locomotives are manufactured in much smaller numbers and have relatively few interchangeable parts; and so these are more suited to the artisanal worker. It is actually necessary to subdivide and focus upon individual components, because hulls, which are not suitable for mass production, need to be distinguished from engines and other components which potentially are. But Zeitlin blurs the boundaries and leaves us feeling interested but dissatisfied.

The failure to categorize is taken to the extreme in “The small-holder economy in Denmark: the exception as variation” by Kristensen & Sabel. This article is strange and obscure, to say the least. What has primary production got to do with subject of the book? There is little or no skill, no artisans, and the system has nothing to do with flexibly-specialized manufacture. There is a passing reference to technology, but only one machine, a milk centrifuge, is mentioned; it is clearly a specialized machine and not general purpose. Of course some type of mass production presumably developed in areas like packaging, but the authors resolutely avoid considering them and leave us in the dark. And we are again subjected to the obscure, as in: “The resulting property regime then became the matrix for a series of bold institutional experiments, partly inspired by foreign examples and constantly informed by indigenous religious beliefs, through which the Danish peasantry placed its legal prerogatives on a competitive economic foundation”. Clearly the article is not to be read by ordinary people!

I have no objection to Sabel and Zeitlin proposing an alternative view to mass production. Mass production (which is nowhere defined and remains a vague shadowy “thing”) cannot account for all manufacturing and flexible specialisation is a sensible description for some activities. But even both of these views cannot encompass all endeavours unless, as with Danish milk, we artificially force an industry into a mold which it does not and cannot fit. And for me, the most serious problem with this book is that the articles make such attempts.

[Watchmaking] *And so to watchmaking. Veyrassat’s article has been described as “exceptionally interesting”, but this is probably because the reviewer knew nothing about the subject. In contrast I found it strange, vague and, in part, unconvincing.*

The first and obvious problem is the attempt to compare calico printing with watchmaking, and so to compare a system that turned to mass production with a system that remained staunchly in a craft-based flexibly-specialized industry. Unfortunately this fails for the simple reason that the two manufactures are so utterly different that comparison is meaningless. Calico printing involves a single trade and mechanization is correspondingly simple; other than overcoming problems with printing multiple colours, and the need for a market large enough to absorb the output, there are no obstacles to mass production and obvious cost savings.

In contrast, watchmaking involves a large number of trades and, most importantly, some have never been mechanized; even today, mechanical watch assembly and finishing is carried out by hand, and the tasks

involved require highly skilled, expensive artisans. Thus in this aspect at least, flexible specialization is inevitable. The comparison is as sensible as that between a mobile phone message and a 400-page novel. In addition, Veyrassat is selective with her information. Although much watchmaking remained craft-based in the 19th century, she has ignored the development of what is generally termed mass-production. For example, Japy and the Fontainemelon ebauche factory are glossed over, and Longines is not even mentioned, despite the latter developing mass-production techniques. Ignoring Ebauches SA is to be expected, the article being limited to pre World War I, but by doing so Veyrassat has ignored the fact that nineteenth century developments were the precursor to a massive extension of mass production in the industry. So when she writes "I propose to seek the elements of an explanation for the successful reproduction of a manufacturing system that manages .. to safeguard the characteristics of flexible specialisation" she is attempting the pointless; because mass production was used where it was applicable, and skilled, artisanal handwork where it was not. The system used was dictated by the product being manufactured.

In addition, Veyrassat does not mention tools and machinery; indeed, she writes that in the nineteenth century watchmaking was a "labour intensive non-mechanized" industry. But anyone who looks at the plates in books by Thiout (1741) and Berthoud (1763) is made aware of the wide variety of general purpose and special purpose machines used in watchmaking. So she is wrong to write of "innovation in the manufacturing process (mechanization of movements)" because watchmaking has always been mechanised. What is most important, and almost completely ignored throughout the book, is the qualitative change in machines which occurred and which was an essential precursor to moving to mass production. And there is no consideration of the pivotal role finishing; the one mass produced ebauche might be used in a watch selling for \$400 and in another selling for \$40,000.

A few minor points can be noted. First, "it should be noted that ... the degree of unionization in watchmaking remained small". This is an inevitable consequence of there being few workers as such. The vast majority of labour consisted of skilled, independent journeymen. The later development of unions reflects the move away from flexible specialisation towards mass production. Second, "specialization ... did not prevent ... hasty and cheap production of junk watches ... (which) were the very embodiment of mass production". However, the manufacturing processes for junk watches are the same as for de luxe watches. Both involve the same steps and merely differ in the time and care put into them, especially during finishing. So if one embodies mass production so does the other. And third, the remarks on government involvement and schools are misleading. The former was limited to control of precious metals and work conditions, and the latter was not very significant at the time because enrolments were low, and so most training still took place within the master/apprentice system. (Likewise, the Neuchatel observatory is included, even though it had no impact on the vast majority of watches and watchmaking; its function was oriented towards chronometers.)

These points are symptomatic of a lack of knowledge; that is, I suspect Veyrassat knows nothing about watchmaking. But can we look at "how" and "why" watchmaking developed if we do not understand the process and the technology, and how they developed over time? I believe it is ridiculous for someone to write on a topic without knowing a lot about it, simply because it is then impossible to comprehend the factors which might influence that development. The obvious example is that watchmaking was a highly skilled occupation which required a long and arduous apprenticeship. And even when fragmented into many trades, each trade required considerable skill and experience, culminating, as I have noted, in the finisher. Consequently, watchmakers worked within a culture (in Switzerland, England or elsewhere) in which there was a simple premise: watches can only be made by skilled artisans. And this was not just a belief, but a matter of fact.

[Remark] The editor and/or the writers apparently favour minimalist punctuation, turning the comma into an endangered species, and causing the reader endless frustration, as he struggles with the resulting ambiguities.

R2273 Sabliere, J

Courir après l'ombre

petite histoire anecdotique et pittoresque de la mesure du temps

Seine et Marne: Alembert, 1965, 4to, 278 pp, 136 ill.

Miscellany (French).

Limited edition of 400 copies.

Running after the shadow, a small anecdotal and pictorial history of the measurement of time.

R2274 Sabrier, JC

Frederic Houriet

the father of Swiss chronometry

Switzerland: Editions de la Chatiere, Editions Simonin, 2006, 30.5 x 24.5 cm, 228 pp, ill.

History, biography (English, French).

Separate French and English editions, both of 1000 copies.

There are 8 chapters: Frederic Houriet (18 pages), Production (14 pages), Calibres (26 pages), Chronometric work (24 pages), Experimental work (24 pages), Thermometers (12 pages), Clocks, regulators and instruments (38 pages), and Students (14 pages).

With an appendix (42 pages containing complete transcripts of manuscripts and correspondence in French), and index. The transcripts are Mémoire sur l'isochronisme du ressort spiral (balancier d'expérience, servant a trouver l'isochronisme des ressorts spiraux); Essai sur la mesure du temps

pour les horloges; Essais sur l'isochronisme des ressorts spiraux, d'un chronomètre sans acier et notes diverses; Rapport sur l'horlogerie du Comte de Neuchâtel en Suisse; Correspondances (letters to A.L. Breguet, Urban Jurgensen and a letter from Monsieur Nicolet, Mayor of Locle).

[1st edition, fair?] Chapter 1 provides a useful biography of Houriet, emphasising his interactions with and work for other famous horologists, including Breguet and Urban Jurgensen.

Chapter 2, *Production*, begins by mentioning that Houriet's note book contains the description of a repeater; but there is no further reference to this and I don't know why it appears. The rest of the chapter, except for a few general remarks, is about Houriet's simplified watch, which Sabrier argues is the origin of Breguet's souscription watches. This consists of a detailed description and illustrations of the watch quoted from Houriet's notes. The watch is very interesting. It uses a cylinder escapement where all the lift is on the cylinder and the escape-wheel has pins (the reverse of the common cylinder escapement). And it has motion-work for the single hand mounted on the barrel; this is poorly explained, but it is presumably the same, in principle, as that used by Roskopf. However, Sabrier simply presents us with Houriet's explanation and he makes no comments on it. The title of the chapter is a mystery to me.

Chapter 3, *Calibres*, is a list of the 78 calibres made by Houriet with photographs of 31 extant ones. These calibres are master plates (and sometimes additional templates). Houriet made a list of these calibres and the text of the chapter is just his information, again presented without comment. In many instances there are only a couple of lines of general information noting the escapement and size of the movement, others additionally provide wheel and pinion counts for the trains. In a few instances Houriet provides additional details. I am not sure what is the purpose of this chapter. The calibres appear to be photographed normal size and so are too small to be studied without a magnifying glass. In addition there is often inadequate information; for example, calibres for repeaters make no mention of the type of repeater mechanism. So, although they may be of interest to professional watchmakers, most readers will simply skim over the chapter and move on because Sabrier adds no discussion at all, simply reproducing Houriet's words.

Chapter 4, *Chronometric work*, begins with the heading "Explanation of the FH30 calibre's characteristics". But there is no explanation! Sabrier makes a couple of general comments and then provides descriptions of work up to 1818. This consists of repeating, word-for-word the descriptions of 7 calibres from the previous chapter, again without any additional remarks. In one instance there are 3 pages of additional text which is a translation of part of Houriet's 1816 manuscript "Essai sur la mesure du temps par les horloges" (which is included in French in the appendixes). This is a general description of features of the watch, a spring-detent chronometer. Following this there is a section on post 1818 work. This consists of a list of known watches with brief remarks and some photographs. There is no text other than a few quotes from Houriet's notes, including an interesting comment on magnetism.

Chapter 5, *Experimental work*, is potentially the most interesting in that it looks at Houriet's study of isochronism and his decision to use spherical balance springs. But again Sabrier presents Houriet's notes without comment. The chapter begins with 3 plates of his "experimental balance" and then Sabrier states "After a long discussion of the use of this instrument ...". Unfortunately this discussion is not included and the tool remains a mystery to the reader. Next are illustrations and details of a balance-spring drawing tool which enables springs to be made in which the thickness varies, Houriet believing that a tapered spring is preferable to achieve isochronism. This is followed by an explanation of his "elastic lever" tool. This is used to measure the force of a balance-spring at different degrees of winding; similar in principle to a fusee adjusting rod but, of course, far more delicate. Houriet apparently assumed that an isochronous spring must produce a regular, increasing force. This may well be true, but Sabrier makes no attempt to discuss this point. Houriet also gives an example of how to choose a new balance-spring to alter the rate of a watch by 2 hours. But it is a statement of fact without providing any understanding. Anyway, problems of isochronism are measured in seconds and not hours, and so I am not sure of the relevance. Next is his pyrometer for compensation balances, which is not a pyrometer. This is simply a complex and accurate tool to check that the balance remains true in the round during temperature changes (basically sophisticated truing calipers). Most of the descriptions of these tools are just names for the individual parts. Although necessary, to explain the illustrations, this approach makes it very hard to understand the purpose and use of the tools. The book would have been enhanced if general explanations appeared first, but it seems that writing is not one of Sabrier's strong points and we are left to struggle with Houriet's words. Then 22 experiments on differently shaped balance-springs are summarised (the details in the appendix are not translated), followed by a discussion on non-isochronous balance-springs, the rate of his watch with a spherical balance-spring, and details of his tool to make spherical springs. The chapter finishes with a table of coefficients of expansion and some general notes on brass, jewellery, elasticity of springs, gold alloy springs, more coefficients of expansion, and bimetallic blades for thermometers.

Chapters 6, *Thermometers*, and 7, *Clocks, regulators and instruments*, contain nothing relevant to watches, so I will only note that they take the same form as the preceding chapters, extensive quotations from Houriet's notes with a few connective sentences by Sabrier.

The final chapter, *Students*, has short biographies of Urban Jurgensen, F.L. Favre-Bulle, Sylvain Mairat and Louis Richard.

For me, this book has the same style and faults as Sabrier's "Longitude at sea in the time of Louis Berthoud and Henri Motel". That is, with the exception of the biographies (which I presume he wrote) Sabrier provides us with raw information without any attempt to explain or analyse. Indeed, he has not

written a book; he has merely edited Houriet's notes. So it is not "an in depth analysis" and Sabrier is not "a methodical and meticulous researcher" as another reviewer wrote. Research involves far, far more than merely quoting source documents and central to it is the critical analysis of source material. Sabrier has not done the hard work which is needed, and it would have been better if the book simply provided a complete and unedited transcript (and translation) of all of Houriet's writings.

Despite these criticisms, the book is a useful contribution to the history of horology. But it could have been much better.

R2275 Sabrier, JC**Le guidargus de l'horlogerie de collection**

Paris: JC Sabrier, 1982, 4to, 445 pp, about 1000 ill.

Price guide (French).

A horological price guide giving auction prices of sales from November 1980 to June 1982.

"The book describes a fantastic collection on display 1980-1982 with sections on 17th and 18th century watches, sonnerie, chronograph, astronomical pocket watches, Japanese, novel watches and regulators."

R2276 Sabrier, JC**Longitude at sea in the time of Louis Berthoud and Henri Motel****La Longitude en mer a l'heure de Louis Berthoud et Henri Motel**

Geneve: Editions Antiquorum, 1993, 31.5 x 25.5 cm, 720 pp, 174 ill, slip case.

History (English, French).

Parallel English and French text.

A detailed study of the life and work of Pierre-Louis Berthoud (1754-1813) and Jean-François Henri Motel (1786-1859), French chronometer makers, based on order books, workshop journals and French naval records. Facsimiles of some documents are included. Substantial parts are given with parallel English and French text, but about half the book is in French only.

[1st edition, fair] This is the largest horology book I have seen and it contains an enormous amount of detailed information. Consequently, summarising and reviewing it is very difficult. The task is made more difficult by the fact that about half the text is not translated. Also the translation, although very good, contains many minor errors, the result of poor editing. But there are a few important errors which have made me worry about the correctness of the rest of it. For example, on page 116 "J'avais un ressort a cette montre" is translated as "I had a chain for this watch", which is a fairly obvious error as the English makes little sense. And on page 271 "a fleur de circle" is not translated at all; it is "flush with the rim". But on page 282 "spiral a rateau" is translated as "ratchet balance spring" instead of "spring with a rack" (?), and "rouleau a ressort" as "sprung wheel" instead of "roller with spring". These errors are very important because Berthoud is trying to describe the design of a balance spring stud, which it seems he did not use, and there are no diagrams or photographs of it. Perhaps the stud is meant to have a small rack to adjust the stud's position, but I do not know. However, I do know that the reader must be very careful.

The book can be roughly divided into five parts.

The first part, pages 20-330 with parallel English / French text, examines the work of Louis Berthoud. It has 15 sections including objectives, details and illustrations of timepieces, experimental technique, motive force, escapements, temperature compensation, isochronism, friction and lubrication, pupils, and contemporary opinions.

Part two, pages 331-592, is in French with no English translation and most of it is on a different colour paper. This contains the complete text of Berthoud's "Entretiens" followed by lists of his clocks, watches, marine chronometers and deck watches in serial number order; the decimal calendar and decimal time, money, weights and measures, and a bibliography. The lists include extensive extracts from Berthoud's workbooks relating to each timepiece. Not translating Berthoud's "Entretiens" is a disappointing oversight, although there are many quotes from it in the first part.

Both of these parts take Berthoud's notes and other documents and rearrange them, in the first part in order of mechanisms and in the second part in order of timepiece. With a couple of exceptions, Sabrier's text consists of short, connecting paragraphs to assist the continuity. Further, it is not clear how much, if any, of the original documents have been omitted.

This approach is good in that we can study Berthoud's work and methods (if we can read French) without any accidental or deliberate bias imposed by the author. But it is very disappointing because all the book does is give us access to documents, and all the effort of researching them rests in our hands. In the preface, David Landes writes Sabrier "is not a professional historian". I presume he means that Sabrier does not have the skills to examine, analyse and explain, which skills Landes has in abundance and Morpurgo insists are essential. Perhaps this is true, but it is irrelevant because no-where in the book does Sabrier discuss, let alone analyse, anything; we are presented with facts and that is all.

An analysis of Berthoud's work would require a very good horological historian. Berthoud's research is often obscure and is focused on the complex problems of isochronism and compensation, requiring the reader to have an excellent understanding of the theoretical and practical problems these areas involve. But many readers would not have such skills. In which case, what is the point of the book? Without an analysis of Berthoud's methods, ideas and his place in the history of chronometry, the book becomes just a catalogue of, admittedly fascinating, timepieces.

In the preface, Landes also writes that Sabrier "does the job convincingly, not by making invidious comparisons, but by looking closely, at Louis Berthoud's work ...". Which begs the question: what job? And

surely comparisons, invidious or otherwise, are central to understanding this undefined job? One example is the design of balance springs. I gradually became aware of an important point which Sabrier ignores, probably because Berthoud doesn't mention it: Berthoud never used terminal curves, never! Why doesn't Sabrier comment on this? More importantly, why doesn't Berthoud even mention it? After 1794, when Berthoud moved to Argenteuil, we might suppose he was both physically and intellectually isolated from horological developments, but this is 12 years after Arnold had taken out a patent on terminal curves and they had been used quite extensively.

Whether the French were ignorant of, or simply ignored developments in England is not discussed in Sabrier's book, but this problem appears in other places. On pages 321-322 Berthoud's desire to make pocket chronometers is lauded, but neither Berthoud nor a report of 1792 make any mention of Earnshaw who had been successfully producing pocket chronometers for 12 years. Were Borda, Le Roy, Berthoud and the rest of the French establishment utterly ignorant of English developments?

In one of Sabrier's few remarks he writes "English technology allowed the production in series of robust and reliable chronometers, but of which the performance, even for the latest ones was hardly better than that of Henri Motel's products or even those of Louis Berthoud". What does "hardly better" mean? I presume it means "as good as or a bit better than". In which case, English chronometers were markedly superior because of their ease of manufacture, robustness and reliability, even if they were not more accurate. Indeed, this view is supported a few pages earlier where Sabrier mentions the work of Onesime Dumas, who used Berthoud's design until 1845 and then switched to a design "derived from that of English chronometer makers" which was "less elegant but robust and reliable ... easier to make ... cost considerably less ... used a spring detent escapement derived from that of Thomas Earnshaw".

Actually, chronometer accuracy appears to be a myth. Most books extol the virtues of auxiliary compensation for middle temperature error, but chronometers with such balances are very rare. In contrast, chronometers using simple bi-metallic balances and stock-standard layouts with Earnshaw style escapements are readily available. In reality an ordinary chronometer was perfectly adequate for most purposes and I assume the few special machines were made for competitions and exhibitions rather than to be used at sea. Which is why nearly every chronometer I have seen is fundamentally identical to every other, whether made in England in the early 1800's or made in Russia in the late 1900's. And it is why makers such as Mudge failed; their work was not simple, robust, reliable and cheap.

It seems Berthoud may have eventually realised this point. His work books are full of his frustration with the problem of adjusting pocket watches that had to be accurate in different positions as well as different temperatures, and the practical solution was to put the watches in gimbals. But Earnshaw's design and gimbals evade the intellectually stimulating problems and the fascination of making elegant and sophisticated solutions. Breguet's tourbillon is a masterpiece which overcomes a problem that does not exist! And Berthoud's research shows him to be a competent, thoughtful horologist searching for a solution to the wrong problem.

But nowhere does Sabrier mention let alone examine such points, and nowhere is the chronology of developments laid out so that Berthoud's place in history can be located.

I am not suggesting that Berthoud was not a great horologist, nor that his work is unimportant. But I am suggesting that Sabrier does very little to help us answer such questions. What, for example, should we make of Berthoud's proposal to use a stackfreed-like device to equalise the effect of changes in oil viscosity over a four-year cycle? I found this suggestion rather idiotic and wondered if Berthoud was actually a second-rate thinker. But then, Berthoud never used it, so should I view this as openness to ideas and careful selection from them, indicative of a superior mind? Berthoud also thought of using a spring to overcome the lack of draw in the lever escapement watches he made, and the idea of draw didn't occur to him. But instead he stopped using that escapement. In this case the idea is vague and just what Berthoud intended is uncertain.

I have a delightful description of a sand chronometer published in the Gentleman's Magazine in 1758. It provides a precise, correct specification for a well thought out "sand glass" mechanism which is, in fact, utterly useless. The point is that doing research does not automatically mean that the research is sensible or useful, and careful analysis is a necessary part of any such work. Berthoud's work is far more interesting and far more important, but we should not simply assume it is valid because he happened to make some very fine chronometers.

More interesting is Berthoud's use of riveted balances until 1793 when he decided to use soldered lamina. There are many fascinating accounts of tests on riveted balances, but nowhere is there any indication that Berthoud understood the implications of the results and the relative English/French chronology is not examined.

So, although I think Berthoud is an important figure in chronometry, I found it impossible to estimate his importance from this book. However, Sabrier has provided the raw data to enable someone, willing and able, to undertake the extensive, detailed research necessary.

Part three, pages 539-639 in English and French, provides a biography of Henri Motel and discusses his chronometers and trials at the Paris Observatory.

Part four, pages 641-664 in French only, lists timepieces made by Motel, the dates of submission of chronometers to the Paris trials, provides information from Motel's sales book and gives a short bibliography.

These sections are minor, providing little useful information other than cataloguing Motel's work. But it includes a useful explanation of how Motel made and hardened balance springs.

Between parts 3 and 4 there is a glossary of terminology. I have no idea why it is included because anyone who needs to read it would be unable to make any sense of the rest of the book.

Part five, pages 665-720 in both English and French, contains biographical notes (of astronomers, navigators, diplomats and a number of watchmakers), a list of illustrations and an index. The index only contains proper names and there are no entries for mechanisms or procedures.

If the value of a book is measured by the quality of the printing and binding, and by the amount of hard work involved, then I would have to rate this as excellent. But hard work by itself is not enough. However, hopefully someone will one day use Sabrier's labours to produce a reasoned and thoughtful study of Berthoud's work.

See also Antiquorum "Important collectors' wristwatches, pocket watches, clocks and horological tools Saturday 12 & Sunday 13 May 2007".

R2277 Sabrier, JC; Rigot, G**Steel time****Montres en acier****Ore d'acciaio**

naissance d'une industrie

Geneva: Georges Naef, Editions de l'Amateur, 2006, 30.5 x 22 cm, 312 pp, 700 ill.

Exhibition (French, English, Italian).

There was an exhibition in 2007 of the watches described in this book. The English title "Steel time" may be a catalogue of the exhibition and not a translation of this book.

Illustrated catalogue of 220 steel pocket watches in the collection of F. P. Journe and part of the Journe watch collection in Geneva, Switzerland. It covers materials, decorations, regulating watches, monthly watches, chronographs, universal time watches, special indication watches, long-winding watches, alarm watches, watches with visible moving parts, wind-up watches, automatic and other watches. Included are technical details, prices and bibliography.

R2278 Sackmann, E**Geleitbuch für die uhrmacherlehre**

Halle: Wilhelm Knapp, 1921, 21 x 14 cm, 245 pp, 152 ill, 2 tables.

(German).

Companion book for horology education.

R2279 Safford, DL**Safford's directory**

of wholesale dealers, manufacturers and jobbers of jewelry, watches, clocks, diamonds and precious stones, silver etc in the United States

New York: D.L. Safford, 1883, 8vo, 166 pp, ads.

Makers (English).

The author is sometimes given as Stafford.

R2280 Saito, Tsutomu**Tokei ippan no chishiki**

Tokyo: Bunko Shoin, 1948, 18 x 12 cm, 146 pp, 27 ill.

(Japanese).

Introduction to clocks and watches, history of timekeepers.

R2281 Sala, PG**Universal watch**

Rome: Vallardi, 2010, 31 x 24 cm, 480 pp, 1800 ill.,

Identification (English, French, Italian).

Parallel Italian, French and English text, but not all translated from the Italian?

Ten sections: History of the brand (25 pages); Timeline and logos (7 pages); The chronograph, development and approach (12 pages); The movements 281, 285, 289, 291 calendar watch (10 pages); Spare parts catalogue (18 pages); Numbering references and punches (14 pages); The models (328 pages); Other brands which assembled Universal calibers (14 pages); Universal and advertising (20 pages); and Catalogs and fliers (12 pages).

"The commitment and the passion of the author, one of the world's biggest collector of Universal watches, permitted to realize this volume, with 220 models photographed also in the details, with specifications and technical data.

More than 1000 color pictures. 800 images in black & white from the Universal archives, with all the cases references, the story of Universal from the origins to nowadays, the advertising campaigns, the old official catalogues and much more makes it the essential reason for collectors and amateurs to possess and enjoy this great book."

R2282 Salm, W**Armband chronographen im takt der zeit**

der preisführer

Augsburg: Battenburg Verlag, 1998, 26 x 20 cm, 336 pp, 1971 ill.

Price guide, description, identification (German).

Quartz and mechanical chronograph wrist watches. The book begins with an introduction describing chronograph movements and terminology. The main part (287 pages) is an alphabetical listing and auction price guide illustrated by dials of watches. This is followed by brand and calibre information.

R2283 Salm, W**Armbanduhren ein sammlerbuch**

Augsburg: Weltbild, 2003 (2000), 27 x 20 cm, 329 pp, 2000 ill.

Price guide (German).

Printed in 2000, 2003 and 2006 with the same pagination; perhaps only the prices have changed?
 "Von der alten Fliegeruhr hat sich der Armband-Chronograph mit seinem Technik-Appeal zum Statussymbol gemausert. Der umfassende Preisführer für Sammler und alle Armbanduhren-Liebhaber. Mit über 2000 Uhren aller bekannten Marken in Farbe und weiteren 2000 in tabellarischer Übersicht, darunter viele Raritäten. Damit Sie für Ihre Traumuhr nicht mehr bezahlen als notwendig."

R2284 Salm, W**Preisführer für armband und taschenuhren von a-z**

Ulm: Ebner, 2009 (1996), 30 x 21 cm, 82 pp, ill, plates.

Price guide (German).

6000 auction prices for watches.

R2285 Salm, W**Uhrenpreisführer armband & taschenuhr chronographen**

aus 7 jahren 2002-2008

Ulm: Ebner Verlag, 2009, 442 pp, 3000 ill.

Price guide (German).

Price guide to wrist and pocket chronographs for the 7 years 2002-2008 based on auction prices. Listing 2858 wrist watches and 506 pocket watches with technical data.

R2286 Salm, W**Welchen wert hat mein chronograph?**

1992, 21 x 15 cm, 151 pp, 1000 ill.

Price guide (German).

In Kopie-Qualität

Bewertungsgrundlage für Kaufentscheidungen

R2287 Salomons, Sir David**Breguet 1747-1823**

London: David Salomons, 1923 (1921), 24.5 x 15.5 cm, 330 pp including 172 plates (2 volumes: volume 1 is frontis, 115 pp, 107 plates, 4 pp, 7 plates, tipped in errata sheet; volume 2 is 2 plates, 10 pp, 19 plates, 6 pp, 8 blank pp, 6 pp, 3 plates).

Description, history, technical (English, French).

The first edition, printed in a limited edition of 1000 copies, consists of the main volume and a supplement containing additional plates, appendix and addenda to the appendix. The addenda has a note indicating that the binding of the first 250 copies is different from that of the remaining 750. A hard back 3 volume set has been noted. The pagination given here for the 2 volumes is from my copy in original blue wraps.

I do not know if hard cover copies have been rebound or if some were originally produced that way.

The revised French edition is of 330 pp including 172 plates (limited edition of 550 copies, translated by L. Desoutter).

The main volume begins with 4 introductory chapters (29 pages): General and personal; The firm of Breguet; The life of Breguet; and Technical.

These are followed by 4 chapters (39 pages) with descriptions of 87 watches, 6 clocks and 4 miscellaneous timepieces, and indexes to the watches.

The 9 appendices (44 pages) include reproductions of an 1822 booklet describing products, an advertisement for souscription watches and a summary of items displayed at the 1819 Exposition. Following the plates there is an addenda with extra plates describing an additional 4 watches, one belonging to Mr E. Bryce.

The supplement volume begins with descriptions and plates of 2 new watches in Salomons collection, 4 watches belonging to Mrs E. Bryce, a pendule sympathique and further plates of some watches in the main volume. These are followed by additional notes.

The plates show watches at their actual size.

[1st edition, good?] The general text is interesting but not stimulating. Salomons begins with an autobiography to explain why he built up his collection of Breguet watches. Then he provides a reasonable biography and history, and an inadequate technical summary. The appendices include remarks on teaching children to tell the time and, more seriously, notes on certificates. I found this aspect of the books most interesting for Salomon's personal opinions, particularly "because they are scarce and dear, many idiots with money collect Breguet watches, although they are people who cannot distinguish between a fine watch and one worth two-and-six".

The majority of the book and the plates describe his collection of 92 watches and 5 watches belonging to Mr and Mrs E. Bryce (and a few clocks). Most of the descriptions are terse, a few giving additional information on how to open and operate them. It is a pity all photographs show the watches at actual size. The method of reproduction means that much detail is lost and it would have been far better if some illustrations had been magnified (there is one exception, a view of the Marie Antoinette watch).

This is definitely an interesting book, but Daniels "Art of Breguet" is much better and much more useful. The revised French edition is said to be more accurate and more complete.

R2288 Saluz, E**A brief history of the pocket watch**

Germany: Deutsches Uhrenmuseum Furtwangen, 2008, 21.0 x 21.0 cm, 39 pp, ill.
History (English, French, German).

The history of the pocket watch in vivid terms from 1500 to the early 20th century.

R2289 Samelius, WH; Hagans, OR**Watch and clock information, please**

USA: AWI Press, 1981, 23.5 x 16.0 cm, 408 pp, 260 ill.

History, makers, repair, technical (English).

There is a single, loose errata page.

Escapements (61 pages); Hairsprings (10 pages); Mainsprings (13 pages); Watch and chronometer disassembly and assembly (8 pages); Clock striking and chiming (8 pages); Pendulum (5 pages); Wheels (17 pages); Dials (5 pages); Tools (10 pages); Restoration (5 pages); Repair (47 pages); Watchmakers tables (16 pages); Clocks (26 pages); Watches (17 pages); Watch and clock adjustment (25 pages); Timing (32 pages); History (24 pages); An index of American horology (10 pages); W. H. Samelius (5 pages); Index (20 pages).

[1st edition, reprint?, good] Samelius was Dean of the Elgin Watchmakers College for 33 years and this book is a compilation of questions and answers from his columns in the "American Horologist and Jeweler", the majority of which concern watches.

The information is reasonably well categorised but, as with other compilations, finding specific information can be difficult because questions are random within the sections. Also there is some duplication. However, the provision of an index is a great relief!

Although very variable in depth and somewhat spasmodic in coverage, the book is both useful and interesting.

R2290 Samelius, WH; Purdom, Charles**It's timing that counts**

Denver: Roberts Publishing Co, 1944, 23.0 x 15.0 cm, 59 pp, 77 ill.

Repair (English).

There are 40 ill, 37 timing machine traces and an errata sheet.

A brief description of how to adjust watches, particularly American pocket watches.

[1st edition, fair?] The book begins with basic instructions for watch cleaning and oiling. These are followed by directions for setting up the lever escapement, checking balance pivots, poising, adjusting compensation balances for temperature, balance spring fitting, checking regulator pins, putting in beat and timing tests.

The remainder describes balance spring "needling", timing machine traces, and wheel and pinion replacement.

Concise and quite clear (once I learned to cope with some strange spelling). Some suggestions for setting up escapements and needling balance springs do not inspire me and the latter part of the book is a bit fragmentary. On the whole it is alright but of no significance.

[Remark] Having read other books by Purdom, I have to assume Samelius wrote most of this one. What I cannot understand is why Samelius was silly enough to associate himself with Purdom.

R2291 Sander, W; Loeske, M**Uhrenlehre**

Die wichtigsten mechanischen, physikalischen und technologischen Grundsätze für den Bau der Uhrwerke in elementarer Darstellung für Fachschulen und zum Selbstunterricht, für Konstrukteure und Reparatereure.

Leipzig: Wilhelm Diebener (Berlin:), 1985 (1922), 24 x 18 cm, 324 pp, 152 ill, plates (297 pp, 152 ill).

Repair, technical, theory (German).

Written by Professor Sander, head of the Schwenningen Technical School, and revised by M. Loeske.

The reprint is of the 3rd edition, 1923.

Instruction in horology, including the most important mechanisms, construction and repair, physical and technical principles.

R2292 Sanderson, EL**Waltham industries**

a collection of sketches of early firms and founders

Vermont: Waltham Historical Society, 1957, 8vo, xiii, 164 pp, 15 ill.

History (English).

General history of industries in Waltham including 33 pages on watch and clock making.

R2293 Sandoz, Charles**Les horloges et les maitres horlogers a Besançon**

du XV siècle a la révolution française

: Association nationale des C.A.H.A. (Besançon: Millot), 1978 (1905), 21 x 14 cm, 88 pp, 24 ill.

History (French).

The reprint is a limited edition of 200 copies.

Clocks and master clockmakers at Besancon from the 15th century to the French Revolution.

Only clocks?

- R2294 Sandoz, Charles**
Origine et développement de l'industrie horlogerie a Besançon
 et en Franche-Comté
 Besançon: Dodivers, 1893, 8vo, 67 pp.
 History (French).
 Origin and development of the horological industry at Besançon and in Franche-Comté.
- R2295 Sandoz, Charles; Lebon, E**
Histoire de la fondation de la fabrique d'horlogerie a Besançon en 1793
 Besançon:, 1891, 27 pp.
 History (French).
 Baillie "Watches, their history decoration and mechanism" gives the author as Lebon and Leroy as Sandoz.
 History of the foundation of the horology factory at Besançon in 1793.
- R2296 Sandoz, E**
Practical methods of accurately adjusting watches
 nd.
 Repair.
Mentioned in Hazlitt & Walker "Adjustments to positions, isochronism and compensation". It is likely that this is a journal article.
- R2297 Sandoz, GR**
Conseils pour entretenir les bijoux, les joyaux, et l'orfèvrerie
 et pour régler les montres et les pendules
 Paris: Gustave Sandoz, 1896, 13.5 x 10.5 cm, 64 pp.
 (French).
 Advice on caring for jewellery, jewels, gold and for regulating watches and clocks.
This sounds like yet another adaptation of Berthoud.
- R2298 Sandoz, M; Sandoz, EM**
Collection de montres et automates
 Le Locle: Edition Du Château Des Monts, Musée d'Horlogerie, 1976 (1965), 8.25 x 6 inch, 199 pp, 127 plates.
 Collection (French).
 Histoire de Horlogerie volume 3. Limited edition of 2000 copies.
 A collection of Swiss form watches and automata from the 18th and 19th centuries. Reprinted?
- R2299 Sarasin, E**
Uhren sammlung
 kunstauktion in Luzern am 18 November 1948
 Lausanne: Galerie Fischer, 1948, 4to, 53 pp, 32 plates.
 Collection, illustration (German).
 Auction catalogue for a collection of early watches.
- R2300 Sasaki, H**
Rolex buyer's guide for sports model
 nd, 21.5 x 15.5 cm, 157 pp, ill.
 Price guide (Japanese).
 Photographs of current and vintage Rolex watches with historical and developmental information.
- R2301 Sasaki, T**
(Timepieces speak about themselves)
 Tokyo: Taika Shobo, 1949, 58 pp.
 History, miscellany (Japanese).
 Timekeeping, history, anecdotes.
- R2302 Sato, Hiromasa**
Keitai tokei no kosho to sono gen'in
 Tokyo: Shiryosha, 1949, 118 pp.
 Repair (Japanese).
 Problems and their causes in watches.
- R2303 Sato, Tsutomu**
Tokei shuri gokuri jiesen dokuhan
 Tokyo: Zenkoku, 1941, 265 pp.
 Repair (Japanese).
 Clock and watch repair.
- R2304 Saturday Magazine**
Manufacture of Watches in Switzerland, 1842
 Australia: Richard Watkins (London: John William Parker), 2008 (1842), (29 x 19.5 cm), 5 pp, no ill.
 History (English).
 PDF file.
 Originally published in the Saturday Magazine, volume 21, October 1842, pp 158-159 and December 1842, pp 237-239. The first part gives a history of Swiss watchmaking. The second part details the smuggling of watches into France by means of dogs.

[1st edition, very good] The first part is ordinary and of no great merit. However, the second part gives a fascinating insight into watch smuggling and is the only detailed account that I have read on the topic.

R2305 Sauerborn, F-D**Jess Hans Martens 1826 - 1892**

Buggingen: Sauerborn, 2003, 22 x 15 cm, 127 pp.

History, bibliography (German).

Erster Lehrer der Taschenuhrenmacherschule in Furtwangen.

R2306 Sauers, D**Time for America**

the Hamilton Watch Company 1892-1992

USA: Sutter House, 1992, 26.0 x 18.5 cm, 315 pp, 16 col plates, 80 ill, 14 pp ill.

History, illustration (English).

Official history written to celebrate the centenary of Hamilton.

Ten chapters: The right product at the right time (12 pages), The pre-Hamilton watchmakers (14 pages), The founding fathers 1892-1910 (14 pages), The Miller years 1910-1931 (20 pages), Depression and war 1931-1945 (44 pages), Hamilton speaks, advertising and public relations (20 pages), Expansion and diversification 1949-1959 (42 pages), New faces new policies 1960-1971 (42 pages), Recovery and Swiss ownership 1972-1980 (20 pages), and Hamilton today back to basics (14 pages).

There are 2 appendices: A trip through the factory (12 pages, reprinted from "Watch Words", 1926-1927) and illustrations of watches (18 pages).

The colour plates show wrist watches, pocket watches and two advertisements. The index primarily lists names of people.

[1st edition, fair] This is a rather disappointing book and it took me a long time to read it. In the beginning I found it tedious, but it does improve and become a reasonably interesting account of the company.

Sauers is vaguely described as a "consultant" and it is not clear what his area of expertise is; probably advertising. He states that he knows nothing about watches and watch making and probably all his horology is quoted (or misquoted) from other sources, including books he thinks authoritative and which I consider simplistic; which probably explains why the colour photographs show case styles and a few uninformative movements. For example, we learn that the Hamilton 940 had "a patent motor barrel adjusted to temperature, isochronism and five positions", the brief outline of "mass production" is superficial and Sauers does not understand the problems of interchangeability. But then neither does Sig Schonholtz, a quoted "expert" who says "if you completely dismantle 100 Hamilton watches of the same model, you could mix up all the parts and reassemble 100 watches that would all run perfectly with little or no adjusting. The amazing thing is that you could do this with every model they ever made. I don't know of another watch company that can make this claim." Well, the claim is certainly not true of early Hamilton watches, and almost any Swiss company could do it by the 1950s or there about. Likewise, regarding Hamilton as the "Patek Philippe of America", ignoring the difference between plain timepieces and watches with extremely sophisticated complications, is patently silly (and Patek still exists whereas Hamilton doesn't, except as a Swiss brand-name). But such gross generalisations are the order of the day and so it is not really surprising to discover that there is also no serious discussion of business practices or finances.

Consequently the book is best described as a social history and, with one or two minor exceptions, it is primarily jolly, enthusiastic and self-congratulatory. Other than a good examination of advertising and marketing (especially in Chapter 6), it is full of trivial facts with almost no useful economic or technical data. I really don't care where some of the workers held a picnic and how much ham was consumed, nor the names of the children who won races at the 1951 outing. Such facts might be interesting in a cookbook or a history of the American people, but they are irrelevant here. Another example is when Sauers says Dick Blakinger "had flown 21 missions as a B-25 navigator during World War II, and had earned varsity letters in wrestling and tennis while at Cornell." I fail to see the remotest connection between such "talents" and the ability to run a major watch manufacturer. Also, Sauers says Elgin and Waltham went out of business by the 1960s and "they only exist as brand names, licensed for use on imported timepieces. Only Hamilton and Bulova survived." But Hamilton didn't survive, going out of watchmaking in 1969 and being simply a brand name from 1974. This penchant for trivia and slipshod analysis ruins an otherwise interesting book.

Finally, it is written by an American for Americans, containing a lot of references to American activities, some American slang words and providing a purely American view of history.

I think the best and most useful part of the book is "A trip through the factory" (written in 1926-27) in the appendices. Although also a piece journalism it includes, perhaps accidentally, a few interesting facts. Importantly it states that jewels and pivots were individually gauged and were not interchangeable. And balance springs, mainsprings and hands were imported, so at least until 1927 Hamilton did not make complete watches. (In the 1920s Waltham was making its own overcoil balance springs.)

My main objection to this book is that it is vague and uncritical. There are many places where matters are mentioned in passing which deserve a far better analysis than Sauers provides.

One example is the contradictory information provided by different authors. Sauers quotes a 1930 Hamilton advertisement stating that Byrd used Hamilton watches in Antarctica, but Francillon "Histoire de la fabrique des Longines" says "The special watches in his plane and the chronometers on the sledges,

all carrying the Longines mark, gained the respect and absolute confidence of these explorers.” Who is presenting the truth?

A far more important instance is that Sauers fails to clearly examine what Hamilton did; make watches or assemble imported Swiss movements? We are told that manufacture ceased completely in January 1969 (22 years before the company’s centenary and when this book was written), but before that time much of the output was distribution of imports (Buren movements were used in 1965 and Sauers says 40% of watches used Swiss movements in the mid 1960s). Also, it seems the company diversified from the 1950s in part because of the declining importance of watch manufacture. Further, we do not know if the American component before 1969 consisted of finishing old stock (such as 992B movements) or new output.

This inadequate analysis percolates throughout. So Sauers shows no understanding of pay rates and he is very imprecise when describing the 1970 failure and subsequent restructuring.

This last point is interesting because there are echoes of what happened to Waltham under Dumaine. The take-over of the “undervalued and cash rich” Hamilton by Jacob Hain would appear to be a similar case of asset stripping; Sauers mentions one case of extracting money needed for research and development by paying a \$1 dividend per share, and later he notes another such event. As Sauers says, Hain and Don Matthews viewed Hamilton as a “money making machine”. He also quotes a person saying in 1970 “we didn’t have the money”, further supporting the likelihood of asset stripping.

The process of converting assets into personal income continued through the creation of HMW, a “corporate shell” owned by a few individuals, which in turn owned the subsidiary divisions of Hamilton. The profitable divisions were sold off and presumably the money was transferred to HMW and paid out as dividends. (The restructuring of Hamilton into a number of subsidiary, separate companies prevented the profits of the strong divisions from being used to support the weaker.) The watch making division was sold to Switzerland in 1974, 5 years after it had stopped manufacture and, despite Sauers’ view, it is obvious that the Swiss were buying the name and trademarks of a defunct manufacturer. The separate Pulsar division lasted a bit longer (formed in 1966 to produce a quartz watch, production started in 1972 and it was sold in 1977), but as it employed only 52 people and simply assembled brought-in parts, it is of little interest. So Hamilton ceased to exist as an American watch maker at least 17 years before its centenary.

R2307 Saunier, Claudius

A treatise on modern horology

Traite d’horlogerie moderne, théorique et pratique

Trattato di orologeria moderno

USA, England: Charles Branford (London: W. & G. Foyle) (London: Crosby Lockwood; Bautzen: Eduard Ruhl) (Paris: Revue Chronométrique), 1975 (1861), 27.0 x 19.0 cm, 944 pp, 100 ill, 30 plates and supp of 112 pp, 20 ill, 9 plates (844 pp, 78 ill, 1 plate, 21 fld plates).

Theory, watch making (English, French, German, Italian).

See Saunier “Lehrbuch der uhrmacherei in theorie und praxis” for German translations, and Robertson and Tardy for the early printing history. The English and French editions are single volumes (some with hand-coloured plates).

There are various modern reprints including ones in 1952 and 1977.

The Italian edition (640 pp, 12 col plates) was printed circa 1867.

The 2nd English edition is in three parts; escapements (584 pages), gears (94 pages) and miscellaneous (118 pages on pendulums, balances, balance springs and adjustment). Followed by an appendix (28 pages), index and key to the plates.

[2nd English edition 1887, very good?] *The study of escapements begins with an introduction giving the principles of mechanics, the general requirements of escapements and the properties of friction. This is followed by theoretical and experimental examinations of escapements beginning with the verge (40 pages). The bulk of the section is on frictional rest escapements, in particular the cylinder (203 pages including a general theory of frictional rest escapements, and the design, proportions, experimental results and manufacture of cylinder escapements). Also covered are the duplex (49 pages), virgule (5 pages) and Breguet ruby cylinder (2 pages). A theory of detached escapements is then given (38 pages) followed by descriptions and discussion of lever (83 pages), chronometer (53 pages) and clock (58 pages) escapements.*

Part 2 on gears gives an outline of cycloidal and involute gearing, trains, shape of addenda and the size of pinions, with a few remarks on contrate, bevel and rack gears. The section concludes with 21 pages on weight and spring motors, including mainspring stop-work and endpieces. There is little theory and this part is mainly a descriptive recapitulation of the work of others. I found it tedious, a bit obscure and inadequate. Other than the discussion of the forms of pinions with different numbers of teeth, I found little of interest.

Part 3 contains the general principles of adjusting (8 pages), pendulums, the balance (33 pages), balance springs (29 pages), adjustment of watches (19 pages). As before, the theory is weak and adjusting is described without any practical methods. There are, however, very good descriptions of how to make balances and balance springs.

The appendix includes descriptions of repeaters, a perpetual calendar mechanism and micrometers.

The crux of this book (and “The watchmakers handbook”) is the cylinder escapement. It is clear that Saunier was a practical watchmaker who worked with this escapement. The treatise is padded out with

other material to make it a “well-rounded” work, but throughout this one escapement dominates. Indeed, much of the supportive material is purely descriptive in contrast to the serious attempt to theorise about the cylinder.

In consequence both this book and “The watchmakers handbook” are concerned with the design for the cheap and often unsatisfactory watches which were mass-produced in Europe. And so the book is of mainly historical interest. It does contain a large amount of interesting information, mainly the surveys of the work and experiments of Berthoud, Wagner and others who preceded Saunier.

Saunier considers watch makers badly educated and in need of more theoretical information. And he is very critical of other writers, frequently making scathing comments on earlier research, quoting the work of Thiout, Wagner (“prejudiced”), Tavan, Berthoud (“adhered to his mistaken views, doubtless impelled by an unfortunate conceitedness”) and Jodin. Importantly, he berates those who pretend their ideas are scientifically based when they are not.

But I am not sure Saunier has done much better than those he has criticised. Much of what he calls theory is description and experimental data. He presents basic ideas from mechanics, details of past experiments, and then gives his theorems and principles without proof, but often supported by experiment. At times he doesn't even bother with this; for example, the explanations of gearing and adjusting are superficial. The overall impression is that Saunier was a practical maker of cylinder watches attempting to make his name as an horologist. He is very good when explaining practical matters but unconvincing when he theorises.

R2308 Saunier, Claudius**Almanach artistique et historique**

des horlogers, orfèvres, bijoutiers, opticiens

Paris: Parmantier, 1859 to 1869, 16mo, 400 pp (135 pp) (128 pp).
(French).

Produced annually.

Artistic and historical calendar of horologists, goldsmiths, jewellers and opticians.

R2309 Saunier, Claudius**Die geschichte der zeitmesskunst**

von den ältesten zeiten bis zur gegenwart

Bautzen: Emil Hubner, 1903, 22 x 16 cm, 2 vols of 1096 pp, 206 ill, plates.
History (German).

The history of time measurement from the earliest times to the present.

R2310 Saunier, Claudius**Guide manuel de l'horloger****Praktische handbuch für uhrmacher**

Paris: Bureau de la Revue Chronométrique, 1892 (1870), 18 x 12 cm, 314 pp, 11 ill, 8 plates (264 pp, 4 ill, 8 plates).

(French, German).

Three editions (1870, 1873 and 1887) with a German translation by Loeske in 1892.

See Saunier “The watchmakers handbook” of which this forms part.

R2311 Saunier, Claudius**Lehrbuch der uhrmacherei in theorie und praxis****Ergänzungsband zum lehrbuch der uhrmacherei in theorie und praxis**

Bautzen: Eduard Ruhl, nd (1869), 25 x 17 cm, 7 volumes of 2250 pp, plates (4 volumes, 21 plates and supp of 187 pp, 8 plates) (3 vol, 21 plates).

Repair, theory, tools (German).

The supplement is “Ergänzungsband zum lehrbuch ...”.

This contains translations and revisions of several works and includes material by other authors.

Tardy gives the early printing history.

Note that the German editions are 3, 4, 5 or 7 volumes with different translators given. Also, confusion may occur with single volumes of similar title, including that by J. Grossmann (maybe a part of this).

There are various modern reprints including ones in 1952 and 1977. A German reprint is described as “produced in seven volumes of 2250 pp, including a separate volume of plates, of original editions published between 1902 and 1917; it is said to include everything of use to horologists and collectors ... the reprint is a limited edition of 500 copies”. Meis also lists a 7 volume edition in 1902.

The 7 volume set which was published between 1902 and 1917 has been reprinted. It contains:

Vol 1: escapements, gearing, pendulums, balances, balance springs, adjustment.

Vol 2: free escapements, lever escapement, chronometer escapement, clock escapements.

Vol 3: gearing, weight power, etc.

Vol 4: balances, proportioning, isochronism, etc.

Vol 5: gears, teeth, escapements, errors, striking work, trains, complications, turret clocks.

Vol 6: electric clocks and time distribution.

Vol 7: plates.

R2312 Saunier, Claudius**Recueil de procédés pratiques utilisés en horlogerie
Sammlung praktischer arbeitsmethoden der uhrmacherei**

Paris: Bureau de la Revue Chronométrique; Bautzen: Eduard Ruhl, 1892 (1874), 12mo, 252 pp, 6 plates. Repair, technical (French, German).

There is a German translation by Loeske in 1892 (629 pp, 6 plates) which may incorporate other material.

Collection of practical procedures used in horology.

The second part of "Guide manuel de l'horloger". See Saunier "The watchmakers handbook".

R2313 Saunier, Claudius**The watchmakers handbook**

USA: Lindsay Publications (London: Crosby Lockwood & Son) (USA: Hazlitt & Walker) (Paris: , Bautzen:), 1993 (1881), 19 x 13 cm (18.5 x 12.5 cm), 498 pp, 36 ill, 14 fld plates (505 pp, 273 ill).

Tools, watch making (English).

This was first published in 1881 and includes both of the books "Guide manuel de l'horloger" and "Recueil de procédés pratiques" translated by Tripplin and Rigg, re-arranged and with additional material. The second English edition, circa 1885 with many later reprints, is the same as the first with minor corrections and a 17 page appendix containing new tools and information.

The American edition was published by Hazlitt and Walker (revised enlarged and adapted to American use by Henry Abbott) in 1892 (505 pp, ill) and reprinted in 1903 (505 pp, 273 ill). It has all illustrations in the text with "antiquated" tools omitted and replaced by modern ones. It was also published in parts (at least 20) by "The American Jeweler".

The 1993 reprint is of the 1882 edition and there may be another later reprint of it.

The 1881 edition is available as a Google Book PDF file (USA only?).

The English edition is in six parts.

The book begins with basic arithmetic and geometry, drawing and concepts of time (35 pages).

Part 2 (108 pages) is an extensive section on materials providing an overview of the properties and use of horological materials and giving details of the smoothing and polishing of brass and steel (including the tools and methods of watering, spotting and snailing), jewel making (derived from Dumontier) and polishing wheels.

Part 3 (12 pages) is a short study of the education of apprentices; after a discussion of the care of eyes general health, it gives details of learning to file and turn.

Part 4 (172 pages) describes tools, their use and instructions for making many of them. The focus is on the turns (62 pp, including early European lathes), mandrels (20 pp) and wheel cutting (30 pp, with a part derived from Philippe "Montres sans clef"). There are also detailed examinations of drilling and screw making. The book makes many references to Holtzapffel "Turning and mechanical manipulation" for basic lathe techniques.

Part 5 (33 pages), on repairing and examining watches, is a brief summary of the examination, cleaning and adjusting of cylinder watches with additional sections on English fusee watches. There is almost nothing on repair.

Part 6, receipts (103 pages), describes methods for making watch parts including plates, barrels, fusees, wheels, balances and dials. There are a few notes on repair and a couple of bits on clocks.

The book concludes with indexes and key to the plates. The second edition also has a 17 page appendix briefly describing changes since the first edition.

[English 2nd edition, excellent?] *The book is a supplement to Saunier "A treatise on modern horology" (which see), and the reader is frequently referred to that work.*

The focus of it is how to make parts for cylinder (Geneva) watches and the tools needed to do so. There are some references to English lever and duplex watches, but only the cylinder escapement is considered in detail. Further, there is no coherent information on watch making. Although some parts are relevant to repair, it is definitely not a repair book. Indeed, the few repair topics and the section on cleaning and adjusting feel out of place.

These days I suspect the book has little value as a practical manual. But it is a wonderful, comprehensive survey of 19th century tools and watch making methods. It is the source of much that appears in later books, pieces having been quoted or adapted by other authors (with or without acknowledgement). It assumes the reader is a competent watchmaker and does, at times, gloss over things that I feel deserve more detail. For example, nowhere in the discussion of wheel cutting is the shape of teeth seriously considered (the reader is expected to have studied the companion treatise).

[American 2nd edition 1903] *The American edition is almost identical to the first English edition. The minor changes include the omission of nearly all references to Saunier "A treatise on modern horology" and other books, slight "Americanising" of the text, some more "modern" minor tools, and the omission of enamel dial making. The major changes are a new section on furnaces and the replacement of the sections on the turns (and making their attachments) by a description of American lathes and attachments. Also, part of the sections on mandrels has been omitted and the rest related to lathe face plates.*

This is an example of barely intelligent plagiarising. Abbott has taken Tripplin and Rigg's text (including their preface) without any acknowledgement and made a few changes to make it more relevant for the American market. Most importantly, he said the book "will be of use to the watch (repairer) in his daily work". Unfortunately it seems he failed to realise the book is about watch making and not repair, or

maybe he didn't want the buyers to know.

Abbott's changes are unsuccessful. His sections on lathes are fascinating but too descriptive to be of much use. And his attempt to make the book independent of "A treatise on modern horology" ignores its function. Even so, it is almost as good as the English edition for giving an insight into 19th century methods.

R2314 Saunier, Claudius**Traite des échappements et des engrenages**

Paris: Dufour Mulat & Boulanger, 1977 (1855), 8vo, 398 pp, 12 fld plates.

Repair, technical, watch making (French).

Some sources give 10 folding plates.

The reprint is a limited edition of 500 copies.

Treatise on verge, cylinder, duplex and lever escapements and gearing.

Tardy notes that this work was "destroyed" by Saunier and re-written for his "Traite d'horlogerie". I have not seen any explanation for this; presumably significant errors.

R2315 Savoye, C**Notes sur les origines de la fabrique d'horlogerie de Besançon**

centenaire de l'horlogerie de Besançon 1793-1893

Besançon: (Paris:), 1893 (1878), 32 pp (20 pp).

History (French).

Gardner "Catalogue of the Torrens collection" gives the title of the first edition as "Exposition collective du Doubs, 1793-1878: notice sur les origines de la fabrique d'horlogerie de Besançon son état présent, chiffres officiels a l'appui"

Notes on the origins of the Besançon horology factory, 100 years of Besançon horology 1793-1893.

R2316 Sawelski**Die zeit und ihre messung**

Moscow, Leipzig: Verlag MIR, 1977, 22 x 15 cm, 271 pp, 71 ill.

(German).

Time and its measurement from the trillionth of a second to billions of years.

History of the calendar, time measurement in antiquity (sundials, sand, fire and water clocks), mechanical and pendulum clocks, local time and time zones, precision time measurement and transmission (astronomical pendulum, quartz and atomic clocks), short time measurement, yardsticks of space and time.

A general book, apparently with some technical information. It contains some information on watches.

R2317 Sayer; Bennett**Catalogue of prints for the year 1775**

London: Holland Press (London: Sayer and Bennett), 1970 (1775), 8vo, 150 pp and 66 pp, ill.

Description (English).

The original title is "Sayer and Bennett's Enlarged Catalogue of New and Valuable Prints, in sets, or Singles; also Useful and Correct Maps and Charts; likewise Books of Architecture, Views of Antiquity, Drawing and Copy Books, &c. &c. in Great Variety".

Includes designs for watch cases.

R2318 Scatchard, J; Saunders, O; Gurney, J; Forrest, T**Miller's wristwatches**

how to compare and value

London: Mitchell Beazley, 2004, 10.5 x 8 inch, 160 pp, ill.

Price guide (English).

Introduction to wristwatches; History of wristwatches; How to compare and value (97 pages); Where to buy and see; Glossary; Bibliography.

The main section (How to compare and value) covers: Rectangular watches; Automatic watches; Chronographs; World time watches; Skeleton watches; Military watches; Minute repeaters; Tourbillon watches; Reverso; Enamel dial watches; Mystery watches; Cocktail watches; Diver's watches; Digital watches; Electric watches; Motorist watches; Coin watches; Watches with provenance; Novelty watches; Patek Philippe; IWC; Omega; Heuer; and Rolex. Each section has one or two pages.

There is a section on fakes and replicas.

Sometimes listed as Forrest "Wristwatches, how to compare and value".

R2319 Schaaf, B**Holzraduhren**

Munich: Callwey, 1986, 29 x 25 cm, 223 pp, 340 ill, 32 plates.

Description, illustration (German).

17th, 18th and 19th century wooden clocks and watches.

R2320 Schade, EFF**Über helikoidische verzahnung**

und ihre anwendbarkeit auf den uhrenbau

Breslau:, 1847, 4to, 12 pp, 8 plates.

Technical (German).

Listed in Robertson.

On helicoidal gearing and its application to timepiece construction.

R2321 Schade, F**Uhrmacher lexikon****Vollständiges uhrmacher lexikon**

Weimar: Boigt, nd (1855), 19 x 12 cm, 198 pp, 3 tables.

Bibliography, dictionary (German).

Printed in 1855 and 1858 with a modern reprint of the 1st edition.

Robertson gives the title as "Vollständiges uhrmacher lexikon".

Classification and characteristics of timepieces including a bibliography.

R2322 Schaefer, A**De Underbara Uren**

Sweden: Urmakaren, ca 2010, 256 pp, ill.

Collecting (Swedish).

Wonderful Timepieces.

"Intended for experienced collectors as well as merry amateurs, this book is primarily on antique clocks and watches, but is also picturing the author's life as a watchmaker. The book contains new research on watch signatures and origins that has never been previously published and it therefore adds new knowledge.

The book offers guidance on how to determine the age of clocks and watches and it describes a lot of constructions represented from the 12th century onward to the newest Omega construction of today, with drawings and replicas."

R2323 Schaefer, A**The proletarian watch****Proletaruret**

Sweden: A. Schaefer, 2007, 22.5 x 17.0 cm, 215 pp, ill.

History, identification, illustration (English, Swedish).

Three biographies of George Frederic Roskopf by P. Van Rompay (2 pages), Liliane Roskopf (4 pages), and Albin Schaefer (2 pages) with photographs of 2 Roskopf watches.

Watches made by Japy Freres (5 pages).

The Roskopf watch (4 pages, extract from Jaquet and Chapuis "The technique and history of the swiss watch").

Patent drawings (4 pages).

Early Roskopf watches (10 pages).

Successors to Roskopf (28 pages on Wille Freres, Leon Schmid and Roskopf Patent).

Manufacturers of Roskopf watches (132 pages).

Watches with conventional trains (9 pages).

Patent summary and index of names.

[1st edition, fair] This book has 16 pages on Roskopf and his patents. The rest consists of brief histories of companies which manufactured Roskopf watches together with photographs of their products.

A study of George Frederic Roskopf is long overdue. He has been largely ignored, in part because of the attitude to his watches. Liliane Roskopf includes a pertinent quote: "You know, the Roskopf watch, we still do not accept it, it is not a watch, it is rubbish!"

Unfortunately this book, although containing a lot of useful material, does not discuss, let alone explain, the important features of Roskopf's concept and its success. Rather than writing his own study, Schaefer relies on extracts from other books. But these extracts are short and incomplete, and do not provide a satisfactory understanding of the proletarian watch. Fundamental to Roskopf's design are the large barrel, train with no center wheel, the porte echappement where the escapement is mounted on a separate, adjustable sub-plate (related to the cylinder escapement chariot), and the motion-work mounted on the barrel. (The use of a pin lever escapement was not a part of the design.) These features need to be described in detail and explained, but they are not. And so after studying this book, the reader does not end up with an understanding of the significance of Roskopf's work.

Another important point that is glossed over, and which deserved a detailed analysis, is the fact that Roskopf did not patent his design in Switzerland, but he did patent it in America. Which raises one question which I have never seen discussed: If he had not patented the watch in America, would the Waterbury duplex watch have been developed?

Although undoubtedly useful, it is a pity Schaefer has not provided the reference work that is needed.

[Remark] Actually, there is a lot of interest in Roskopf "rubbish". My translation of Buffat "History and design of the Roskopf watch" is by far the most popular download from my web site.

R2324 Schaefer, A**The watches from St Mikael**

Sweden: Urmakaren, ca 2010, 48 pp, ill.

History, makers (English, Swedish).

"In the autumn of 1747 the ship St Mikael was sailing from Amsterdam to St Petersburg with luxury goods, and sank at Borstö Island off the Finnish coast leaving no survivors.

In 1953 the very well preserved wreck was discovered at 42 meters depth, with all masts still standing up. Amongst the finds on the ship were gold watches, snuffboxes and a two wheel carriage.

The author's research of the find at the Maritime Museum in Finland has cast new light upon the manufacturing of watches with false signatures.

The research material is unique since it represents a group of watches, from a very exact and limited time period, packed in the same box with the same destination.

These would otherwise, free from this context, have a restricted value of proving their connection to both time and place as well as to their internal relationship.

The booklet not only contains a thorough investigation of each of the 11 watches found on board the ship, but also a list of all watchmakers active in the Augsburg/Friedberg area during the 17th to 19th century."

R2325 Schafhautl**Über die geschichte der uhren**

1864, 4to, 130 pp.

History (German).

Listed in Robertson.

On the history of timepieces.

R2326 Schaper**Die ankerhemmung unserer taschenuhren**

Meininger., 1900, 45 pp.

(German).

The lever escapement in pocket watches.

R2327 Schardin, J**Taschenuhren und seechronometer**

Dresden: Staatlichen Mathematisch-Physikalischen Salon, 1997, 23 x 19 cm, 200 pp, 300 ill, 23 plates.

Description, catalogue (German).

Catalogue of an exhibition of German, Austrian and English pocket watches and marine chronometers in the Staatlichen Mathematisch-Physikalischen Salon, Dresden. Views of movements, dials and cases.

R2328 Scheibel, W**How to make profits from your repair department**

USA: Jewelers Circular, 1960, 11 x 8.5 inch, 30 pp.

Business, repair (English).

R2329 Scheidegger, T**De la durée d'existence de l'entreprise**

en particulier de l'entreprise horlogère dans le Jura

Bienne: Tony Scheidegger, 1948, 102 pp.

History (French).

Of the duration of the Jura horological industry.

Dissertation.

R2330 Scherer, U**Vo zyt zu zyt**

bernische uhren im laufe der jahrhunderte

Switzerland: Stiftung und Verein Schloss Jegenstorf, 1992, 24 x 24 cm, 66 pp, 39 ill.

Catalogue, exhibition (German).

Catalogue of Swiss clocks and watches for an exhibition in the Jegenstorf castle.

R2331 Schild, A**A. Schild SA 1896 - 1946**

Switzerland: Vogt-Schild, 1946, 31 x 22 cm, 136 pp, 65 ill, 19 plates.

History (French?, German).

Publication for the 50th anniversary of the company.

R2332 Schild, A**Cinquantième anniversaire A. Schild S. A. Assa**

Grenchen: A. Schild, 1968, 4to, 103 pp, 16 ill.

History (French).

R2333 Schindler, G**Alte uhren**

ein handbuch für sammler und liebhaber

Munich: Deutscher Taschenbuch-Verlag, 1981, 19 cm, 219 pp, b/w ill.

Collecting (German).

Introduction to collecting antique watches and clocks.

R2334 Schindler, G**Uhren**

Munich: Heyne, 1975 (nd), 18 x 12 cm, 224 pp, 100 ill.

Collecting (German).

Several editions including 1976 (3rd), 1978 (5th), 1987 (11th), 1989 (12th).

"Indispensable for the beginner and advanced collector. Primarily clocks, but including watches and with a chapter on copies and forgeries."

R2335 Schindler, G**Uhren, stile und design**

stilkunde für freunde alter und neuer uhren

Stuttgart: Rühle-Diebener-Verlag, 1986, 25 cm, 288 pp, 191 ill.

- History (German).
Timepieces, style and design, for friends of old and new timepieces.
"A textbook or overview of design and aesthetic considerations in creating a clock throughout the ages.
One of very few texts on the subject."
Only clocks?
- R2336 Schindler, G**
Uhrenfachbuchsammlung
nd, 21 x 15 cm, three parts and two supplements, over 200 pp.
Bibliography, collection, catalogue (German).
Catalogue of the sale of Georg Schindler's book collection containing over 3000 titles. With sale prices.
- R2337 Schirmer, B; Mollnitz, H; Schmiedchen, C**
Fachzeichnen für uhrmacher
Berlin: Verlag Technik, 1982, 22 x 15 cm, 128 pp, ill.
Technical (German).
Konstruktion – Schaltzeichen – Schaltungen
Technical drawing for horologists.
- R2338 Schlup, M (ed)**
Biographies neuchâteloise
Hauterive: Editions Gilles Attinger, 1996 to 2008, 8vo, 5 volumes.
Biography (French).
Often listed under the name of the publisher Gilles Attinger.
Volume 1 (1996, 287 pp) includes Ferdinand Berthoud, Abraham L. Breguet, Jacques Frédéric Houriet, Henri-Louis and Pierre Jaquet-Droz, and Daniel JeanRichard.
Volume 2 (1998, 313 pp) includes Louis Benoît (father and son), Edouard Bovet, Frédéric A. Courvoisier, Jean-David and Jean-Auguste Maillardet, Phinée Perret and Louis-Frédéric Perrelet.
Volume 3 (2001, 355 pp) includes Ulysse Nardin, Jules-Frédéric-Urban Jürgensen, Charles-Edouard Guillaume and Georges-Frédéric Roskopf.
Volume 5 (2008, 352 pp) includes Gérard Bauer and Sydney de Coulon.
- R2339 Schmeltzer, B**
Die automatische armbanduhr
von den anfangen bis heute
Germany: Verlag Karin Schmeltzer, 1992, 32 x 23 cm, 224 pp, 621 b/w ill, 170 col ill.
Description, history (German).
Automatic wrist watches from the beginning to today.
- R2340 Schmeltzer, B**
Taschen und armbanduhren
richtig sammeln und bewerten
Germany: Verlag Karin Schmeltzer, 1989, 31 x 23 cm, 176 pp, 500 ill.
Collecting, description, price guide (German).
A book for building a collection. The systematic collecting of watches with discussions of values, quality estimation, determination of age, feasibility of repair and repair costs.
- R2341 Schmeltzer, B**
Wie alt ist meine taschen oder armbanduhren
Germany: Schmeltzer, 1988 (1986), 32 x 22 cm, 159 pp, 350 ill.
Description, history, technical (German).
"Für den Sammler und Uhrenfreund, von der Spindel-Taschenuhr zur Quarz-Armbanduhr, die Geschichte der tragbaren Uhr von 1780 bis 1980".
How old is my pocket or wrist watch. A summary of major companies with technical information on watches from 1780 to 1980.
- R2342 Schmid, F**
Exportindustrie und auslandszoll
eine untersuchung der wirkung der ausländischen zolle auf den absatz und die rentabilität der deutschen uhrenindustrie
Freiburg: Jos Waibel, 1932, 8vo, 130 pp, ill, plates.
Business (German).
Exports industries and foreign tariffs, an investigation of the effects of foreign tariffs on the market and the profit of the German horology industry.
- R2343 Schmidt**
Le chronographe Schmidt
Paris: F. Leve, ca 1900, 23 x 18.5 cm, 8 pp, 12 ill.
Description (French).
- R2344 Schmidt, CH**
Die englischen pendeluhren
und zwar thurmuhren, hausuhren, controluhren und astronomische regulatoren sowie taschenuhren und chronometer
Weimar: Voigt, 1856, 203 pp, 72 ill on 5 plates.
(German).

R2345 Schmidt, F; Jendritzki, H; Brauns, W**Lehrbuch für das uhrmacherhandwerk, volume 2**

Berlin: Michael Stern (Halle: Wilhelm Knapp), ca 2000 (1951), 21.0 x 14.5 cm, 414 pp, 350 ill.
Repair (German).

Volume 2 by Schmidt, Jendritzki and Brauns to accompany Böckle and Brauns "Lehrbuch für das uhrmacherhandwerk", which see.

The 1951 edition is reproduced on a CD Rom; see Stern "Horology CD Roms", CD 3.

R2346 Schmidt, FA**Belehrungen für die jenigen welche taschenuhren**

tragen in absicht ihrer beschaffenheit

Leipzig: Siegert, 1802 (1795), 19 x 12 cm, 117 pp, 1 plate (104 pp, 1 plate).
(German).

Instruction for the pocket watch carrier. With reference to their construction, their examination, their purchase, their improvement and their regulation. With an appendix on wall and table clocks. Not for craftsmen and watchmakers, but for the public.

Baillie says "He clearly knows his subject, and gives much good advice."

R2347 Schomann, N**Das richtige und schnelle gangsetzen des freien schweizer ankeranges**

Ulm: Wilhelm Kempfer, Neue Uhrmacher-Zeitung, 1950, 20.5 x 14.5 cm, 24 pp, 7 ill.

Technical (German).

"Ein ausbildungslehrgang zum perfekten gangmacher durch selbststudium mit sieben fachtechnischen abbildungen".

The correct and best Swiss lever escapement, an advanced education for the escapement maker by self instruction with seven technical lessons.

R2348 Schoof, WG**Improvements in clocks, watches and marine chronometers**

London: John Austin, 1898 (1874), 16 pp.

Technical (English).

See Chamberlain "Its about time" where Schoof's ten tooth and five tooth lever escapements are described. See also Patent Office "Patents for invention - abridgements of specifications class 139, watches, clocks and other timepieces 1855-1930" (patents 1873-3617 and 1874-1249).

The title "Lever escapement for watches and marine chronometers" and date of 1874 are used by Tardy and Robertson, but Chamberlain suggests these refer to articles in the Horological Journal.

R2349 Schreiber, E**Vollständiges handbuch der uhrmacherkunst**

namentlich in bezug auf thurm wand und stutzuhren, taschenuhren, ferner astronomische und nautische uhren, sowohl hinsichtlich ihrer konstruktion und regulirung als auch ihrer reparatur

Weimar: Voigt, 1869 (1848), 8vo, 647 pp, 27 plates with 358 ill (2 volumes 596 pp and atlas of 27 plates with 358 ill) (396 pp, 22 plates).

Repair (German).

See Robertson and Tardy who list 4 editions (1848, 1860, 1865 and 1869) and a new edition by Grosch "Praktisches handbuch fur uhrmacher" (1877 and 1907), which see.

Complete handbook for watchmakers; namely on tower, wall and table clocks, pocket watches, additionally astronomical and marine clocks, with respect to their construction and adjustment, also their repair.

R2350 Schroeder, Bill**Antique watches, collectors illustrated price guide****Antique watches with current values 1978-1979**

USA: Collector Books, 1980 (1977), 8.5 x 5.5 inch, 63 pp, ill (60 pp, ill).

Price guide, collecting (English).

The two different titles are probably two editions of the same book.

American watches.

Said to emphasise watch cases from the 1880's but apparently it has illustrations of movements (wrist and pocket). It includes prices of movements and cases.

This may be the same book as Stark "Antique watches with current values".

R2351 Schuckberg, E**Anweisung zur behandlung und regulierung**

aller thurm, wand, stutz und taschenuhren

Nordhausen:, 1847, 12mo.

(German).

Instruction on the handling and adjustment of all tower, wall and table clocks and pocket watches.

R2352 Schulte, K**Lexikon der uhrmacherkunst**

Munich: Callwey (Bautzen: Hubners Verlag) (Berlin: Schulte), 1978 (1901), 22.0 x 15.5 cm (23 x 16 cm), xvii, 959 pp, 224 ill (362 pp, 177 ill).

Biography, dictionary (German).

The reprint is of the second edition, originally published in two parts; A-K in 1902 and L-Z in 1903.

“Handbuch für alle gewerbetreibende und kunstler der uhrenbranche”.

A 17 page name list (people for whom biographical notes are included) followed by about 2000 alphabetical entries for horological professionals and artists including numerous biographies.

[reprint, good?] Said to be the German equivalent of Britten's handbook. However it appears to be much more descriptive and biographical with less technical information.

The illustrations are poorly reproduced in the reprint.

R2353 Schultz, W

Our watches and clocks and how to manage them

Unsere zeitmesser und ihre behandlung

Nos montres et nos horloges et des soins a leur donner

Vara tidmatare och deras behandling

Berlin: (London:) (Stockholm, Sveriges Urmakareforbund) (Berlin: Carl Marfels), ca 1970 (1900), 21 x 13 cm (23 x 15 cm), 47 pp, 26 ill (15 pp, 24 ill) (31 pp, 26 ill).

Description (English, French, German, Swedish).

Produced in a number of single language editions (certainly 1901, 1908, 1912 and 1925). The English translation is by Hertz and the French by Gros.

There is a modern reprint of the 1925 German edition circa 1970.

R2354 Schultz, W; Kames, A; Gros, Charles

Der uhrmacher am werktisch

L'horloger a l'établi

De horlogemaker aan de werkbank

Manual del relojero, guía practica des reparador y repasador

Bruxelles: Editions Collections Livres (Berlin: Michael Stern) (Berlin: Deutschen Uhrmacher Zeitung) (Berlin: Carl Marfels; Paris: ; Neuchâtel: Journal Suisse d'Horlogerie), 2001 (1902), 21 x 13 cm (24 x 16 cm), CD Rom (552 pp, 395 ill) (483 pp, 352 ill, 6 plates) (371 pp, 268 ill, 5 fld plates) (237 pp, 232 ill, 5 fld plates).

Repair (French, German, Spanish, Italian, Dutch).

At least nine German (revised by Kames) and French editions (as well as other languages) have been produced in various paginations between 1902 and 1941.

The French translation is by Charles Gros and was originally produced in parts in wrappers.

There are modern reprints of the German 1919 edition (499 pp, 352 ill, 6 plates) and the 1910 French edition (428 pp). Also, the 1933 edition is reproduced on a CD Rom; see Stern “Horology CD Roms”, CD 4.

“The watchmaker at his workbench”, a manual and reference book for the repair of pocket watches.

R2355 Schwanatus, W

Der taschenuhrgehausemacher

ein praktisches handbuch für uhrmacher und goldschmiede

(Bautzen:) (Berlin: R. Gensch), nd (1884), 24 x 15 cm, 79 pp, 10 ill (72 pp, 10 ill) (44 pp).

Repair (German).

Produced in three editions (1884, 1894 and ?) and a recent reprint. There is a 1932 printing which is presumably an early reprint or the 3rd edition.

The pocket-watch case maker, a practical handbook for watchmakers and goldsmiths.

R2356 Schwanatus, W; Fenimore, W

A practical treatise on repairing watch cases

England: Pierhead Publications (USA: American Reprints) (USA: Arlington Book Co.) (Chicago: Hazlitt & Walker), 2001 (1909), 19.0 x 13.5 cm, 34 pp, no ill.

Repair, tools (English).

At least three reprints in 1993 and 2001, and one undated.

Two separate essays by Schwanatus (26 pp) and Fenimore (8 pp). The first by Schwanatus is said to be a shortened translation of his booklet “Der taschenuhrgehausemacher”, probably derived from the first edition of that work.

[1st edition, good] Schwanatus describes in detail re-soldering pendants, lining bow holes, repairing joints and bezels, correcting snaps and removing dents. The lack of illustrations is annoying, but the instructions are clear.

Fenimore, in contrast, describes case problems and comments in general terms on their repair, without enough detail. He does, however, give some useful hints for diagnosis.

R2357 Schwarz, Zsigmond

A hengerjarat mukodese es javitasa

Budapest., 1922, 8vo, 100 pp, 34 ill.

Repair, technical (Hungarian).

The cylinder escapement and its repair.

R2358 Schwarz, Zsigmond

A horgonyjarat

Budapest., 1923, 8vo, 115 pp, 32 ill.

Repair, technical (Hungarian).

The lever escapement and its repair.

R2359 Schwarz, Zsigmond

R2359 Schwarz, Zsigmond

A komplikalt zseborak

Budapest:, 1928, 8vo, 198 pp, 109 ill.

Repair (Hungarian).

Complicated watches and their repair.

R2360 Schwarz, Zsigmond

A zseborajavitasa

Budapest:, 1924, 8vo, 107 pp, ill.

Repair (Hungarian).

Watch repair and the lever escapement.

R2361 Schwarz, Zsigmond

Oras szakrajzok

Budapest:, 1925, 8vo.

(Hungarian).

Tardy says "Livre de l'horloger".

R2362 Schwarzer, I

26 wochen grundlehre der uhrmacher

herausgegeben der redaktion uhrmacherkunst

Halle: Wilhelm Knapp, 1948, 33 pp, 32 ill.

Technical (German).

At least 2 editions.

26 weeks basic learning for horologists.

Technical drawings.

A supplement to Bockle and Brauns "Lehrbuch fur das uhrmacherhandwerk"?

R2363 Scotchford, TC

A treatise of the detached lever escapement

and a dissertation on watch motions

London: Thomas Charles Scotchford, 1866, 19.5 x 13.0 cm, 64 pp, 12 plates.

Technical (English).

Gardner "Catalogue of the Torrens collection" specifies 19 plates, but there are 12 plates with 19 illustration on them. The author's name has been incorrectly given as Scotchforth.

Reprinted in the Horological Journal in 1881-2.

The text is continuous, without chapters, but there is a table of contents listing 46 topics.

[1st edition, fair?] The preface states the book is "to explain to gentlemen unconnected with the business the construction of the lever watch escapement" and to "give the best information to the trade". The book aims to "converse (on) correct mechanical principles and the cause of things" with a "new explanation and theory of integration".

The first 14 pages explains the lever escapement. Although largely intelligible, it is strange, going from general principles to obscure details. It is of little use to "gentlemen", who certainly couldn't comprehend the rest of the book, and I doubt if the "trade" would learn anything.

The theory of "integration" is introduced on page 15. This has nothing at all to do with the concept of integration in mathematics. Scotchford begins by stating the obvious, that a beat is composed of two parts, when the train is locked and when it is free to impulse the balance. If a beat is represented by "1" then these two parts must be fractions that add up to "1". So for a watch to keep time accurately, if the fraction of time occupied by one part varies then the fraction for the other part must vary so that the sum remains unity. He then wanders off to vaguely discuss why in reality beats vary in time, noting that small errors cannot be detected in a single beat or even a few beats. And so aggregate errors over a period of time must be used. From this he comes up with the very strange suggestion that "a small amount of irregularity in the motion of the train, or of the main-spring, will probably do more good than harm" because it will lead to gains and losses that cancel each other out. No mention is made of this theory in the rest of the book and so it serves no purpose.

After this diversion and an unsuccessful attempt to explain how to make a Savage two-pin escapement, Scotchford explains how to draw the pallets for a 15-tooth escape wheel. Unfortunately I know little about drawing escapements and Scotchford's approach is completely different from others I have seen. Allix "Postal bid catalogue 1" says "according to Baillie it is all nonsense". This may be correct and I certainly felt uneasy about the explanation which covers 10 pages and many of the illustrations. This is followed by an equally obscure discussion of forces and equilibrium which occupies much of the rest of the book. I had no desire to put in the necessary work to understand it and I cannot comment on it except to say I have some doubts about the validity of it.

This book reminds me of another I have read where a very technical approach is used to give an air of credence to nonsense. I suspect this is true of Scotchford's writing, but am not sure enough to condemn the book. Hopefully someone will put the effort into analysing the arguments and explain them correctly.

R2364 Seconds' Practical Watchmaker

The watch and how to repair it

New York: Excelsior Publishing, 1885, 250 pp, ill.

Repair (English).

Written by Fritts?

This may be the first edition of Fritts "The watch adjuster's manual" (which see) or the second edition of "A practical treatise on the balance spring".

R2365 Segal, B**Watchealing**

the modern method of horological hospitalisation

California: The House of Horological Learning, 1954, 8vo, 143 pp, ill.

Repair (English).

25 chapters.

Simple instructions for the novice to learn watch repair. With pictures and listings of watch parts, tools and repair procedures. It also contains pages of tips and tricks for the watchmaker.

R2366 Segond, P**Contribution a l'étude des lubrifiants**

huiles d'horlogerie

Genève:, 1910, 22.5 x 14 cm, 52 pp, 10 fig.

Technical (French).

Listed in Tardy.

Contribution to a study of lubricants, horological oils.

R2367 Segurier, M**Echappement a ancre**

Paris:, 1845.

Technical (French).

Listed in Robertson and Tardy.

R2368 Seibel, E; Hagans, OR**Complicated watches**

Colorado: Roberts Publishing Co, nd (1945), 23.0 x 15.5 cm, 136 pp, 152 ill.

Repair, technical (English).

Translated, compiled and edited by the authors from the writings of B. Humbert, Louis and Samuel Levin, W.H. Samelius, G.T. Gruen, J.E. Coleman, B. Hillmann and W.H. Widiger.

There are both hard back and soft cover printings. It is unclear whether the soft cover is a later reprint; it has no reprint information and only gives the original publication date.

The first section, pages 5-77, is a translation of Hillmann "La reparation des montres compliques". It describes alarm, calendar, chronograph and repeater mechanisms with notes on faults and correcting false striking of repeaters.

The second section, 32 pages, gives further descriptions of chronograph mechanisms and details of chronograph repair. The repair notes are derived from Levin and Humbert, Humbert's being similar to but far less comprehensive than his "The chronograph, its mechanism and repair".

The book concludes with details of Elgin and Waltham timers, and notes on self-winding mechanisms, tourbillons, chronometers, and the Longines Lindbergh hour angle watch.

[1st edition?, very good] *The first section gives clear descriptions of a variety of mechanisms, but which would be easier to follow with a watch in hand. Included is some discussion of faults and salutary warnings not to attempt repairs without being certain of the problem. This part is excellent; it is professional, instructive and valuable.*

The remainder of the book is a rather strange mixture. The additional notes on chronograph mechanisms and repair tips are certainly useful, and the remarks on Elgin and Waltham watches of some value. But between these are some peculiar comments on time and motion studies and medical uses. And the final bits on self-winding, etc. seem to be page fillers rather than purposeful text. These can be ignored, especially as the photographs are poor.

From the quality of other publications by Hagans and the copyright notice in this book, I suspect Seibel provided the translation of Hillmann and the other useful parts, while Hagans provided the inconsequential bits and the money.

R2369 Seiko; Goodall, John**A journey in time**

the remarkable story of Seiko

Japan: Seiko Watch Corporation, 2003, 25.0 x 22.0 cm, 114 pp, ill, slip case.

History (English).

Thirteen chapters: Humble beginnings, Innovation and refinement, The development years, Competitions, The pinnacle of mechanical excellence, The day that changed the history of time, Kinetic watches, The grammar of design, The influence of global design, Sports watches, Sports timing, The innovation goes on, and Guardians of time.

[1st edition, excellent] *Nearly every book published by a watch company that I have read has been self-congratulatory advertising. The company concerned is portrayed as the only important watch manufacturer in the world and it has made the only important developments. Although introspection is to be expected, the result is often of little value and I have rarely learnt anything of interest or use.*

This book is a startling exception. It is a thoughtful and fascinating history of Seiko rich with information about the company and its products. Perhaps most notable is the careful study of how Seiko coped with market changes and the quartz revolution, with very good explanations of the roles of management, customer perceptions of the brand and research. Also I was pleasantly surprised that the discussion of

Seiko's electronic designs held my attention, even though I am only interested in mechanical watches, and the hybrid approach underlying the Kinetic and Spring drive watches is thought provoking. Even allowing for the necessary adulation, it is clear that Seiko has been and is a very important horological innovator. If nothing else, the chronographs with balance staff heart cams, not mentioned in any other book I have read, point to a creativity not found in many more illustrious companies. As the author notes, many "new companies were in the business of niche marketing ... these were selling an image; the quality and technical features took second place to the brand name". Of course there are companies that place quality and innovation at the forefront, but I doubt if any deserve to outrank Seiko. My only disappointment is the lack of any context. Seiko is viewed in virtual isolation and other companies, in particular other Japanese watch makers, are not mentioned. Some examination of contemporary companies would have enhanced the book without detracting from the focus on Seiko. But this does not really matter in an otherwise excellent book.

[Remark] Reading the book left me with three puzzles to sort out.

First, the zaratsu method of polishing is mentioned, but I have been unable to find out anything about it. The Japanese have always been very sophisticated metal workers and it would be nice to know something about this technique used on Seiko watches.

Second, there is apparently a North Pole of Inaccessibility! This left me wondering if the author was making a joke until an internet search told me it is a real point defined as the point in the Arctic farthest from any coastline.

Third, when discussing Mr Ohba, who had this odd urge to walk across the Arctic and Antarctica, I read that "the situation in the southern hemisphere is the opposite ... the sun rises in the east, passes to the north and sets in the west". So, in the northern hemisphere it rises in the west, passes to the south and sets in the east? No wonder I was confused the last time I visited London! And can determining north (or south) using a watch and the sun be possible if you don't know local time? I would have thought longitude had a role to play ...

[Remark] When I heard of this book, I contacted Seiko and asked how I could get a copy. Seiko posted it to me for nothing. A few months later, while searching an internet book site I found a copy for sale in England for US\$241.43! This is only one example of overpricing, which is surprisingly common. I hope the bookseller did not get a buyer.

R2370 Seitz

Catalogue of watch materials and tools

Switzerland: Bergeon & Cie, nd (ca 1944), 27 x 21 cm
(21.0 x 15.0 cm), 59 pp, ill (30 pp, ill) (40 pp, ill, 2pp price list) (76 pp, ill).

Repair, tools (English, German).

Several editions with various numbers of pages and sizes. The 1946 (40 pp, ill, 2pp price list) edition includes photographs of the Seitz factory.

The booklet "Führer für die Verwendung synthetische Steine" is presumably the German version.

A catalogue of Seitz jewelry tools, jewels, bushes, staking tools, etc.

The 1946 edition has a 3 page discussion of watch repairing by Guye.

[1946 edition, good] In addition to listing tools, the catalogue is useful because it provides instructions for the use of the jewelry tool and its accessories, and for pivot straightening.

R2371 [Sekonda]

The making of time

history of watchmaking from Sekonda

Russia: , nd, 23 pp, ill.

History (English).

History of watchmaking from Sekonda.

R2372 Selby, Isabella de Lisle

Identifying wrist-watches**Armbanduhren, das neue kompakte bestimmungsbuch**

London: Quintet Books, 1999 (1997), 19.5 x 14.5 cm, 80 pp, ill.

Illustration (English, German).

[1st edition, mediocre] A pocket book similar to her previous tome. Pretty pictures of the cases and dials of expensive watches which are of little relevance to the title. I found it uninteresting.

R2373 Selby, Isabella de Lisle

Wrist-watches**Les montres bracelets**

the collectors guide to identifying, buying and enjoying new and vintage wristwatches

London: New Burlington Books and USA: Courage Books, 1994, 31.0 x 24.0 cm, 80 pp, plates.

History, illustration (English, French).

8 chapters: What makes a wristwatch tick? (9 pages); Interesting and complicated movements (8 pages); Designs over the decades (11 pages); Jewellery watches (6 pages); Sports watches (10 pages); Classic collectables (8 pages); The Swatch phenomenon (8 pages); and Tips for collectors (6 pages).

Followed by a chronology of wristwatch invention (2 pages), glossary (3 pages), useful addresses (1 page), and index (1 page).

[1st edition, mediocre] An introductory description of high quality wrist watches and their types. Superficial explanations of how watches work and complications with lots of pretty photographs of dials

and potted histories of the common “up market” companies.

I am aware that what I see as below par another person may find valuable. For example, a person with a passing curiosity about watches will not buy Kahlert, Muhe and Brunner. But they may buy a book like this one and, through reading it, develop their interest to the point where they move on to better things. But in the context of this bibliography, which such a novice probably would never see, I found this book superficial. It seems to be directed at wrist watch collectors who are only interested in appearance and status and who want to learn as little as possible.

R2374 Selwyn, A

Jewellers' and watchmakers' pocket book

London: Heywood & Co, 1951, 13 x 8 cm, 503 pp, ill.
(English).

4 sections: Weights and measures, Metals, Gemstones and Horology. The horology section, written by Haswell, contains chapters on time (12 pages), clocks (56 pages) and watches (34 pages including watch movements, calendar and self-winding watches, watch and motion work trains, balances, escapements, glasses and watch timers). There is an appendix on commercial and general matters.

R2375 Selwyn, A

The retail jeweller's handbook

and merchandise manual for sales personnel

London: Heywood, New York: Chemical Publishing, 1968 (1945), 22.0 x 14.5 cm, 381 pp, ill, plates (520 pp, ill, plates) (480 pp, ill, plates).

Repair, technical (English).

Printed in at least 1945, 1946, 1948, 1950, 1951 (5th edn, 488 pp), 1955, 1962 (7th edn) and 1968.

The first 5 editions of “The retail jeweller's handbook” have no direct information on watches or clocks. The 5th edition (and previous ones?) is divided into four parts: Merchandise for personal wear; Materials used for jewellery; Manufacture of jewellery; and In the shop. The appendix deals with weights, melting points, specific gravity, and gold, silver and diamond prices. Pages 423-488 are advertisements and other editions include advertisements in the pagination.

The 1955 6th edition (and presumably the later ones) are said to contain an additional section on clocks and watches, but this may just be confusion with “Jewellers' and watchmakers' pocket book”.

[5th edition, mediocre] This edition has some marginal interest. It contains about 100 pages on materials including a chapter on hallmarking. But it is simply a descriptive guide to jewellery and, although interesting in its own right, it is irrelevant to horology except for the advertisements for watches. Because the later editions are smaller, I suspect the watch information in them, if any, would be brief and unimportant.

In 2003 prices varied from a sensible US\$8 to an unrealistic US\$125. Which is common for booksellers.

R2376 Seneca, B

Les inventeurs du temps

trésors de la haute époque horlogère (1500-1700)

France: Degeorge, 2009, 4to, 175 pp, col ill.

Catalogue, illustration (French).

Catalogue of an exhibition of 120 16th and 17th century watches loaned to the Musée d'Arras by private and public collections. The exhibition was prepared by Bernard Seneca, watchmaker, restorer and curator of science.

Described as the “best book of pocket watches 16th to 18th century” and a “merveille”. The one two-page spread I have seen suggests it may be more coffee-table than useful.

R2377 Seneca, B

Les maitres du temps

l'âge d'or de l'horlogerie (1750-1850)

Arras: , 1998, 4to, 80 pp, ill.

Illustration (French).

Exhibition catalogue?

R2378 Sermier, C; Papi, G

High-end horological finishing and decoration

Finitions & décorations horlogères

Uhrenfinissierungen & Verzierungen in der Haute Horlogerie

Acabados y decoraciones relojas

Switzerland: Audemars Piguet, ca 2007, 21.5 x 27.5 cm, 128 pp, ill.

Watch making (English, French, German, Spanish, Japanese).

In three parts:

Part one, Finishing (32 pages): Bevelling, Flanks, Black polishing, Finishing drilled holes.

Part two, Applications (42 pages): Wheels and pinions, Screws, Pins, Pivots.

Part three, Decorations (20 pages): Engraving, Chasing, Engine-turning, Cotes de Geneve, Stippling, Openworking, Sunray-brushing, Snailing, Circular-graining, Electroplating.

In addition there are an Editorial, Foreword, Conclusion and Glossary.

[1st edition, review by Fortunat Mueller-Maerki, good] When I first learned about this new addition to the horological literature I was quite excited. There is - to the best of my knowledge - no other in-print book (and hardly anything in the historic literature) devoted to this subject area. Publications covering

manual finishing processes for watch movements are rare. George Daniels in "Watchmaking" briefly covers some of the techniques, but not all of them, and in less detail.

The techniques covered (corresponding to chapter headings) are: 1. Beveling, 2. Flanks, 3. Specular Polish (black polish), 4. Finishing drilled holes, 5. Engraving, 6. Chasing, 7. Engine Turning, 8. Côtes de Genève, 9. Stippling, 10. Openworking (skeletonizing), 11. Sunray-brushing, 12. Snailing, 13. Circular graining and 14. Electroplating. They are what distinguishes a superb, high-end, hand-finished watch from your run-of-the-mill products. The author clearly knows his subject well; he was the principal of an independent Swiss workshop (Renaud & Papi) that - as a subcontractor - for many years specialized in carrying out these operations for a small number of exceptional pieces on behalf of high-end Swiss luxury brands. (More recently, that firm was acquired by Audemars Piguet, and now works mainly for that brand).

Mr. Papi (with the help of writer Caroline Sermier) describes each of the 14 techniques (often both in their original manually applied ways and with their modern machine approximations) and illustrates the procedures with numerous, clear and helpful photographs and line drawings. He describes how and why these steps are applied to wheels, pinions, plates, screws, pins and pivots. He comments on both the functional and the aesthetic benefits of each technique. In the opinion of this reviewer, the book would have been a most valuable addition to the horological literature had the text been limited to that.

But apparently the marketing staff at Audemars Piguet had higher aspirations: They wanted a fancy, high class publication which they could distribute worldwide (there are six different language editions) to all purchasers of their hand-finished, ultra high grade watches. What could have been simply a technical, factual, and descriptive text on hereto poorly documented watchmaking techniques was "augmented" to primarily serve as a book that would help increase the mystique and prestige of a hand-finished watch, and justify the extremely high prices charged for such products. In the opinion of this reviewer, this secondary mission is now too obvious and too transparent in the finished book, and I think the book would have turned out more "high class" and more valuable, if it had strictly limited itself to technical content, and avoided editorializing on the merits of hand finishing. Maybe I am overestimating the intelligence and level of horological interest of the buyers of such watches, but a more subtle approach would achieve more. If you are a perfectionist you can simply describe what you do, and don't need to talk negatively about the less exacting technology used by your competitors.

Somewhat surprising for a high quality firm like Audemars, the publication apparently did not get the same kind of attention to detail as is given to their watches: The English text is obviously a translation from the French, and the language does not always flow smoothly. While the translator obviously knows the horological terminology (and the narrative is perfectly understandable), this reviewer got the impression that the text was never reviewed by a native English speaker who is also a practicing, watch-making professional. Reading some sentences feels as if the translator had translated all the facts of the sentence, rather than the feeling expressed in the original version. Furthermore there are a few silly, obvious errors, which careful proofreading or copy-editing should have caught (e.g. on pages 56 and 79). That said, the book remains a unique and most valuable source of information on its subject and warrants careful study by anybody seriously interested in hand-finished, high grade watches; there is no other serious, comprehensive text available on this subject.

[Remark] The key to this book lies in the editorial by Papi: "It is morally correct that a client be accurately informed regarding the true nature of the finishing details. Moreover, this implies that the sales personnel be capable of explaining and drawing attention to them. ... this work is dedicated to all enthusiasts, collectors ...".

Thus the book is primarily a sales manual. This becomes clear as we read it. Each aspect of finishing is covered by explaining the part and its terminology, giving a few comments on how it is made, and then describing how it is finished. The descriptions are general, vague and explain what is done, but how it is done is covered superficially.

The editorial begins with: "we are clearly seeking to raise awareness of the existence of 'industrial' finishing that is passed off as 'handcrafted' finishing ...". Seen in this light, the book is very good. It provides the lay person with enough insight into finishing to appreciate this aspect of watch making.

R2379 Serres, M

Van Cleef & Arpels

the poetry of time

Paris: Editions Cercle D'Art, 2009, 4to, 216 pp, 211 ill.

Illustration (English).

"A visual anthology of the famed French jeweler's history as a purveyor of haute timepieces and craftsmanship in fine watch-making."

"This collector's hardcover chronicles Van Cleef & Arpels' storied evolution from the unique inspired watches of its earliest days creating jewels that tell time, to its emerging classics that now cover categories spanning from enameled tourbillons to poetic complications to high jewelry watches and beyond. This book explores the beautiful watches created by this famous jeweller. Combining the spirit of invention with the love of precious gems, Van Cleef & Arpels create watches with delicate and elegant lines, pushing imagination and ingenuity to the forefront to create beautiful items of jewellery."

The legendary business of Van Cleef & Arpels was established in Paris in 1898, following the marriage of Alfred Van Cleef and Estelle Arpels. The couple, along with Estelle's brother Charles Arpels, opened their first boutique in 1906, soon after joined by Julien Arpels.

After more than 100 years, Van Cleef & Arpels are still renowned for their expertise in precious stones and have won particular acclaim for a ground breaking gem-setting procedure known as the 'serti invisible' (invisible setting), whereby stones and gems are set in a side-by-side formation with no apparent metal or mounting visible from the front.

R2380 Seth Thomas**Seth Thomas watches 1885-1915**

USA: American Reprints (USA: National Association of Watch and Clock Collectors) (USA: Seth Thomas), 1981, 9 x 6 inch, 94 pp, ill.

Catalogue (English).

Published for the 1981 Annual Convention of the NAWCC and then reprinted by American Reprints. Four sections: Reprints of 13 Seth Thomas trade catalogues; Catalogue of models and grades; Seth Thomas watches, thirty years of manufacture; and United States patents granted to Reinecke and Higginbotham for watch features utilised by the Seth Thomas company.

[Review by Henry B. Fried] *This booklet containing actual reprints of old parts lists and Seth Thomas watch catalogues as well as information compiled from numerous trade and material journals was assembled by Chris Bailey, managing director of the American Clock and Watch Museum in Bristol, CT. Dan Gaenger of Long Island, authority on Seth Thomas watches and clocks, contributed his researches and catalogued a compilation of models and their grades.*

This 94-page compilation is the best collection of Seth Thomas Watch Company history, tables, materials and illustrations available to date in one volume. This was originally published for the 1981 NAWCC Convention and has now been reprinted for the general public. It contains pertinent material which has been extracted from over sixteen sources. This includes S.T. movements, watch materials and price lists. Virtually every S.T. movement is pictured in reproductions of engravings and line drawings. Seven photographs show the factory in different stages of development. Chris Bailey has also supplied a history of the watch company's operation, from its inception in 1886 to the end of its production of over four million watch movements in 1915.

Among the models seen in this book are the 18-size 3/4-plate gilded, and others such as those with the names: Centennial, Old Eagle, Maiden Lane, Old Century, (Fake) 23j, New Eagle, 20th Century, Henry Molineux, Edgemere, Eagle. In the material parts section, each part is pictured in actual size, In another section complete watches are pictured, one with solid nickel screwback case for \$3.65. The Maiden Lane, ornately engraved movement alone, sold for \$60.00, while the now rare 25j Maiden Lane is listed in 1909 for \$54.00. (Its original misprint lists this for \$30.00.) The various listings indicate the models' their grades, jewels, sizes, adjustments, type of regulator, hairspring, setting device, plate finish and names on their plates. This is a fine work for the collector.

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R2381 Shadwell, CFA**Notes on the management of chronometers**

and the measurement of meridian distances

London: J.D. Potter, 1861 (1855), 8vo, 228 pp, 7 ill (155 pp).

Description (English).

The 1855 and 1861 editions are available as Google Book PDF files.

The 1861 printing has nine chapters: Introductory observations (9 pages); Reception and stowage of chronometers on board ship (27 pages); On the determination of time (23 pages); On rating chronometers, simple method (14 pages); On rating chronometers (18 pages); On the chronometric determination of meridian distances (16 pages); Various examples of the computation of meridian distances (23 pages); On the determination of the meridian distance between two stations (7 pages); and On the mode of recording the results of chronometric measurements (10 pages).

There are 5 appendices: Table for converting time, or longitude, into decimals of a day (2 pages); Form I, chronometer journal (1 page); Form II, chronometer journal (2 pages); Form for exhibition of results (1 page); and Table exhibiting the rates of the chronometers of HMS "Fly", employed surveying on the coasts of Australia (5 pages).

[1861 edition, good] *This is almost a "manual, technical, navy, for the use of" being very clear and precise, and based on strictly defined methods. The relevant chapters, II, IV and V, provide detailed descriptions of how to handle chronometers on board ship and how to rate them.*

R2382 Shaffer, Douglas H**Clocks, the Cooper-Hewitt museum**

USA: Smithsonian Institute Cooper-Hewitt Museum, 1980, 28.5 x 22.5 cm, 128 pp, 115 b/w ill, 30 col ill. Collection, description, illustration (English).

Six chapters: Introduction (6 pages); Our basic clock (10 pages); Clocks from America (42 pages); Clocks from other lands (38 pages); Time in a pocket (17 pages); and Advice for collectors (2 pages).

There is a glossary, bibliography, list of other public collections, and an index.

[1st edition, fair] *A well illustrated introductory book with only 18 pages on watches and some brief advice for collectors. Most of the relevant illustrations are of enamel cases and the text provides a general history of styles.*

R2383 Shawkey, Bruce**Gruen wristwatches**

a collectors guide

USA: Bruce Shawkey, 2010, 28 x 21 cm, 198 pp, 500 b/w ill.

Illustration, collecting (English).

Spiral bound.

[1st edition, review by Fortunat Mueller-Maerki] Gruen watches are a rewarding area of horological collecting. While Gruen is an American watch brand, most of their wristwatches were made in Switzerland. They had innovative designs and were of high quality. The brand had a certain exclusivity, but their prices were - and are - mostly not in the prohibitive range. Compared to the big American made brands, or to the various famous Swiss brands, however, there are comparatively few published books on Gruen. I am aware of only four publications, three small, long out-of-print monographs, really more brochures than books dealing with Gruen history: 1st: Dietrich (1991): "A brief history of the Gruen Watch Company"; 2nd: AWI (1986): "Gruen watches - a special collection"; and 3rd: Fuller (1974): "The Priceless Possession of the Few" (NAWCC Supplement No.10). The fourth is Roy Erhardt's "Master Book - Gruen Guild", published 1993 as part of his spiral bound, price guides series.

The book under review is in many ways an improved re-edition of Erhardt's book which was the first effort to systematically document the Gruen history for the collecting public. Erhardt's book was the result of his purchase in 1991 (from an unknown vendor) of a 'Scrapbook' maintained between ca. 1930 and 1958. That scrapbook, containing about 4000 images (photographs or artists renderings), was not the result of systematic, ongoing and complete record keeping at Gruen, but a periodic effort by somebody at Gruen to record its history. The 'Master Book' label given that source by Erhardt is misleading. That list is missing dozens of models, if not more, but it remains the most authoritative source in existence. The scrapbook was cut up and the images were remounted to create Erhardt's book (but we know that Erhardt simply omitted all the models where the image had been removed or fallen out of the scrap book, and very likely in at least some cases also 'fiddled' with the data.)

Bruce Shawkey was able to acquire the original cut-and-paste pagemounts of the 1993 book from Erhardt's estate and, using improved modern digital technology, produce a 'catalog' that has much larger and vastly clearer images than the Erhardt book, and is better organized, but which omits the outdated and sometimes unreliable price information found in the Erhardt edition.

The new book consists of nearly 200 pages of larger than life-size wristwatch images. 90% of the pages show nine wristwatches each making the individual black and white images about 45 x 60mm (2 x 2 1/2 inches). The book covers men's wristwatches only, pocket watches and ladies' wristwatches were omitted. A short description of the history of the 'Master Book', a few pages on Gruen corporate history, and a handful of reproductions of Gruen vintage advertisements round out the publication.

Shawkey's book is a well produced, very useful and most welcome working tool for correctly identifying Gruen wristwatches. As such it is very valuable to collectors. But it does not fill the gap felt by students of horological history who continue to face a complete void when seeking a publication that describes the technical, design and business history of the Gruen brand and the Gruen company. The Gruen story deserves to be told, it is a key chapter - especially on the design front - of the history of the wristwatch in America in the first half of the 20th century. Let us hope that some potential author will tackle that challenge in the near future.

R2384 Shenton, Alan**Pocket watches 19th & 20th century**

Suffolk: Antique Collectors Club, 1996 (1995), 28.0 x 22.0 cm, 431 pp, b/w ill, 29 colour ill.

Dating, identification, illustration (English).

12 chapters: Verge watches (20 pages); Cylinder watches (32 pages); Lever pocket watches (English 82 pages and Swiss 40 pages), American lever watches (23 pages); Duplex watches (14 pages); Pin pallet lever watches (30 pages); Roskopf watches (18 pages); Chronographs (64 pages); Novelty watches (38 pages); Repeating watches (3 pages); Pocket alarm watches (22 pages); and Eight day watches (23 pages).

With a separate section of colour plates and an index of makers. Most illustrations are black & white photographs of watch dials and/or movements. There are a few other illustrations of patents, advertising etc.

[1st edition, excellent] The introduction provides some terse advice to help novice collectors appraise watches. From this I presume the purpose of the book is to provide a pictorial survey of watches to develop in the learner an understanding of styles and features. Each chapter then shows examples in roughly chronological order. Each watch is shown in one or more very clear photographs accompanied by information; often only a brief description, but sometimes including historical, technical and patent data.

Although the watches come from everywhere, they are examples of "ordinary" watches found in England. Unfortunately there is no bibliography (but there are many references scattered throughout the work) and the index only lists makers' names, omitting pointers to the other information in the text (most importantly, the many patents). Despite the fact that the book must be searched, because of the inadequate indexing, it does produce information that justifies the effort.

For the beginner and the person concerned with collecting or identifying more common watches it is to be strongly recommended.

R2385 Shenton, Rita**Christopher Pinchbeck and his family**

England: Brant Wright, 1976, 21.5 x 15.0 cm, 71 pp, plates.

Biography, history (English).

Numbered but unspecified limited edition of at least 400 copies.

Biography of the Pinchbecks.

[1st edition, fair] An interesting account of the Pinchbecks pieced together from contemporary documents. The family is noted for clocks and non-horological activities, but some references to watches occur.

R2386 Sherwood, NB**A practical treatise on watch repairing**

Nashville USA: J.E. Coleman (Chicago: Hazlitt & Walker), 1968 (1892), 20.5 x 14.0 cm (19.5 x 13.5 cm), 63 pp, 7 ill.

Repair (English).

Printed in 1892, 1894, 1905 and 1910, and the 1892, 1905 and 1910 printings are identical and described as the 3rd edition. No information on earlier editions has been found and I wonder if they ever existed.

Reprinted in 1968.

Seven chapters: The bench and its accessories, vise and oilstone (11 pages); Lathe appliances, Jacot lathe, depthing tool, expanding the web of a wheel (9 pages); Spreading tool, rounding-up tool, stud remover, opening the regulator, roller remover (8 pages); Replacing broken teeth, graining, polishing blocks (10 pages); Polishing steel work, polishing pivots, superiority of conical pivots (7 pages); The cutting engine, to cut escape wheels (5 pages); Replacing broken arbors, hardening and tempering (5 pages).

[3rd edition 1910, very good] The purpose of the book is to help the ordinary watch repairer in his daily work and it includes information on the "little things". Sherwood's aim is to show that the repairer can easily and cheaply make useful tools need for his work, starting with making a workbench. Indeed, although there are remarks on repair, the title should be "how to make useful tools".

Chapter 2 explains swing tools for filing and polishing flat in a lathe; using a depthing tool for topping wheels; and converting an uprighting tool to a staking tool and making punches and dies for it.

Chapter 3 describes making a die for spreading wheels; a stud remover; regulator cap holder; and a roller remover.

Chapter 4 describes a lathe fitting for graining; and tools for polishing wheels.

Chapter 5 describes converting a depthing tool into a staking tool.

Chapters 6 and 7 cover repairs without making tools.

A very good booklet, Full of practical techniques.

R2387 Sherwood, NB**Watch and chronometer jewelring**

USA: Arlington Book Co (Chicago: Geo. Hazlitt & Co), 1988 (1887), 21.0 x 13.0 cm, 120 pp, 8 ill (55 pp, ill).

History, repair (English).

Previously printed in 1887 and 1892. This book was first printed as a serial in the American Horological Journal from 1869, and then republished as a serial in Jewelers' Circular in 1879-80. So the Hazlitt monograph is marked 3rd edition.

The reprint is of the 3rd edition.

This book describes how a watchmaker can make a hole jewel from raw materials by the English method and then set it in a bezel.

[3rd edition facsimile, very good] The first part describes how to take a rough stone and, with a lathe and simple tools, slice, shape and drill it to produce a flat plate jewel or domed balance jewel. The second part describes making a bezel, setting the jewel, polishing the setting and fitting it to a watch. In this second part Sherwood describes the jewel setting tool (endshake tool). This was used by American companies to manufacture movements and a far better description of it is given in David "American and Swiss watchmaking in 1876".

For many people such a task will not arise in practice, so I consider this to be of historical interest as well as (or instead of) repair value.

Two books, this one and Higginbotham "Jeweled Bearings for Watches", cannot be easily separated. They cover almost identical material in much the same way and in about the same amount of text. The obvious difference is that Sherwood makes the reader work much harder by having almost no illustrations. Higginbotham is to be preferred for this reason, but Sherwood adds much flavour through his criticisms of contemporary bad practice, especially English jewellery methods.

See also Daniels "Watchmaking" for a modern approach.

R2388 Shinkle, J**Detached lever escapement study**

USA: Sandia Corp., 1965, 44 pp, ill.

Technical (English).

R2389 Shishkov, BI

Konstruktsiya shtampov v chasovom proizvodstve

Russia: Oborongiz, 1941.

Watch making (Russian).

Stamping machines for watch manufacture.

R2390 Shouffelberger, H

Wheels and pinions and how to determine their exact size**Dix tableaux pour déterminer la grandeur des roues et pignons d'horlogerie**

USA: Arlington Books (USA: Adams Brown Co) (Chicago: Hazlitt & Walker) (La Chau-de-Fonds:), 1998 (1879), 27.5 x 21.5 cm

(8vo), 9 pp, 10 pp tables (8 pp, tables).

Technical (English, French).

Translated into English in 1896 by Gribi and reprinted in American Jeweler "Watchmakers tables 1914".

There is a modern limited edition reprint (Adams Brown, 1977) and later reprints. The Arlington reprint is an enlarged facsimile.

Some sources give the author's name incorrectly as Schouffelberger.

General remarks on wheel and pinion sizes, a mathematical method of determining full diameters for gearing with true epicycloid addenda and 9 tables for different wheel and pinion combinations; a general table, tables of train wheels (of 60, 64, 70, 75 and 80 teeth with pinions of 6, 7, 8 and 10 leaves) and motion work. Other combinations can be calculated from the general table.

[1st edition, good] See also American Jeweler "Watchmakers tables 1914".

R2391 Shugart, C; Gilbert, RE; Engle, T

Complete price guide to watches

USA: Cooksey Shugart Publications (New York: House of Collectables), 2009 (1981), 21.5 x 13.5 cm, 1134 pp, ill, adverts (1017 pp, ill, adverts).

Dating, description, identification, makers, price guide (English).

Produced annually, with the 29th edition in 2009. Earlier editions had different titles and authors including:

Shugart: "The complete guide to American pocket watches" (1st edition).

Shugart and Engle: "The complete guide to American pocket watches" (2nd and 3rd editions).

Shugart and Engle: "The official price guide to watches".

The 14th edition has a lengthy introduction (about 90 pages, covering general information about watches and collecting) followed a retail price guide in four sections: American pocket watches, comic and character watches, European pocket watches, and wrist watches. The book ends with a section on swatch timepieces and a glossary on watch terminology.

The 22nd edition has an almost identical introduction (now 95 pages) followed by the price guides: American pocket watches, comic and character watches, European pocket watches, and wrist watches. The book ends with glossary on watch terminology; The section on swatch timepieces has been omitted.

[14th edition 1994, fair] This price guide seems to be the collectors' "bible".

The introduction and the notes preceding the European section are full of enthusiasm, but the information is patchy, disorganised and often superficial. Even though there are a few useful bits, such as the diagrams of regulator styles, it does not provide a good introduction to the subject and the absence of references to further reading is a pity.

Similarly, the price guide entries give some maker information, but not more than thumbnail sketches. The glossary and table of pronunciation at the end of the book are useful. My feeling is that there is not enough detail for the novice and too much for the experienced collector.

The price guide itself is somewhat vague, giving selected examples which can only be a very rough indicator. These are probably adequate for the majority of American timepieces, but not very satisfactory for the vast range of non-standard European products.

A useful book if you have the current edition and buy or sell a lot of watches, but not of much value otherwise.

[22nd edition 2002] The obvious differences between the 1994 and 2002 editions are the inclusion of more illustrations and the large number of "buyer beware" statements protecting the authors against people who imagine this book is indeed the bible. In addition, some obvious omissions and errors have been rectified and Swatch has vanished (apparently no longer a collector's fad).

Little has changed in 8 years other than the prices and my opinion is the same. As I don't buy and sell a lot of watches (and don't live in the USA) I almost never refer to it. I don't need the price information and there are far better identification books. It is simply a very comprehensive price guide and its value lies much more in the prices than the information.

[Remark] Somewhere I have made a passing reference to inflation. The 2002 edition of this price guide notes that a \$25,000 investment in 1975 might now be worth \$125,000; might because it rather depends on the perspicacity of the buyer. Actually, devaluation of the dollar during this period means that the investment would have to yield about \$96,000 simply to keep up with inflation and, allowing for other expenses involved in keeping the investment safe for 30 years, the profit is only about \$25,000 and not the \$100,000 implied by the authors. To offer such a growth estimate without standardising dollar values is meaningless and it can only serve the purpose of enticing the unwary by giving a fanciful impression

that vast gains can be made. It is worth remembering the author's "fine print" disclaimer that "the value of a watch may be \$5,000 today, \$1,000 or \$50,000 five years from now". To me it is in this aspect that the book fails. Although the authors quite rightly stress the need to learn about watches it does little to provide the necessary education and does nothing to direct readers to the many good books that can do so.

R2392 Shugart, C; Hanson, D**Collecting watches, instant expert**

New York: House of Collectables, 2004, 21.0 x 11.5 cm, 164 pp, ill.

Collecting (English).

Five chapters: What is an instant expert? (3 pages), Think and talk like an expert (78 pages), History (36 pages), The instant expert resource guide (9 pages), and The instant expert quiz (4 pages). These are followed by Glossary, Market trends and About the authors. The first 3 chapters form the text and the remainder are appendices.

[1st edition, mediocre] After I had ordered this book, but before I had got it, I resumed cleaning watches and doing minor repairs after a break of some years. I stripped and cleaned an ordinary American watch and then set about assembling it. After about an hour I still could not get all the pivots in their holes, so I muttered an impolite word and gave up. I felt rather depressed. If, after reading many repair books and repairing many watches, I could not do such a simple task, I was most certainly incompetent. The next day I remembered what I had forgotten. If a watch has a potence attached to the top plate then it must be assembled upside-down, building it up on the top plate instead of the pillar plate. I returned to my bench and got the offending watch together in a few minutes!

The word "oxymoron" sprang to mind. It is a word I like because it makes me imagine a stupid bull in a china shop and I had been stupid. But if after more than ten years I am not an expert it is impossible for anyone to become one after reading a 164 page book. The words "instant expert" are not an oxymoron but are simply mutually exclusive. In fact I discovered that the authors also realise this point. In their introduction they write "You must READ and study to gain an insight" and "Gain all the knowledge you can and LEARN all about the things you collect". So we can ignore the word "instant" and focus on how well such admonitions are developed.

This turned out to be difficult because the book is poorly organised and, in order to examine it, it is necessary to begin by listing the topics covered with a few remarks on them.

Chapter 1, What is an instant expert, poses a number of requirements as questions. No answers are given, but the stress is on developing non-instant knowledge.

Chapter 2, Talk and think like an expert, is the core of the book. The topics it covers, in order of presentation, are: Limit collecting to a defined area, US prestige watches (what they are), Comic character watches (short history), Repeaters (what they are, history, buying; there are 2 illustrations of chronograph mechanisms and none of the under-dial repeater mechanisms - but it doesn't matter as the novice reader would not know what he/she is looking at anyway), How to determine manufacturer and How to determine age (vague, of little use, and the comments on English hallmarks are incorrect), Appraising watches (guidelines for assessing condition), Collecting on a limited budget (suggests learning to clean watches and avoiding broken ones), The great American railroad pocket watch (history, discusses adjustment, double roller, pallets, regulator and other terms without any explanation of what they mean), Watch cases (gold standards, gold filled, etc.), Watch sizes (table of sizes), Opening cases (screw and hinged but snapped cases are not mentioned), Damaskeening, Care (get it cleaned, keep it dry, wind regularly), Examination before purchasing (general advice including some things which are next to impossible to detect, such as the difference between gilt brass and gold wheels - what to do is stated but the reader doesn't have the knowledge to do it).

At this point we are over half way through the chapter, have no idea how a watch works and have been presented with a lot of terminology which is almost completely unintelligible. The topics are not organised (starting with repeaters is ridiculous) and the information is vague. But, at last, we reach sections which should have come first:

How a watch works (undefined terms, poor illustrations with a fairly simplistic description, inadequate and crude explanation of escapements), Jewels, Winding and setting (including automatic mechanisms), Judging quality and a list of things to look for (many could not be understood by a novice let alone detected), Pin lever escapement (the Roskopf calibre and dollar watches), Essential terminology (list of dealer abbreviations which are not used anywhere in the book), Essential tools (loupe, screwdrivers, tweezers and case opener), Analysing the market place (how to sell your watches to a dealer; this follows up the exhortation in the introduction to "deal with reputable dealers you can TRUST"), and finally Swiss fakes (copies of American pocket watches).

Chapter 3, History, begins with an untitled section on pre 1800 history of watches (which is simply wrong) and a summary of American watchmakers between 1800 and 1850. The chapter continues with: Where watches are born (do a tour of Switzerland and France, preferably one led by the authors), Chronological list of American pocket watch makers, Production totals (for the above), Histories of major companies (very short and incomplete), A bit of wristwatch history (a list of dates and facts), Chronograph (superficial and far too late as chronographs have been mentioned many times before this), American wristwatch companies (Hamilton electric and Bulova Accutron), and finally European wristwatch companies (just a list of names).

A number of points are now clear. First, this is a book written by Americans, for Americans about American watches. A few mentions of un-American watchmaking appear, but it seems that the authors know very

little about such matters. Second, only two books are referred to; the authors' "Complete price guide to watches" and "Wristwatches" by Brunner and Pfeiffer-Belli (but whether their price guide or histories of companies is not clear). We are asked to "READ", but no suggestions are given. Indeed, only two book sellers are listed in the appendices; one, Arlington, no longer exists having been taken over by the other. (Actually Trantiques is a self publisher and reprint publisher, and other books seem to be incidental. There are important horological book dealers, but I don't think any of them are American.) Third, there is an underlying suggestion that collecting should be for profit, and buying and selling should be through dealers (which the authors are). However, there is no mention of dealer markups (at least 100% and often much higher) and the fact that if you buy a watch for \$500 you will sell it for no more than \$250 or have to wait a very long time to recoup your expenditure (which may be next to impossible when inflation is taken into account).

I think the real problem with this book is that it has been written by dealers who are, perhaps, experts (with regard to American pocket watches anyway). And one problem with experts is that they often have trouble understanding and thinking like novices. It is all so familiar to them that they don't realise that what they are writing is utterly obscure to the beginner!

Another problem is highlighted by the section "Analysing the market place"; buy your watches from dealers (a good idea if you are ignorant) and sell them back to dealers (a bad idea if you think you are investing in watches).

From my experience I have come to realise that dealers love ignorant collectors who cannot evaluate objects and often pay too much for objects they desire, or can be persuaded to buy something the dealer has been unable to sell for ages. Conversely, knowledgeable collectors love ignorant dealers. Like the one who sold me a "1930s" watch (because it had 1930 stamped on it) when it was an 1850s fusee watch; the number was, of course, the serial number.

The authors probably did not set out to, but I think they have written a "keep him ignorant" book. There are enough facts and lots of terminology to make the novice feel clever when in fact he is still ignorant and will be a very good customer. As I have pointed out elsewhere, facts alone enable you to win quiz shows but they are useless without an understanding of their significance and interaction.

[Remark] I decided to buy this book after reading the following description of it, which I have annotated: "A one-of-a-kind resource on how to organize a collection (no), the history of watches (poor) and how watches are made (no), on-line resources, plus many listings for museums, conferences, conventions, clubs, and associations. How do you tell the age of an American-made watch? What keeps a watch running for 24 hours? What is a repeater watch? (poor) Insider tips on what makes a watch collectable (none), what the hot watches are today (no), how to determine if a watch is real or fake (only American pocket watches)." Maybe we are reading different books?

Another thing I noted is that the authors say there are about 240,000 watch collectors in America. The conclusion is they do not read books. After all, most specialist books have print runs of a thousand or even less and there is most certainly not enough copies to go around. Probably the only books printed in large enough numbers are price guides and these are most certainly not educational. It seems most collectors must be ignorant which, of course, is what dealers want.

R2393 Sidenbladh, E

Urmakare i Sverige under aldere tider

Stockholm: Nordiska Museet (Stockholm: Norstedt & Soner), 1947 (1918), 9.5 x 6 inch (8vo), 256 pp, 62 plates (173 pp, 43 plates).

Makers (Swedish).

One source gives 260 pp, 83 ill (on 43 plates) for the first edition. The second edition has 129 ill (on 62 plates).

Dictionary of Swedish clock and watchmakers illustrated by pieces in the Nordiska Museet, Stockholm.

R2394 Sievert, H

Leitfaden für uhrmacherlehre

L'apprenti horloger

Guide manuel de l'apprenti horloger

Leerboek voor den horologemaker

guide et méthode d'étude pour apprentis et manuel pour maitres d'apprentissage

Berlin: Deutschen Uhrmacher-Zeitung, Paris.; Bolsward: Fédération des Horlogers Allemands (Paris: Henri Renaud), 1938 (1879), 22.0 x 14.0 cm, 530 pp, 193 ill, 5 fld plates (399 pp, 138 ill, 5 fld plates) (384 pp, 134 ill, 5 fld plates) (331 pp, 78 ill, 5 fld plates) (263 pp, 64 ill, 5 plates).

Repair (German, French, Dutch).

Another bibliographer's nightmare because it has been produced in at least 14 German editions and translations revised by different people, sometimes without acknowledging Sievert. Consequently the format and author are given erratically and it can be difficult to determine if a book is an edition of this or not. I think the editors and translators include:

Loeske, Kames and Schultz: German editions.

Fresard: French edition, 1910 (339 pp, 78 ill, 5 plates).

Pignet: French edition, circa 1920 (384 pp, 134 ill, 5 plates).

There is at least one reprint (of the 1914 edition).

Pignet's edition does not mention Sievert, with the implication that he wrote it rather than just edited or translated it. Also it is described as the "second edition" which may mean it follows Fresard.

Its date is given as circa 1900 or 1921; my copy is undated and so I don't know how the date was deduced.

Edition by Pignet (circa 1920): "Helpful guidance for the apprentice watchmaker. An introduction for the apprentice and manual for the instructor. With an appendix containing 289 questions and answers". There are 4 chapters followed by appendices and tables:

Chapter 1 (preparatory work, 27 pages) includes filing, steel, making tools, drills, screws, finishing steel and brass.

Chapter 2 (general horology, 24 pages) covers the laws of mechanics, gearing and trains.

Chapter 3 (pendulum clocks, 65 pages) includes the pendulum, motive force, pivots, the anchor escapement, special work (making pinions, wheels, escape wheels, barrels and anchors), striking work, Graham's escapement and instructions for making a seconds clock.

Chapter 4 (watches, 144 pages) includes tools, examination and repair, the cylinder escapement, balance spring, case and dial, jewellery, keyless winding and lever escapement.

The appendixes are questions and answers (33 pages), technical drawing (34 pages), trigonometry (20 pages), types of time (6 pages). The tables are for sizes of wheel and pinions (including Ingold fraise size), sizes of cylinder escapements and lengths of pendulums.

R2395 Sifakis, C; Sifakis, M-L

Beginners' guide to antique watches

USA: Drake Publishers, 1978, 23 x 15 cm, 128 pp, b/w ill.

Collecting, description, history, price guide (English).

A brief, introductory history with some notes on collecting.

[Review by Donald Summar, mediocre] This little book is an effort, though unfortunately not a successful one, to present an inexpensive book useful to the beginning watch collector. Interesting chapters include "What Makes a Watch Tick," which provides a useful introduction to the subject, and "Tales of Famous Watches," which deals primarily with the Lafayette watch stolen in 1824 and recovered in 1875. The usual historic bases are touched, from Peter Henlein's watch to early Waltham watches, with little that can not be found in other books. Although the Waltham history covers five pages there are no Waltham watches illustrated in the book.

There are many errors, such as the statement that "in the early days of watches, the (watch movement) pillars were visible when a hinged movement had to be lifted up to be wound" and the statement, below a reprint of a page from a watch case catalog, that "Watches with 1915 retail prices are all now worth ten times or more their original prices." After checking the watch prices listed there, one wonders how many collectors would wish to purchase a 7 jewel Swiss movement in a 15 year gold-filled case for \$172.60?

Appendixes include (1) "Important Dates in the History of Watches," (2) "Prominent Watchmakers Around the World," and (3) a two-page glossary. Many of the entries in the "Important Dates" appendix are incorrect (the lever escapement did not, as stated, come into general use in 1770) and in some cases disagree with dates given in the text of the book. The "Prominent Watchmakers" appendix, which is called a fairly long list by the authors, contains just 233 names, some with insufficient information to be useful, and excludes some of the makers whose watches are illustrated in the book. The glossary is almost useless, with definitions such as the following: "Axle, the rod on which the balance wheel revolves"; "Barrel Arbor, a hook on a small spool attached to the mainspring", and "Pinion, a gear with a number of teeth". The book has no bibliography; the only book mentioned is Baillie's "Watchmakers & Clockmakers of the World". The authors state: "Watches of the post-1825 period have not really been subjected to historical documentation." Even a brief bibliography could have listed a dozen or more books published since 1970 which document much of 19th Century watchmaking in the United States, and to a lesser extent watchmaking in Europe.

The book's greatest asset, its beautiful black and white photographs, is unfortunately also a basic weakness. The photographs, furnished by Sotheby Parke Bernet, of New York, are delightful but totally inappropriate in a book written for the beginning collector. In the chapter "Should You Invest in Antique Watches" the authors discuss setting a limit of \$150 or less per watch; on the facing page is an illustration of a Poitevin minute repeater with perpetual calendar and moon phases for which the authors give a "fair price estimate" of \$12,000. Of the 119 watches illustrated in the book, 72 have fair price estimates above \$1,000 while the other 47 have estimates below \$1,000. The photographs are also not in chronological order; on one page a German watch of 1750 is paired with a Swiss musical watch made about 1900.

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[Remark] Based on the above, I feel a grade of "mediocre" is fair, if not generous.

R2396 Sigsbee, C.

Log of the Howard watch

relating forty-two years of navy duty done by my Howard watch N. 12772

USA: Howard Watch Company, 1911, 22 pp, ill.

Catalogue, miscellany (English).

Howard Watch Co sales booklet with a story about Admiral Charles Sigsbee's watch followed by a price list.

The main text and three illustrations has been reprinted in the NAWCC Mart, December 2006.

R2397 *Simenon, Georges*R2397 **Simenon, Georges**
The clockmaker**The watchmaker of Everton**

New York: Harcourt Brace Jovanovich (UK: Arrow), 1977 (1959), 8vo, 124 pp.

Novel (English).

Originally published as "The watchmaker, a psychological thriller by the creator of the Inspector Maigret mysteries".

There appear to be several first editions! Also published with another Simenon novel in one volume.

Murder mystery (of course!) about a watchmaker whose son is wanted for murder.

R2398 **Simic, Charles; Blocker, Marc****Watch repair**

Seattle: M. Kimberly Press, 1987, slip case.

Miscellany (English).

Limited edition of 25 copies signed by Simic and the artist Marc Blocker.

Four hand painted and decorated panels with parts of watches that have been disassembled and attached to the panels.

*Presumably the book contains photographs of the panels.*R2399 **Simoni, A****Orologi italiani dal cinquecento all'ottocento**

Milan: Vallardi Editore, 1980 (1965), 27.5 x 22 cm, 172 pp, ill.

History (Italian).

Italian horology 1500-1800.

R2400 **Simonin, A; Mix & Remix; Muller, B****Les métiers de l'horlogerie**

on recherche rhabilleur

Switzerland: Editions Simonin, 2006, 107 pp, ill.

Humour (French).

Livre humoristique sur les métiers de l'horlogerie - dessins de Mix & Remix, conception Bernard Müller, textes Antoine Simonin.

Book of humour with drawings by Mix & Remix.

R2401 **Simonin, M****L'horlogerie au fil du temps**

son évolution en Franche-Montagne sur le plateau de Maïche

2007, 29.5 x 21 cm, 143 pp.

History (French).

"Histoire de l'horlogerie et son évolution en Franche-Montagne, sur le Plateau de Maïche. Récit de la condition de vie de nos ancêtres entre les travaux de la campagne et l'essor horloger. Cette activité artisanale du début du XX^e siècle sera transformé par quelques astucieux maîtres horlogers et deviendra une activité intense grâce à l'arrivée de l'électricité."R2402 **Sire, G****L'horlogerie a l'exposition universelle de 1867 a Paris**

Besançon: Comite Dept. du Doubs, 1870, 8vo, 160 pp, 16 plates.

Exhibition (French).

Horology at the Paris Universal Exhibition 1867.

Includes illustrations of escapements and compensation balances.

R2403 **Sivan, C****L'exposition historique d'horlogerie a Nuremberg en 1905**

notice concernant Pierre Henlein

Genève: Journal suisse d'horlogerie, 1906, 8vo, 72 pp, 17 ill, 5 plates.

History (French).

Robertson erroneously gives the author as Swan.

Exhibition of historic horology at Nuremberg in 1905, notice regarding Peter Henlein.

R2404 **Sivan, C****Le rhabillage de la montre**

suivi d'une notice sur l'huile employée en horlogerie

Geneva: Administration du Journal Suisse d'Horlogerie, 1917, 24 x 16 cm, 71 pp, 6 ill.

Repair (French).

Watch repair followed by a note on the oil used in horology.

R2405 **Sivan, C****Le travail des métaux employés par l'horloger et le mécanicien**

Genève: Journal Suisse d'Horlogerie, 1893 to 1895, 24 x 16 cm, two parts of 116 pp, 157 ill and 79 pp, 70 ill, 1 fld plate.

Technical (French).

Robertson erroneously gives the author as Swan.

The working of metals used by horologists and mechanics. Part 1: smelting, iron, steel. Part 2: copper, brass, nickel.

Supposed to be very good on wheel cutting.

R2406 Skeet, M; Ural, N**Vintage Rolex sports models**

a complete visual reference and unauthorized history

USA: Schiffer Publishing, 2002, 11 x 8.5 inch, 216 pp, 250 ill.

Description, price guide (English).

A comprehensive and detailed reference guide to Rolex sports models which covers the history of the Submariner, Explorer, GMT-Master, Turn-O-Graph, Milgauss, and Cosmograph watches from 1952 to 1990. The watches are shown in chronological order with color photographs and diagrams of each model. Also included are reproductions of 22 Rolex brochures, numerous catalog photographs and sale prices of sports models at recent auctions. There is a current price guide for the models shown in the book.

R2407 Sladkovsky, J**Ucebnice odborné nauky hodinarske**

Prague:, 1949 (nd).

Technical (Polish).

The 2nd edition was printed in 1949

Textbook of horological science.

R2408 Sloane, T Conor**Facts worth knowing**

selected mainly from the Scientific American for the household, workshop, and farm

USA: Dewing Company, 1907 (1890), 9 x 6.5 inch, 878 pp, 250 ill.

Miscellany (English).

Printed in 1890, 1893 and 1907

A book of extracts from "Scientific American". "29 chapters organize the information primarily by industry. A wealth of interesting knowledge."

It contains a picture of a glass globe from which watch crystals were cut (and presumably some commentary about it).

R2409 Smit, JL**Horlogerie**

en uurwerkmakers handboek

Holland: J.C. Vieweg, 1836 (1826), 21.0 x 12.5 cm, 256 pp, 16 fld plates, 2 fld tables.

Technical (Dutch).

Tardy suggests two editions.

Clocks and sundials and nothing to do with watches. A significant part of the work is concerned with musical clocks.

[Remark] A ring-in, included because the title is ambiguous. Interestingly this work is not listed in most bibliographies and the only copy I know of was from the Franklin Institute Library.

R2410 Smith and Sons Ltd**Guide to the purchase of a watch**

with illustrations

USA: (England: Malcolm Gardner) (England: Smith and Sons Ltd), 1978 (ca 1898), 27.5 x 18.5 cm, 125 pp, ill.

Description (English).

A sales catalogue produced in a number of editions. There are two reprints; a 1969 facsimile of the circa 1898 3rd edition (produced by Malcolm Gardner, England) and a 1978 reprint of the 1900 edition.

"Illustrated catalogue of high-class Kew Observatory certified chronographs, split seconds, repeating, calendar, revolving escapement, non-magnetizable and other watches".

[reprint of 3rd edition, fair] Beginning with a one-page demand to buy a "Strand" watch (the source of the rather misleading title) the rest of the book contains brief descriptions and prices of the Smith and Sons range of watches, with many glowing testimonials from happy customers and self congratulatory Kew certificate reports. There is a little factual material on Kew certificates and the mechanisms of chronographs and karussel escapements. The illustrations of wrist watches are interesting for their time. Picturesque if not very informative; but then it is just advertising.

R2411 Smith, Alan**The antique collectors guide to clocks and watches**

London: Ebury Press, New York: Random House (London: The Connoisseur), 1996 (1975), 22.0 x 15.5 cm, 222 pp, about 400 figs, 8 plates with 26 ill.

Description, history (English).

Reprinted several times.

A general introduction to horology in 10 chapters: Time (6 pages); Clocks, watches and tools (48 pages); Mechanical clocks before 1550 (6 pages); Early renaissance clocks and watches, 1550 to 1650 (14 pages); Classical English horology, 1650 to 1740 (20 pages); English rococo and neo-classicism, 1740 to 1800 (20 pages); English eclecticism in the nineteenth century, 1800 to 1900 (20 pages); American clocks and watches, 1780 to 1900 (20 pages); Continental Europe and Japan, 1675 to 1900 (26 pages); and Modern clocks and watches, 1900 to the present day (20 pages).

There is a 2-page select bibliography and a 7-page index.

[1st edition, very good] This book is in an interesting format. Each page has (usually two) drawings

illustrating some specific object of horology, and beneath them text describing the item as well as giving general remarks. The illustrations and text are ordered to form a coherent book with descriptions of particular clocks, watches, etc. As with other books where the author has based the text around the illustrations, the result is a clear, informative work.

The use of drawings instead of photographs enhances the clarity of the book. In many books I have found there is too much detail in often poor photographs and the reader has difficulty finding and recognising the things being discussed.

One of the better books for the novice.

R2412 Smith, Alan; Abbott, Henry G; Roberts, KD
The Lancashire Watch Company, 1889-1910

Prescot Lancashire, England

USA: Ken Roberts Publishing Company, 1973, 28.0 x 21.5 cm, 88 pp, 58 figs and plates.

History, tools, watch making (English).

The book is often listed under Roberts, the name of the publisher.

The book consists of three parts: Lancashire Watch Company 1889 - 1910 (36 pages, an historical essay by Alan Smith); Lancashire Watch Company catalogue (19 pages facsimile); and four articles by Henry Abbott about the machine tools used (21 pages, reprinted from the 1893 American Jeweller).

The book also contains a number of contemporary photographs of the factory work areas.

[1st edition, very good] Smith's essay begins with an outline of watch manufacturing in Prescot and then describes the life of the Lancashire Watch Company; its development from John Wycherley's manufactory, attempts to buy up competing businesses, progress and eventual collapse. I find his discussion a bit brief and superficial, but it is one of the few sources of information on English companies and so it is valuable. Abbott's articles, resulting from a visit to the company, begin with general remarks about the company and its products. He then describes in some detail pinion manufacture, staff making, teeth cutting, pallet jewel, escape wheel and plate making. This provides a very good account of manufacturing techniques of the period, which had a high labour component despite the mechanisation.

Overall a useful and interesting study of a largely neglected area of English watchmaking history.

R2413 Smith, Barry

Smiths watches

England: Pierhead Publications, 2009, 277 pp, ill.

History, identification (English).

A history of watch production by the Smiths group of companies with details of the pocket and wrist watches produced in the factories in Cheltenham and Ystradgynlais (Wales) between 1947 and 1974. Included are reproductions of 16 catalogues.

R2414 Smith, Carol

Winnie-the-pooh collectables #2

USA: Hobby House Press, 1996, 9 x 6 inch, 120 pp, 256 ill.

Identification, price guide (English).

Identification and price guide including watches (probably quartz).

R2415 Smith, EA

Rolled gold, its origin and development

London: Institute of Metals, 1931, 8vo, 30 pp, 1 ill.

History, technical (English).

R2416 Smith, GH; Smith, ER

Watch keys as jewelry

USA: Syracuse University Press, 1967, 9.5 x 6.5 inch, 135 pp, 38 col ill, 84 b/w ill.

Collecting (English).

Limited edition of 500 copies.

The collecting experiences of a husband and wife.

Introduction; How our hobby started; The first and second keys; What are watch keys?; Key-wound watches; photographs and index. It covers a large variety of keys including chatelaines, hanging watch keys, locket, weapons, coins, opal, bead decorations, nationalities (Dutch, Swedish, Scotch, English, French), enamel, ivory, coral, cameo, Phi Beta Kappa, Fraternity, musical instruments, seals, crosses, etc.

[Review by Jeanne Parkhurst] I have just read a charming love story, or romance, if you will; the story of a husband and wife and their mutual affinity for collecting. Specifically, I refer to the Syracuse University Press book, "Watch Keys As Jewelry," by Grace and Eugene Smith. It contains over one-hundred black and white and colored photographs, annotated by the Smiths, of the collection of keys housed at Rollins College, Winter Park, Florida.

As I was swept along through this book, comparing, admiring, enthralled by one couple's collecting experiences, I was conscious of a feeling of disappointment; in the first chapter Mr, Smith states that he knows too little about the history of keys to write a treatise and that no one should read his book with the idea that it is anything other than the collecting adventures of a man and wife. I had hoped that anyone who had collected 1200 keys would be able to place them into general areas of time based on country of origin, material used and method of construction. We grant that it would still be one man's opinion but certainly that of a well qualified man. Also, it seemed to me that the book could have been slanted toward the serious collector without jeopardizing its appeal to a general readership, To speak of an "overcoat"

on a watch when meaning a pair-cased watch and of "tipsy" keys with no mention of the master and designer of the ratchet key, Breguet, seems like a little more attention to technical details would not have been amiss. All-in-all this book is a delightful addition to any library.

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R2417 Smith, J**Dimensions of American balance staffs**

USA: J. Smith, ca 1990, 11 x 8.5 inch, 15 pp.

Repair (English).

Swartchild's "build-up system" of American Balance Staffs.

R2418 Smith, James**The mechanic**

or compendium of practical inventions

Liverpool: Henry Fisher, Claxton Press, 1825 (1816), 22 x 13 cm (8vo), 2 vols frontis, x, 496 pp, 76 plates and frontis, viii, 470 pp, 28 plates.

Description (English).

Seven editions. One source indicates some mispagination in the 7th edition (vol 2, pp 421-428).

"containing two hundred and fifteen articles, selected and original, arranged under the following heads: I. Manufactures and Trade; II. Philosophical Apparatus and the Fine Arts; III. Rural and Domestic Economy; and Miscellanies."

The books contains 21 articles and 10 plates relating to horology.

Smith also produced *"The panorama of science and art, embracing the sciences of astronomy, ..."* (1815, 8vo, 2 vols 626 pp and 837 pp, 49 plates) containing some horology and a section on lathe work.

R2419 Smith, John**A handbook and directory of old Scottish clockmakers**

from 1540 to 1850

Edinburgh: William J. Hay, 1903, 19.0 x 13.0 cm, xiv, 97 pp, 12 plates.

History, makers (English).

The book is physically more substantial than it sounds containing 103 leaves. Only the right hand pages are numbered; the facing left hand pages are not numbered and are blank except for 10 containing plates; one plate is a frontis and one the title page.

The second edition titled "Old Scottish clockmakers from 1540 to 1850" is completely different and listed separately.

See also Whyte "Scottish clock and watchmakers 1445-1900".

A list of makers with some biographies and interspersed with information on the Hammermen incorporations. Primarily concerned with clocks (no watches are illustrated).

[1st edition, good] One doesn't expect to enjoy reading lists of names. But I found the more substantial entries a pleasure, being informative and littered with fascinating anecdotal history.

R2420 Smith, John**Horological dialogues**

showing the nature, use and right managing of clocks and watches, with an appendix containing Mr. Outred's method for calculating of numbers

England: Thames (England: Jonathan Edwin), 1962 (1675), 16.5 x 11.5 cm, (12), 120 pp, no ill.

Description (English).

Reprinted in 1962.

In three parts, each being a question and answer dialogue:

Part 1 (35 pages): The definitions of clocks; The manner how all clocks naturally perform their effects; Wherein the goodness and excellence of a clock chiefly consists; Of the several conclusions wrought by the motion of clock-work; Some rules how a man may furnish himself with either clocks or watches that are really good and substantial; and The way and manner of packing up and conveying all manner of clocks from one place to another.

Part 2 (24 pages): Of pocket watches, their use, right managing and true adjusting; Of ordinary domestic balance watches; Of pendulum clocks; Of quarter, repeating and chime clocks; and Certain cases to be observed in all clocks generally.

Part 3 (38 pages): Of the inequality of time in respect of artificial motions; Of refractions; Of the spring; Some enquiries into the nature of the pendulum; and Of the clock bell.

The appendix of 16 pages is in 6 parts: Of movements; Of finding out fit numbers for the wheels and pinions; Of effecting particular motions; A motion to show the age of the moon; A motion to show the day of the year; and To show the hour of full tide in any port.

There are no illustrations.

[1st edition reprint, fair] Reputedly the first English book on horology. According to Derham, Oughtred's "Automata" was "first surreptitiously published in English" in this book.

The introduction states that the book is directed to owners and "to reveal some of those secrets that are necessary to be known by those that would rightly manage them". Thus most of the book describes how to manage clocks and watches; buying; choosing a good workman, packing and moving the clock and setting it up, setting the hands and the alarm (both moving hand and moving dial mechanisms), correcting the strike of count wheel mechanisms, and cleaning. There are some vague, and at times

incorrect, explanations of quality (why brass wheels and pivot holes, and the quality of mainsprings), trains, equation of time and sound bodies. But there are also interesting explanations of using sundials and the effects of refraction, and calculating the lengths or number of vibrations of pendulums. Also seemingly trite matters (such as how to wind a watch) are explained.

The appendix containing Mr. Oughtred's method for calculating of numbers is, to be polite, obscure. He uses a complex, unexplained notation (not helped by poor printing) to describe train calculations, including approximations to prime number trains. I presume the transcript by Aked makes this section intelligible.

The book is mainly interesting because it shows what Smith believed timepiece owners in 1675 needed to be taught.

See also Smith and Aked, "Horological Dialogues".

[Remark] *The approach taken by Derham, a dabbler, is understandable, but John Smith states that he is a clockmaker and so we should reflect on what is in this book in the light of the knowledge a clockmaker of the times would have known. So it is odd that Smith needs to include Oughtred's train calculations when we would expect Smith to be well aware of the processes; unless he simply finished rough movements purchased from others.*

R2421 Smith, John**Old Scottish clockmakers**

from 1540 to 1850

England: British Book Centre (Edinburgh: William Hay) (Edinburgh: Oliver & Boyd), 1975 (1921), 23.5 x 15.0 cm, 436 pp, 25 plates with 31 ill, frontis.

Makers (English).

First published as "Handbook and directory of old Scottish clockmakers from 1540 to 1850" (which see) and this is the second edition of 1921-24, reprinted in 1975 (and 1979?).

Also available as a pdf file.

Introduction (5 pages); List of makers; Appendix (10 pages, list of clock and watch makers in various English, Irish and Isle of Man towns; Index (22 pages; and Index of names of makers furth of Scotland (2 pages).

There are 2 illustrations of watches.

The index of names includes considerable additional information, including advertisements and extracts from other documents.

See also Whyte "Scottish clock and watchmakers 1445-1900".

R2422 Smith, John; Aked, CK**Horological dialogues by J.S. clockmaker 1675**

transcribed for the modern reader

England: P. I. Drinkwater, 1986 (1675), 8vo, 66 pp.

Description (English).

Notes by Aked followed by a transcript of the original work.

R2423 Smith, WO**The detached lever escapement**

function and adjustment

Illinois: Watch Technician and Micro-Precision Technology, University of Illinois, nd, 36 pp, ill.

Technical (English).

R2424 Smith, WO Jnr**21st century watchmaking**

USA: American Watchmakers-Clockmakers Institute, 2000, video tape.

Repair (English).

Video tape of the techniques described in his book "21st century watchmaking book one".

R2425 Smith, WO Jnr**21st century watchmaking**

book one

USA: American Watchmakers-Clockmakers Institute Press, 1996, 25.5 x 17.5 cm, 212 pp, 267 ill.

Repair, tools (English).

In three parts:

Making flat parts (118 pages): The first chapter describes how to accurately and quickly make flat steel watch parts using grinding disks mounted in a lathe. The next four chapters then illustrate the technique with detailed, step-by-step instructions for making a clutch lever, set bridge, detent and minute register pawl.

Design of parts (75 pages): This section considers the problem of replacing missing parts. It begins with a 30-page chapter on lever theory with examples of chronograph levers, the lever escapement and ratchet wheels. Then there are 2 chapters covering the design and making of a setting spring and a minute register pawl.

Heat treatment and finishing (19 pages): 2 chapters on hardening, tempering, flat grinding and polishing followed by a 1 page biography of relevant books.

There is no index.

[1st edition, excellent] *This book has a single message spelt out in the first 36 pages, how to shape flat parts, a task that I have found inadequately covered (or even ignored) by other books. It provides an*

excellent description of a method to do this. The illustrations are very clear black and white photographs mixed with equally good diagrams.

Although polishing is somewhat glossed over this is a minor defect in an otherwise delightful and useful work.

R2426 Snell, M**Clocks and clockmakers of Salisbury**

600 years of skill and invention

Salisbury: Hobnob Press, 1986, 11.5 x 9.25 inch, 280 pp, ill.

Makers, illustration (English).

The book, despite its title, encompasses the full spectrum from pocket watches to turret clocks.

It includes a bibliography, glossary and an index. Illustrated by numerous b/w photographs, facsimiles of documents and maps.

R2427 Snelling, Richard**The horological directory 2011**

England: British Horological Institute, 2010, 8vo, 352 pp.

Directory (English).

The last edition was issued almost 10 years ago.

A useful source for British amateur and professional horologists to find contact details of dealers, restorers, suppliers, museums etc.

Section 1 lists all the businesses in the directory; Section 2 lists all current watch and clock brands by name with manufacturer and distributor; Section 3 lists about 230 services available from the businesses listed in section 1; Sections 4, 5 and 6 list Trade Associations, Training and Museums respectively.

R2428 Snowman, AK**Carl Fabergé**

goldsmith to the Imperial Court of Russia

New York: Greenwich House (London: Debrett's Peerage, New York: Random House), 1983 (1979), 10.75 x 8.5 inch, 160 pp, 185 ill.

Illustration, description (English).

Printed in 1979, 1980, 1983, 1986, 1988 and 1999.

Catalogue of an International Loan Exhibition Assembled on the Occasion of the Queen's Silver Jubilee and Including Objects from the Royal Collection at Sandringham, 23 June-25 September 1977.

Contents include metals, enamels/stones; imagination; stone carvings; flower studies; marks/standards, pastiches/forgeries, etc.

"Working for the court of Imperial Russia, Faberge and his craftsmen were able to fashion a wealth of fine objects, some simple, some elaborate, some ingenious, some surprising, but all inventively designed and meticulously executed. For Faberge, gold was never just gold - it could be red or white or green, and there were delightful effects to be had by contrasting the colours. With such formidable expertise to draw upon and a clientele including not just the Russian but also European and Far Eastern royal families, Faberge was not held back by technical or financial limitations: he could give free rein to his imagination. The results included a dazzling succession of masterpieces. The finest of his eggs are among the hundreds of pieces illustrated in this book. Over a hundred colour pictures include the first in colour of the ten Imperial Eggs in the Armoury Museum of the Kremlin. The author's text represents the distillation of years of experience studying and dealing in Faberge. Here are new insights into Faberge's products, his workshops and retail shops, his patrons, customers and collectors. Among the previously unexplored aspects the author covers in this book is the building up of great collections of Faberge pieces."

I do not know if this book includes watches.

R2429 Snowman, AK**The art of Carl Fabergé**

London: Faber & Faber, Boston: Boston Book & Art Shop, 1975 (1952), 10 x 8 inch, 186 pp, 407 ill, 86 plates.

Description, illustration (English).

Printed in 1952 and 1953 (186 pp), 1955 (167 pp), 1964 and 1975.

Includes Faberge watches.

Snowman appears to have produced a number of books other than those listed here, but some may be the same books under different titles:

"Fabergé 1846-1920" (1977, published in association with the Victoria and Albert Museum).

"Fabergé jeweler to royalty" (1983, Cooper-Hewitt Museum, from the collection of Her Majesty Queen Elizabeth II and other British lenders).

"Fabergé, lost and found, the recently discovered jewelry designs from the St. Petersburg archives" (1983, 176 pp, 169 col ill, London: Thames and Hudson, New York: Harry Abrams).

"Fabergé court jeweler to the tsars" (171 pp, New York: Tabard Press).

R2430 Sobel, Dava**Longitude**

the true story of a lone genius who solved the greatest scientific problem of his time

Italy: Rizzoli (New York: Walker & Company) (London: Fourth Estate), nd (1995), 18.5 x 11.0 cm, DVD (184 pp, no ill).

History (English, Italian).

Reprinted innumerable times.

History of the development of the chronometer with the focus on John Harrison

[1st edition, very good] *This book has been so popular that I doubt if a review is necessary. It certainly deserves much of this popularity, being a well written and absorbing account, and should be read by novices and lay people.*

However, it has nothing to offer for the serious horologist. Basically it is a rewrite of Andrewes "The quest for longitude, the proceedings of the longitude symposium Harvard University 1993", omitting all the technical (and boring) stuff. And the conference proceedings are vastly more important and valuable. Certainly Sobel has done an excellent job of popularising the subject, but I feel sad that Sobel is lauded while those who did the real work remain hidden in the background, in the unread acknowledgements and references.

[Film] *The film "Longitude" should be listed separately because it is centered on Rupert Gould as much as Harrison. Again, it is a very good and absorbing account. And again, it seems to be a rewrite rather than something new.*

R2431 Sobel, Dava; Andrewes, WJH

The illustrated longitude

London: Ted Smart, London: Fourth Estate, New York: Walker & Company, 2009 (1998), 10.25 x 9 inch, 216 pp, 183 ill.

History (English).

Reprinted innumerable times.

Also given as 256 pp.

Contains the entire text of the original re-formatted to include 183 images chosen to further enhance understanding and appreciation of the problems, solutions, and creation of John Harrison's masterpieces. Includes elegant captions, sidebars on scientific events.

R2432 Societas Fabbriche Fiammiferi

Box of matches

Milano: Societas Fabbriche Fiammiferi ed Affini, ca 1950, 2 x 1.75 inch.

Miscellany (Italian).

Match box with illustrations of two Vetta automatic watches.

R2433 Societe Suisse de Chronometrie

Some notes on Pierre-Frédéric Ingold and the work of E. Haudenschild

Quelques notes sur Pierre Frédéric Ingold et les travaux de E. Haudenschild

Australia: Richard Watkins (Bienne: Ch. Rohr), 2004 (1932), 4to (20.5 x 14.0 cm), 11 pp, 9 ill (15 pp, 9 ill).

Biography, history, tools (French).

Some book lists state that the author is Haudenschild, which is obviously incorrect; perhaps they want to convey the impression that all 15 pages are about Ingold? The author is probably G.A. Berner.

The 2004 translation by Richard Watkins is distributed as a pdf computer file.

The booklet has a one page preface followed by a 9 page biography of Ingold (with illustrations of press tools and a bezel wound watch) and a 5 page biography of Haudenschild describing three of his clocks with complications.

[1st edition, good] *An interesting and enjoyable biography of Ingold. Although regarded as important in the development of watchmaking by machinery, Ingold's only significant contribution seems to be his fraises (although his keyless watch is undoubtedly interesting).*

See my review of Berner and Audetat "Pierre-Frederic Ingold, 1787-1878".

R2434 Society of Arts; Ganney, H; Warwick, RW

Reports on the Paris Universal Exhibition of 1878

London: Sampson Low, Marston, Searle and Rivington, 1879, 23.0 x 15.5 cm, 664 pp, no ill.

Description, exhibition (English).

An introduction followed by 39 reports by artisans sent to the exhibition by the Society of Arts. There are two reports on horology by H. Ganney (12 pp) and R.W. Warwick (16 pp).

[1st edition, fair] *Ganney, who spent 4 years in America before this time, gives a brief survey of watch manufacturing and education in England, America, France and Switzerland. His opinion of the English is illustrated by "this contribution (of Kullberg) serves to redeem the English horological exhibits from the contempt which they would otherwise deserve". After a few comments on American machine manufacture he applauds French education (including details of the work of a Besancon student) and gives a tirade against cheap, poorly designed Swiss watches. He concludes with a plea for the introduction of schools and machinery to English watchmaking.*

Warwick begins with a discussion of methods used to eliminate the fusee in France (by a form of stackfreed) and America (T-brace mainspring endpieces) as well as some comments on lever escapement designs and an unusual compensation balance. He then gives a general overview of the clock and watch exhibits and a description of Japy Freres' worker accommodation.

R2435 Society of Arts; Gregory, J; Stringer, J; Jung, HF; Cook, G

Reports of artisans selected ... to visit the Paris Universal Exhibition, 1867

London: Royal Society of Arts, 1867, 8vo, 476 pp, ill, 213 pp, ill.

Exhibition (English).

The full title is "Reports of artisans selected by a committee appointed by the council of the Society of Arts to visit the Paris Universal Exhibition, 1867".

The report is in two parts, paginated separately.

Pages 343-362 of part 1 concern horology.

It is available as a Google Book PDF file.

There are three reports on horology:

Gregory & Stringer "Watchmaking" (8 pages, no ill); Jung "The horological department (5 pages, no ill); and Cook "State of the watch trade" (7 pages, 3 ill).

[1st edition, good] Gregory and Stringer wrote a diary of their trip to the exhibition, from which they visited Besancon, La Chaux-de-Fonds and other places. Many of the remarks are brief, but there is some interesting information on case making and the Besancon horology school curriculum.

Most of the article by Jung consists of his opinions on education, in which he damns England's apprenticeship system and the extreme division of labour which produces mindless workers with little or no prospects for self improvement. He concludes with some remarks on the quality of the exhibits and a description of a tuning-fork escapement invented by Breguet.

Finally, Cook provides information on the cost of making watches in England and France, and production in France. In addition to some other remarks, he provides further details of the tuning-fork escapement invented by Breguet.

Overall the reports are interesting and the discussions of education and the tuning-fork escapement are worth reading.

R2436 Solothurn

Uhrmacherschule Solothurn

1984 (1934).

History (German).

The Solothurn horology school has produced several booklets:

"50 Jahre Uhrmacherschule Solothurn 1884-1934", 1934, 76 pp, 19 ill, 21 x 15 cm.

"Uhrmacherschule Solothurn 1884-1947".

"100 Jahre Uhrmacherschule Solothurn 1884-1984", 1984, 48 pp, 21 ill, 30 x 21 cm.

R2437 Sotheby

Catalogue of important English and continental bracket and longcase clocks

the property of the late Sir John Prestige, and fine watches from the Courtenay Ilbert collection, the property of his nephew Michael Inchbald Esq, and from the Sir David Salomons collection, the property of Sir James Blunt

London: Sotheby, 1963, 57 pp, ill.

Catalogue (English).

28 October 1963 sale. There was also a sale of clocks and watches in 1968, including watches by Breguet, Emery, JF Cole, etc.

I presume Sir James Blunt was the famous spy.

R2438 Sotheby

Catalogue of ten important watches and a timekeeper

the property of Lady Prestige

London: Sotheby, 1963, 4to, 14 pp, ill.

Catalogue (English).

22 April 1963 sale.

R2439 Sotheby

Catalogue of the Hornby collection

of rare and important watches

London: Sotheby, 1978, 4to.

Catalogue (English).

Auction catalogue.

The printing is said to be very poor.

R2440 Sotheby

Masterpieces from the Time Museum collection

including watches, clocks and scientific instruments

USA: Sotheby, 2004 (1999), 4to, 3 vols of 700 pp, ill, slip case?.

Collection, catalogue (English).

At least 4 volumes, but bookseller descriptions are vague:

"Masterpieces from the Time Museum, watches, clocks and scientific instruments", 1999, 315 pp, 81 lots.

"Masterpieces from the Time Museum, Part Two", 2002, 351 pp.

"Masterpieces from the Time Museum, Part Four Volume II Chronometers and scientific instruments".

"Masterpieces from the Time Museum, Part Four, Volume III, Clocks, Watches and Horological Curiosities", 2004, 248 pp.

Auction catalogues of 653 lots. Includes the Mudge "green" marine chronometer.

The Time Museum closed and the bulk of the collection was acquired by the city of Chicago. Sotheby's sale of masterpieces from the collection achieved a total of \$28,285,050.

The centrepiece of the sale was the Henry Graves watch which sold for \$11,002,500. In 1925, Patek

Philippe was commissioned by Henry Graves, a prominent New York banker, to produce the most complicated watch in the world. The product of three years of research and five years' effort, the Graves watch has 24 complications including perpetual calendar, moon phases, sidereal time, power reserve and indications for time of sunset and sunrise and the night sky of New York.

See also the books on the Time Museum by Randall and Hoke.

R2441 Sotheby**The palace collection of Egypt**

works of art in precious materials

London: Sotheby, 1954, 25 x 19 cm, 212 pp, 59 plates.

Collection, catalogue (English).

In 3 volumes with the horological items in the first.

Sale catalogue of the 1261 lot collection of King Farouk sold by order of the Government in March 1954.

R2442 Sotheby**The Percy Webster collection**

catalogue of the important collection of clocks and watches

London: Sotheby, 1954, 25 x 19 cm, 2 volumes, 47 pp, ill and 37 pp, ill.

Collection, catalogue (English).

Sale of 226 lots.

R2443 Sotheby**The Thielmann collection**

of watches, clocks and scientific instruments

London: Sotheby, 1989, 4to.

Catalogue (English).

Auction catalogue of 418 items.

R2444 Sotheby**Watches, the Belin collection**

London: Sotheby Park Bernet, 1979, 4to, 108 pp, ill.

Catalogue (English).

Sale catalogue for the Belin collection showing 195 items.

See also Belin "Horology on the half shell".

R2445 South Bend Watch Co**How a jeweler moved his old stock without cutting prices**

(USA: South Bend Watch Company), nd (nd), 48 pp, ill.

Catalogue (English).

Reprinted.

Catalogue of watch cases.

R2446 South Bend Watch Co**How and why own a South Bend watch**

USA: South Bend Watch Company, nd (1914), 9 x 6 inch, 75 pp, ill.

Catalogue (English).

Reprinted.

Catalogue illustrating 0-size to 18-size watches made by South Bend, with 24 pages of watch cases. It includes a company history.

R2447 South Bend Watch Co**Lifetime accuracy, catalogue no. 87**

(USA: South Bend Watch Company), nd (nd), 16 pp, ill.

Catalogue (English).

Reprinted.

Catalogue illustrating cases, dials and movements.

R2448 South Bend Watch Co**South Bend Watch Co Catalog - 1914**

USA: Arlington Book Co (USA: South Bend Watch Company), nd (1914), 9 x 6 inch, 72 pp, ill.

Catalogue (English).

[Reprint, review by George Townsend] This is a high quality reproduction. All illustrations are excellent in black and white which are hard to detect from the original catalog.

The first twelve pages tells why you should select and own a South Bend pocket watch. It gives their guarantee plan, their Club Plan and service arrangements. It tells what you should look for in selecting a pocket watch. Also, there are eleven pictures showing the various sections in the South Bend factory.

The next ten pages point out how "Everlasting Accurate" South Bend watches are made. Mr. C.T. Higginbotham has a page of comments on making South Bend watches "a perfect time keeper". He was the designer of the first South Bend watch. It outlines how perfect equipment, material and methods are used to build their watches. Each page shows some of the factory operations needed to make their watches. Again, their "Club Plan" is outlined and tells how you can't do without a South Bend watch.

The next sixteen pages have 22 pictures of the various watches in 18, 16 and 0 sizes which were available in 1914. Emphasis is on the Chesterfield, Studebaker and Railroad grades. These pictures very clearly show every detail of their watches and point out why they are made to the highest grade and accuracy. There are four beautiful pictures of the much sought after "The Studebaker" watch, 18 and 16-size, 23

and 21 jewels. The full description and details of each grade of the watches available in 1914 are shown. Five grades of Railroad watches are shown.

Pages 39 through 70 tell the story of the South Bend watch cases. It gives a short history of the watch case. It explains the making of a gold-filled watch case and some of the markings used on their cases. For example, it lists their best gold-filled case, which is the South Bend "Pyramid". Those interested in how cases are made and graded and what is meant by "Permanently Guaranteed", 25 and 20 years guarantee, should read this section. Two pages of South Bend dials are shown in 12 different designs. 103 full-size black and white, fine half-tone prints are shown of South Bend cases, 18 through 0 size. The engravings and designs are just too beautiful to explain - they must be seen. The more beautiful ones are eagle and shield, railroad engines, elk, race horses, 1914 vintage touring car and battleship. Emblem designs are shown for K of C, FCB, FOE, WOW, BPOE, Masonic and others. A case for The Order of Railroad Telegraphers is shown which is most interesting. Many monograms are shown in beautiful detail. At the bottom of the 22 pages, along with the cases, is a chart showing the case design number in the various grades of gold-filled and gold, with the price of each grade of South Bend movement, 15 through 21 jewels. It is interesting to note that a man's 12-size, 18-kt, 21-jewel watch sold for \$125.00 in 1914 - I guess today's prices aren't too far off. The emblems and monograms shown will be of great interest to collectors - it gives us something to be looking for.

The catalog has an excellent index on page 72 which makes it easy to locate items of our individual interest. The back cover has a grand picture of the factory in South Bend, Indiana, as it was in 1914.

This is a super catalog that gives many details on the watch, the men who made them, and the various grades available and will add to the collector's source of reference library.

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R2449 Spanje, T

Handboek voor den horologemaker

Leyden:, nd (1864), 23 x 16 cm, 442 pp, 191 ill.

Repair (Dutch).

Reprinted.

"leiddraad voor ieder die kennis wil bekomen van de werking en samenstelling der uurwerken".

Instruction for apprentices and clockmakers.

R2450 Spear, DE

American watch papers

with a descriptive list of the collection in the American Antiquarian Society

Worcester: American Antiquarian Society, 1952, 25 x 16 cm, 76 pp, 3 pp of ill.

Description (English).

Reprinted from the proceedings of the American Antiquarian Society.

May be only 2 plates.

R2451 Speckhart, G

Kunstvolle taschenuhren der sammlung Marfels

Berlin: Hempel & Co, ca 1904, 17 x 24 cm, 86 pp, 41 plates.

Bibliography, collection, catalogue, description, illustration (German).

Also given as 88 pp, 37 plates.

Artistic pocket watches from the second (?) Marfels collection, including a chapter on indicators for determining the age of pocket watches and a bibliography of relevant publications.

Marfels built up and sold collections to make money. His first collection is described in Speckhart and Kreuzer's booklet "Die Marfels'sche uhrensammlung".

R2452 Speckhart, G

Uhrensammlung Marfels

Berlin: Deutsche Uhrmacher-Zeitung, 1915, 27 x 21 cm, 10 pp, 15 plates with 50 ill.

Collection, description, illustration (German).

Pocket watches from the Marfels collection.

R2453 Speckhart, G

War Peter Hele der erfinder der taschenuhren?

1894, 2 ill.

History (German).

Was Peter Henlein the inventor of the pocket watch?

R2454 Speckhart, G; Kreuzer, R

Die Marfels'sche uhrensammlung

umfassend interessante taschen-uhren seit erfingung der selben

(Frankfurt am Main: Kuehl & Co), nd (1888), 21 x 15 cm (oblong 4vo), 31 pp, ill, 48 plates (60 pp, 70 ill).

Collection (German).

Tardy lists "Die Marfels'sche uhrensammlung" under Kreuzer and Marfels with the same date and format and no such title under Speckhart.

Given as 31 "double column pages" and the alternative pagination presumably lists each column separately. Robertson specifies 38 plates.

There is a modern reprint.

A summary of a series of articles published in Der Deutschen Uhrmacher-Zeitung of 1888.

R2455 Speel, E

Dictionary of enamelling

history and techniques

USA: Ashgate Publishing, 1998, 10.75 x 8.75 inch, 152 pp, ill.

Dictionary, history (English).

Includes enamel case and dial making.

"For more than 1000 years enamels, made by fusing layers of coloured glass to metal, have been used to embellish objects of great value and importance. Medieval altar pieces and reliquaries, Renaissance jewels, Limoges paintings, portrait miniatures, seventeenth-century gold snuff boxes and watch cases, and, perhaps most famously, Fabergé's presentation Easter eggs made for the Russian imperial family, were all decorated with enamel. Twentieth-century studio enamels have widened traditional methods, while industrial manufacture ranges from architectural panels to art applications.

'The Dictionary of Enamelling' is the first book to provide a comprehensive guide to this most diverse of the decorative arts.

Indispensable for anyone interested in the evolution of enamelling technique, the book includes some 400 entries covering every aspect of its history. There are entries on key pieces, individual enamellers, designers, schools, techniques, and the major achievements are described in every era. It is enhanced by a brilliantly researched collection of 200 illustrations, 100 in colour, portraying the most dazzling and important pieces, a unique visual record of enamelling history."

R2456 Spiegel, W

Taschenuhren

von Nürnberger ei zur präzisions taschenuhr, ein buch für laien und anfangen sowie sammler unentbehrlich

Munich: Prisma Verlag (Munich: Mosaik Verlag), 1985 (1981), 13.5 x 13.5 cm (20 x 13 cm), 160 pp, 32 ill, 147 plates (80 pp, ill).

Description (German).

Pocket watches, from the Nuremberg egg to the precision pocket watch. An indispensable book for novices and beginners as well as collectors. Case shapes and decoration, dials and hands, giving a grounding for the dating and valuation of collections.

R2457 Spittler, S; Spittler, T; Bailey, Chris

American clockmakers and watchmakers

USA: Arlington Book Co, 2000, 11 x 8.5 inch, 336 pp.

Makers (English).

Volume 3 in the series "American clocks".

Directory of American "makers, manufacturers, dealers, assemblers, peddlers, case-makers, dial-makers, repairers and entrepreneurs". It contains some 16,000 names and includes biographical information.

[Review by Ward Francillon] What a noble undertaking, what a concept, what a tool. The authors have set a goal of presenting a comprehensive listing of every name ever associated with American clocks and watches, at all levels: "makers, manufacturers, dealers, assemblers, peddlers, case-makers, dial makers, repairers, entrepreneurs, and possibly some others who might have simply been the first owner of the clock and had their name painted on the dial." The talents, persistence and teamwork of the three authors are evident on every page of their book.

Some 16,000 names are presented in alphabetical order, 8000 of which have not been previously listed. The authors make quite clear that this reference is to be used to find out about the people whose names are found on clocks and watches, not just the people who may have actually made clocks and watches.

The text is clear, names are set forth boldly, and the reader will find this publication easy to use and enjoyable, with a minimum of distracting abbreviations. All of the known information about each person is set forth for the reader, and the book is completely cross-referenced with both (or all) members of partnerships listed individually.

This is definitely a work in progress, and wisely so. The authors continue to collect input, make corrections, additions, and they beg of you to provide them with other references to people who were in the trade or whose names were associated with clocks or watches. One might envision a softcover supplement sometime in the future if the volume and importance of the new material discovered warrants it.

The cover of the book shows a photograph of Eli Terry and the words "Volume 3." Neither element of the cover design seems to have much to do with the material presented. This is a stand-alone publication, not a continuation of a price guide, and it covers such a range of time and place that old Eli can hardly represent its scope (though he might be proud to do so).

American Clockmakers and Watchmakers should be in your own library as a primary reference. It is by far the best and most accurate collection of data on this subject to date.

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R2458 Spitzer, S

La collection Spitzer

antiquité, moyen age, renaissance, horloges et montres

Paris: Maison Quatin, Librairie Central des Beaux Arts; London: M.M. Davis, 1890 to 1892, 51 x 39 cm, 6 volumes of 1248 pp, 846 ill, 345 plates.

Collection (French).

Limited edition of 600 copies.

Tome 1: Antiques, ivoires, orfèvrerie religieuse, tapisseries. (v + li + 176 pp + 63 plates)

Tome 2: Émaux peint, meubles et bois sculptés, faïences de Saint-Porchaire, faïences de Bernard Palissy, serrurerie, cuirs. ((vi) + 224 pp + 57 plates)

Tome 3: Orfèvrerie civile, incrustations sur métal, peintres sur verre, verrerie, vitraux, bijoux et bagues, faïences et grès de Flandre et d'Allemagne, coutellerie, sculptures en bois en pierre de Munich, sculptures en bois et en pierre de Munich. ((ii) + 294 pp + 59 plates)

Tome 4: Faïences Italiennes, faïences Hispano-Moresques, sculptures, plaquettes, médailles, dinanderie. ((iv) + 202 pp + 54 plates)

Tome 5: Gemmes, horloges et montres, instruments de mathématiques, manuscrits, miniatures et dessins, cires, étoffes et broderies, coffrets, jeux. ((ii) + 260 pp + 49 plates)

Tome 6: Armes et armures. ((iii) + lxxxiii + 108 pp + 57 plates)

"Spitzer was born in Vienna in 1815 and moved to Paris in 1852. He assembled one of the greatest art collections of all time, which was sold after his death. This massive and beautifully produced catalogue of the Spitzer collection showcases some of the oldest, most costly and time-consuming hand-printing techniques whose painstaking processes required the finest quality paper to yield their exceptional tonal range."

R2459 Sposato, K

Dictionary of American clock and watchmakers

USA: K Sposato, 1993, 28 x 21 cm, 190 pp.

Dating, makers, bibliography (English).

Reprinted?

An index of some 8000 names with extensive cross-referencing to illustrations of their work.

[Review by John Cammarata] This is a record of American clock and watchmakers. It is structured to provide rapid retrieval of the who, where, when, and what of the people who made American horology. It addresses the need of horologists for a comprehensive documentation of American horology.

The alphabetical arrangement of entries goes beyond clock and watchmakers to include clock peddlars, case makers, label printers, dial makers, and those often forgotten inventors who contributed so much to American horology. Entries summarize not only relevant data on the subject, but provide the reader with the answer to the most frequently asked question, "where can I find more information?" References are listed wherein additional information can be found, including photographs. These latter features put this book a step above the current classic books on American clock and watchmakers available to horologists with well equipped reference libraries.

In developing these entries, Mr. Sposato has extracted from these classic references and extended his search to include significant data from horological journals, publications dedicated to antiques collections rich with horological items, and other magazines known to dedicate a significant portion of their editorial content to watch and clock collections. The book's appendix attests to the who's who character of the reference texts searched by Mr. Sposato.

I found that the entries sampled contained more information than I was able to find in the two or more classic references which I normally use. This reviewer's acid test of a book on American clocks is to turn to Banjo Clocks, often referred to as the first truly American clocks. I found the coverage to be inclusive from the Willards to the Riggs. I wish that I would have had "The Dictionary of American Clock & Watch Makers" when I first became interested in the history of the Riggs enterprises.

Omissions of second tier watchmakers are evident to those who have studied early American watchmaking. The identification of the classical watchmaker apart from the clockmaker is not always noted by the author. We know that before the 19th Century, many of the American watchmakers were clockmakers also. However, as the age of specialization influenced production in the 19th Century, and in particular, the move towards volume production of both watches and clocks in America, there evolved a more defined specialization of the two crafts. Most readers should have no difficulty in differentiating the two.

This book was spawned out of necessity in Mr. Sposato's antiques shop in the suburbs of New York City. "The Dictionary of American Clock & Watch Makers" is his answer to the lack of organized data which we have all experienced in searching for answers in American horology. A trained historian turned horologist, an avid collector and researcher, he is recognized internationally as a dealer of fine antique clocks. "The Dictionary of American Clock & Watch Makers", his first bound contribution to the horological libraries, complements his contributions to horology. His heritage in horology was enriched at an early age by his father, Anthony Sposato, who was an avid collector of fine clocks.

I recommend this professionally produced book with high quality paper and easy to read entries as a valued addition to the libraries of collectors, dealers, researchers, and restorers who have an active interest in American clocks and their history. They will no longer have to juggle several books on their knees, desks, or workbenches to find that needed information when they have this book. Foreign collectors with a limited library of American clock books will find "The Dictionary of American Clock & Watch Makers" an invaluable reference.

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R2460 Sprengel, PR**R2460 Sprengel, PR****Der uhrgehäusemacher**

Berlin: Verlag der Buchhandlung der Königl, 1778 to 1795, 7 x 4 inch, 18 pp, 1 fld plate.

Description (German).

A section of Sprengel "Handwerke und kunste in tabellen", which was published in 17 volumes between 1778 and 1794.

Case making with a plate showing tools for watch cases.

R2461 Sprengel, PR**Kunst des kleinuhrmachers**

Berlin: Verlag der Buchhandlung der Königl, 1778 to 1795, 7 x 4 inch, 76 pp, 1 fld plate.

Description (German).

A section of Sprengel "Handwerke und kunste in tabellen", which was published in 17 volumes between 1778 and 1794.

The art of watchmakers, describing a watch and repeating mechanism.

Robertson notes that "Kunst des kleinuhrmachers" is said to be the best treatise written on the subject, but Baillie suggests otherwise.

R2462 Springbok**Time pieces jigsaw puzzle**

USA: Hallmark, nd, jigsaw puzzle.

Miscellany (English).

A jigsaw puzzle of watch movements and parts with over 500 pieces.

R2463 Springer, M**Mensch, zeit, uhr**

zur geschichte der zeitmessung

Berlin: Ulstein, 1927, 17.5 x 11 cm, 150 pp, ill.

History (German).

People, time, timepieces; the history of time measurement.

R2464 St. Paul Vocational School**Watchmaker's dictionary**

St. Paul, USA: St. Paul Vocational School, 1946, 27.5 x 21.5 cm, 124 pp, no ill.

Dictionary (English).

Extracts from a dictionary published by the Jeweler's Circular Keystone Publishing Co. A printed typescript.

A dictionary of horological terms with the main focus on watches.

[1st edition, good] A quite good dictionary with a few terms I have not come across before. Like most dictionaries, it is of limited value and Berner "Dictionnaire professionnel illustre de horlogerie" is much more useful.

R2465 Staeger, Hans**100 years of precision timekeepers 1763-1862****100 jahre prazisionsuhren**

John Arnold to Arnold & Frodsham

Germany: Hans Staeger, 1997, 30.5 x 22.5 cm, 885 pp, about 1000 ill.

Description, history, illustration (English, German).

Parallel German and English text. A limited edition of 1000 copies with 100 copies in leather.

A preface followed by 15 chapters.

The preface (30 pages) contains: What is a precision timekeeper?; The act of Queen Anne; and Instructions concerning Arnold's chronometers or time-keepers.

The 15 chapters are:

John Arnold pocket watches (30 pages, including ring watches for King George III);

John Arnold pocket chronometers (32 pages);

John Arnold & Son pocket chronometers (38 pages, including dial signatures);

John Roger Arnold pocket chronometers (50 pages, including types of balances);

John Arnold and A.L. Breguet (10 pages, 2 Breguet pocket chronometers);

John Arnold & Son marine chronometers (66 pages, including the Arnold and Earnshaw conflict);

John Roger Arnold marine chronometers (58 pages, including types of balances);

Dial signatures, movement signatures, case shields and output (42 pages);

John Roger Arnold pocket watches (44 pages, including watches with Prest's keyless work);

Arnold & Dent 1830-1840 (58 pages);

J.R. Arnold from 1840 and Arnold & Frodsham (30 pages, including case makers);

Edward John Dent (108 pages, including movement and dial signatures);

Carriage clocks by J.R. Arnold (42 pages);

Regulators from John Arnold to Arnold & Frodsham (148 pages);

Literature consulted (4 pages).

Each chapter has a list of extant timepieces (and in some cases a list of lost timepieces), photographs and descriptions of timepieces and other information.

There is a 21-page index.

[1st edition, fair] The first point to note is that the title is misleading. The book is limited to John Arnold and his successors and, with the exception of Frodsham and Dent, all other chronometer makers working between 1763 and 1862 are ignored. Consequently the book is a survey of the work of only one maker.

Basically it appears to document the collection of Hans Staeger, with a few other watches included. Nearly all the book is like an auction catalogue with many high quality photographs of each timepiece coupled with brief, precise descriptions of the case, dial and hands, movement and escapement, condition, and remarks which give additional information; unfortunately there is almost no information on the provenance of the pieces. In addition, each chapter is prefaced by a useful table of all known timepieces, giving a summary of features and, importantly, the source of the information.

However the book is almost devoid of other information. Staeger repeatedly refers to the books on Arnold, Dent and Frodsham by Mercer, which the reader must go to if he is to learn anything of the watchmakers whose work is included. Further, there is no technical information. For example, one section is devoted to watches with Prest's keyless work. But there is no explanation or diagram of the mechanism and none of the photographs display it. Likewise, although many, good photographs of different balances are provided, there is not one word on their design features or relative merit. Because of this the book must be seen as a companion volume to other, more useful sources, providing photographic information to complement technical and historical accounts of Arnold's work.

There is some text, but the majority of it consists of facsimile copies of documents (presumably in Staeger's collection) with German translations. The important ones are:

Longitude act of Queen Anne 1714 (4 pages).

Dalrymple "Instructions concerning Arnold's chronometers or time-keepers", circa 1788 (9 pages with at least 2 pages missing).

Arnold "An account kept during thirteen months in the Royal Observatory at Greenwich of the going of a pocket chronometer made on a new construction", 1780 (11 pages).

Arnold "An answer from John Arnold to an anonymous letter on the longitude", 1782 (16 pages).

Dent, letter regarding the inventor of the spring detent escapement, 1832 (1 page).

Arnold, Patent No. 1328, 1782 (4 pages).

Dalrymple "Account of the going of Arnold's pocket-chronometer No. 51, no date (1 page).

Aubert, "Account of the going of Arnold's pocket-chronometer No. 51, 1782 (3 pages).

Arnold Patent No. 1113, 1775 (3 pages).

Mayer, "Letter from M. Christian Mayer, astronomer to the Elector Palatine, to Mr. N. N. on the going of a new pendulum clock made by Mr. John Arnold, 1781 (26 pages).

About the only original contributions by Staeger are:

A discussion of Mercer's opinions on the dating and numbering of Arnold's timepieces and suggested corrections.

A brief discussion on how Arnold made bimetallic balances (mainly citing Rees).

A 3-page look at the invention of the spring detent escapement (see below).

As a result, the book is a comprehensive collection of information almost devoid of critical appraisal. So it is an important contribution to horology, providing valuable documentation of Arnold's work, but unless you want specific information about a particular watch it is little more than an excellent "coffee table" book. Which is a great pity.

[Remark] Staeger's analysis of the Arnold/Earnshaw controversy is superficial. He bases his argument on the failure of Earnshaw to provide precise dates in his book "Longitude - an appeal to the public", and he places much weight on Brockbank's statement that he had seen an Arnold watch with a spring detent escapement earlier, despite the fact (which Staeger does not mention) that Brockbank's evidence is compromised. Staeger places much emphasis on Arnold's pocket chronometer No. 10/51 (which is illustrated). This watch, circa 1779, was made for Mr. Aubert (see the above facsimiles) and was "converted from pivoted detent to spring detent". But when was it converted? Staeger apparently relies on a letter written by Edward John Dent in 1832 in which he states "Mr. Arnold has studied his books and finds that 51 was made for Mr. Aubert, and is the celebrated chronometer which proved the invention of the springs and the escapement before the House of Commons Committee as having been applied before Mr. Earnshaw ever thought of it." Thus Dent is merely citing John Roger Arnold's opinion about events involving his father, and the letter cannot be taken as proof.

What is more remarkable, is that Staeger provides a facsimile of Arnold's patent, but he does not mention it. This is a stunning omission, seeing that the patent is complete rubbish and in no way describes a spring detent escapement. As noted elsewhere, Arnold's patents are precise and clear, except for his drawing and description of a spring detent escapement, which vague, superficial and, actually, incomprehensible. To decide in favour of Arnold on the basis of this patent, a watch that has been converted at an unknown date, and testimony by Arnold's son some 50 years after the events is poor reasoning and bad historical research. Staeger may be right, but we cannot agree with him on the basis of his quite inadequate argument.

[Remark] Staeger provides a description and several photographs of a ring watch which he states is the one made for George III in 1764. One interesting feature of this watch is that the quarter repetition is similar to the standard continental quarter repetition, whereas the other repeaters illustrated by Staeger use Stogden's repeater mechanism. This difference may be due to the small size of the watch, but it might be because Arnold used a movement imported from France or Switzerland.

[1st edition, review by D.J. Blackwell] In 1993 the 400th anniversary of John Harrison's birth in 1693 was celebrated in various ways to honor the man who had spent much of his life trying to solve the longitude problem which was considered by most experts to be a problem beyond human solution. Harrison's tenacious quest demonstrated a truly reliable timekeeper able to hold a steady rate in spite of conditions at sea. This fascinating story has been superbly set forth in *The Quest for Longitude* in 1996 covering *The Longitude Symposium at Harvard* in 1993. This had little to do with current methods of finding longitude but was of great historic interest and devoted much justified attention to Harrison.

Harrison's approach to his timekeeper was to take the verge watch of his day and refine it to eliminate as many errors as possible. While this was successful, it was extremely expensive and almost prevented its adoption for general navigation purposes. Horologists set about finding a more practical solution by devising less costly but equally reliable timekeepers resulting eventually in instruments thoroughly satisfactory but far less expensive. Many in Britain and other countries contributed to this quest, but three English horological families played a great part in this story. Hans Staeger's book is the account of those who played a big part in bringing the marine chronometer into general use. The author concentrates on the three famous families, and those associated with them who brought this about.

At first sight this book is forbidding because of its size and weight (885 pages, 11-5/8 x 8-5/8, 8-1/4 lb.); it is fully bound in cloth or green leather. Gold stamped on the front cover with full title and view, by David Penney, is the Arnold pivoted-detent escapement used in John Arnold's pocket chronometer No. 29. Not only is this work an outstandingly attractive volume and publishing masterpiece in a day not noted for elegant books but is the result of much original research.

In 1972 Dr. R. Vaudrey Mercer, an English physician deeply interested in precision horology and several outstanding makers of chronometers, published the first of his three important volumes, *John Arnold & Son*, to be followed in 1977 by *The Life and Letters of E.J. Dent*; this was followed in 1981 by *The Frodshams*. The present work has resulted from the author having read these works which stimulated his interest to learn more about the early makers who took Harrison's successful but costly and complex timekeeper and turned it into a practical and reasonably priced solution to the longitude problem. Horologists from many countries worked on this problem. Some produced excellent devices but because of the work of people like those covered by Dr. Mercer, the groundwork was laid for a particularly successful manufacture of marine chronometers in London and Liverpool.

The 267 pages of colored illustrations, numbering over 1000 photographs, are quite unlike anything hitherto published. Considerable photographic skill combined with excellent lighting results in most instances with freedom from objectionable reflections often evident in photographs of such objects as watch movements.

Since the time Arnold, Dent, and Frodsham were working, the final adjusting and testing of chronometers were usually done by makers (whose names appear on movements and dials). There were many styles of balances, various forms of hairsprings, detents, etc., and it is useful to have a book that illustrates many of these variations and to learn of their performances.

In this book one can study the transition from compensation curbs where an external bimetallic device more or less effectively shortened or lengthened the operating portion of the hairsprings to the incorporation of temperature compensation in the balance itself, which in turn resulted in various balance designs by J. Arnold, such as the "T," "S" and "Z" types, sometimes supplemented with a circular ring. Some of these must have presented interesting manufacturing and poising problems.

Hairspring design is reviewed. J. Arnold invented the helical or cylindrical hairspring with top and bottom terminal curves. This became the generally accepted chronometer hairspring design though other forms such as conical and spherical were tried by other makers especially those on the continent.

Arnold's famous ring watches which were made for King George III and Queen Charlotte are illustrated and may be the inspiration for some contemporary watches where the bezels are much jewelled with diamonds.

The association of J.R. Arnold and Dent (1830-1840) is well covered as is the later association of J.R. Arnold and Charles Frodsham which began when Arnold left the firm. The early watches produced by Arnold & Frodsham carried both names until the mid 1850s by which time Charles Frodsham's name was so well known that he no longer felt the need of using Arnold's name.

Important features of this book include material on fine regulators, carriage clocks, and deck watches, with documentary information about all three firms that would not be available to most people today. The Act of Queen Anne of 1713 offering certain rewards for a portable timekeeper for use on the sea which started the whole quest for what came to be the chronometer is published in full as are other documents and numerous tables that showed how these devices performed under sea conditions.

Some new insights into the old Arnold-Earnshaw controversy concerning which had priority in the invention of the spring-detent escapement are offered. Professional jealousy entered into this vituperative exchange. The author points out the strange situation of Earnshaw's care in recording aspects of his spring-detent development which seems to be lacking in careful recording of dates pertaining thereto. This may or may not be the last word in this debate but it provides food for thought to those who are deeply interested in the more subtle aspects of horological history and technology.

The illustrations show how the English watch developed and, during the period the book covers, came to be regarded throughout the world as the ultimate in watches because they were precision timekeepers with tasteful design, thus making the classic English watch admired and imitated by others for many years. The function of the English watch was to tell the time; this it did by means of a clear dial, finely

proportioned numerals and hands fitted to a gold or silver case which has appeal because of its elegant and simple refinement.

When one looks at some watches today they seem to challenge the owner to see if he can determine the time. Some are so enmeshed with extraneous hands and hardware, which, when jeweled with precious stones, only adds to the absurdity.

*If the reader is to get the most out of this book, he should have read Dr. Mercer's trilogy which inspired the present work. It goes without saying an understanding of Rupert T. Gould's *The Marine Chronometer* will greatly increase the pleasure of the reader.*

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[Remark] *I have left in this review because it is what decided me to buy Staeger's book. Having read that book I have realised that Blackwell's "picture" of the book is quite wrong.*

First, a lot of the review has nothing at all to do with the book. The opening paragraphs on Harrison and Mercer's books are background padding.

Second, the review implies content which does not exist. There is no review of hairspring design, and one cannot "study the transition from compensation curbs ... to the incorporation of temperature compensation in the balance itself". The "association of J.R. Arnold and Dent (1830-1840) (and) the later association of J.R. Arnold and Charles Frodsham" is not well covered. Nor does the book "show how the English watch developed", except accidentally. Such things may be mentioned, but they most certainly are not examined. And the "new insights into the old Arnold-Earnshaw controversy" are, as I have noted, superficial.

So I bought a book on the basis of a misleading review, where (I presume) the reviewer has been motivated by generosity rather than honesty. It is "an outstandingly attractive volume and publishing masterpiece", but surely content is more important than sheer bulk and beauty?

However, the last paragraph is perfectly correct; without reading Mercer and Gould (and Andrewes) the reader will not get much out of the book! I wish I had paid more attention to that statement.

R2466 Stahl, F**200 Jahre Pforzheimer schmuck und uhrenindustrie**

Pforzheim: Kollmar & Jourdan, 1967, 26 x 21 cm, 50 pp, ill.

(German).

The number of pages is variously given as 17, 40-50, 64 and 100!

Jewelry and timepieces from the Pforzheim museum, including wrist and pocket watches.

R2467 Star**Outillage et tours d'horlogerie de précision**

nd, 86 pp, ill.

Catalogue (English, French).

Manufacturer's catalogue of tools and lathes.

R2468 Stark, L**Antique watches with current values**

USA: Collector Books, 1979 (1972), 8vo, 56 pp, ill.

Price guide (English).

There appear to be 3 printings in 1972, 1976 and 1979. Sources give 47 pp, 56 pp or 64 pp.

A price guide with illustrations from a W.G. Crook 1888 trade catalogue.

This may be the same book as Schroeder "Antique watches, collectors illustrated price guide".

R2469 Starrett & Co**50th anniversary of Starrett tools, catalogue 25**

USA: Starrett & Co, 1930, 383 pp, ill.

Tools (English).

R2470 Stein, AL**Der belehrende uhrmacher**

oder kurze belehrung für die welche taschen, wand, tisch und schlag uhren besitzen

Leipzig: Lincke, 1800, 8vo.

(German).

Listed in Robertson.

The instructive horologist, or brief instructions for all kinds of pocket, wall, table and striking clocks.

R2471 Steinberg, J**Why Switzerland?**

England: Cambridge University Press, 1996 (1976), 23.5 x 15.5 cm, 300 pp, 3 ill, 34 plates, 3 maps.

History (English).

The first edition was reprinted with corrections in 1978 and then reprinted 5 times to 1991.

Eight chapters: Why Switzerland?, History, Politics, Language, Wealth, Religion, Identity and Why Switzerland matters. Followed by an appendix (lower house voting method), notes (including references) and index.

Chapter 5, Wealth, examines the textile and watchmaking industries, and there are some other mentions of watchmaking.

[2nd edition, excellent] *Now and then I read a book which is both enlightening and inspiring. This is one of those.*

There is very little on watchmaking in this book, much less than the 8 relevant illustrations suggest; what

is included are rather general remarks, primarily in the context of Swiss industry. And so, in a sense, I should not include this work. However, such a comment is rather misleading.

Steinberg provides an utterly fascinating examination of why Switzerland developed in a particular and idiosyncratic way. His discussion of history, politics, language and religion are not dry, academic pontifications but deeply felt examinations of the character of the people and their institutions, which provide a startling understanding of what being Swiss means. Central is a concept of sovereignty completely alien to people raised in monarchist cultures like America, England and Australia. We have social structures philosophically based on the idea of an over-ruling sovereign (be it king, president or prime minister) with power devolving down from on high; a structure mainly differing from an hereditary dictatorship by the regular election of monarchs. In contrast, in Switzerland the sovereign is the people. Power comes from the bottom, from small communities, and is granted to councils whose actions always require the approval of the sovereign people. This inversion is the basis on which small, isolated communes of socially and linguistically disparate people are able to come together and form a stable and cohesive nation.

Superficially the book is irrelevant, but I feel it is very important. I have never felt comfortable with other writers who blandly explain the Swiss horological industry as stemming from the Edict of Nantes or some other vague and non-explanatory view. Nor have I understood why English watchmaking was centred on Lancashire, which is usually just presented as a fact without providing any real explanation. In contrast, Steinberg enables us to understand why industries such as watch making and silk spinning were established and why they developed on farms and in many small villages; why etablissage existed. This explanation is not some academic theory based on economics or geography. It is through an appreciation of the whole nature of Swiss society and the Swiss people that we come to see why certain structures arose in the way they did. How a huge industry can be built from thousands of individual and individualistic cottage workshops.

See also Bowring "Report on the commerce and manufactures of Switzerland" which examines many of the same points.

R2472 Steinmann

Procédés chimiques employés dans l'horlogerie

et la bijouterie et initiation à l'art de l'essayeur

Bienne: , 1918, 15 x 10 cm, 32 pp.

Technical (French).

R2473 Stelle, J Parish

American watchmaker and jeweler

a clear and complete exposition of all the latest and most approved secrets of the trade with a series of plain instructions for beginners, etc, etc

New York: Haney's Trade Manuals, Excelsior Publishing House, 1873 (1868), 19.0 x 12.0 cm, 102 pp, tables, 24 pp ads (102 pp, tables, 6 pp ads).

History, repair (English).

The two copies I have contain the book (copyright 1868) and the supplement (copyright 1873) bound together with a common table of contents; the supplement has its own title page. They are different printings.

The publisher's note to the supplement says "Since first publication, some nine years ago, the foregoing work has passed through several editions ...". The text mentions a book "Secrets of the trade", price \$3, and this may be what the publisher is referring to. The only books that might be earlier printings are Collins "Secrets of the trade for watchmakers and jewelers" and Hopkins "The watchmaker's and jeweler's handbook" (which see).

The note also indicates this is the first printing of the supplement and I presume it was never printed separately.

In two parts. The first part of 62 pages contains an introduction, watch repair (24 pages), clock repair (3 pages), processing metals (16 pages) and a 3 page glossary. The supplement of 40 pages is titled "Supplement to the American watchmaker and jeweler containing additional valuable information including private formulas and processes of leading American houses together with a careful selection of the best French and English methods adapted to the American trade". It contains further receipts for metals and enamels.

[1873 edition, fair] The introduction contains brief remarks on watchmaking in America and the Waltham and Elgin companies. This is followed by chapters on watch repairing, tables of trains, tempering, broaches and burnishers, and repairing clocks. The sections on repair are descriptive without any real explanations and discuss techniques that are, on the whole, crude. Most are identical to those in Hopkins "The watchmaker's and jeweler's handbook" and have probably been copied from that book. The majority of the book and all of its supplement describe methods for processing metals; refining gold and silver, soldering, plating, cleaning, alloys and enamels.

There is no evidence that Stelle knew anything about watch repair. The book is interesting for its compilation precious metal and alloy receipts, rather than the few poor repair methods.

See also Kemlo "Kemlo's watch repairer's handbook" which copies the repair sections.

R2474 Stengel, FA**A practical work on watch repairing**

valuable recipes

Marion Ohio: FA Stengel, ca 1900 (ca 1896), 22.5 x 15.0 cm, 77 pp, 78 ill.

Repair (English).

No date in either edition, but the first circa 1896 and the second circa 1900. The first edition has 2 pages of illustrations of tools, but my copy of the second edition and another do not have illustrations of tools and it may have been printed with this omission.

Pages 5-28 describe how to disassemble, repair, clean and assemble an American watch. This section is in a question/answer format and the 78 illustrations (on 2 pages) relate to it.

Pages 29-44 consist of assorted questions and answers of a standard to suit a lay person, followed by the illustrations and descriptions of the illustrations.

The remainder of the book consists of a number of separate topics, many reproduced from other sources. They are short notes which cover: Points to be remembered (things that affect a watch's rate), Mounting a watch (how to assemble and oil a cylinder watch, which refers to an illustration that has been omitted), Taking tarnish off silverware, Broaches, Bad depthing, Clock case polish, Cleaning clocks, Defective screws, Cleaning gold and silver cases, Good material, How to hard solder, How to polish gold, brass and steel, Removing tarnish from gold, How to regulate a watch, Hair spring selection, Jewel pins, Old clocks, Oil stones, Watch cleaning and repairing, Pinions, Points to be remembered, Polishing fluid, Polishing, Peg wood, Putting in a new tooth, Pin tongues. Replacing main springs, Removing stains from silver, Stopping or irregular running, Silver plating, Stopping and starting of watches, To mark names on tools, To harden steel tools, To tighten ruby pin, To tighten canon pinion, Timing screws, To clean holes in clock plates, To solder in a new tooth, To temper cylinders, To blue screws, To anneal brass, The fork, The escape wheel, To extract a broken screw, Fourth pinion, New pinions, Material for mending a dial, Oiling watches, Polish for brass, Polish for wood, Polishing brass, Straightening pivots, Restoring colour to gold, Drawing temper, To temper gravers, Silver plating solution, Removing gold from silver, Removing soft solder, Finishing steel parts, To fasten ribbons, To make platinum adhere to gold, To polish pivots, To harden copper, To retain the colour in hard soldering, Care of the watch (by Kemlo), Cleaning and repairing American clocks (by Kemlo), Tempering (brass, drills, gravers, case springs)

[2nd edition, poor] My suggested date for this book is based on three things: the style of writing, the quotations from Kemlo "Kemlo's watch repairer's handbook" and the style of the first 44 pages. These pages are similar to the prize essays published by Hazlitt & Walker, and in particular to Detent "Repairing american watches". Although a guess, I would not be surprised if Stengel had submitted an essay in the 1890s which, thankfully, did not win, and later republished it with the additional material and as the second edition.

The first part, describing watch repair is mediocre at best. Reading it is a bit like wading through mud, but less satisfying, and it is not helped by the tiny, poor illustrations of watch parts and the omission of all illustrations of tools. I have the impression that Stengel knew very little and understood even less. After all, anyone who quotes Kemlo, who quoted Stelle "American watchmaker and jeweler", who was obviously ignorant and incompetent, could not be too knowledgeable!

As you can see from the above list, the rest of the book is best described as random jottings, and I would not be surprised if all have been copied from other journals and books, even though only a few acknowledge their sources. Some of these jottings display a competence missing from the first part, but their randomness suggests careless collecting of information to pad out an otherwise too short book.

Overall this book should be ignored by anyone after useful information and only purchased by people like myself who collect books about watches irrespective of their quality.

By the way, I have no idea what a pin tongue is, but then I am not interested any way.

R2475 Stephens, CE**On time**

how America has learned to live by the clock

New York: Bullfinch, Little Brown, 2002, 23.5 x 23.5 cm, 256 pp, 175 col ill, 50 b/w ills.

History (English).

An illustrated history of the ways Americans have measured, used, and thought about time over the past 300 years, drawn from a popular exhibit at Smithsonian's National Museum of American History, Behring Center.

The author is a curator in the History of Technology Division of the Smithsonian's National Museum of American History.

Acknowledgements and Introduction followed by 5 chapters: Telling time (48 pages), Mechanizing time (42 pages), Synchronizing time (48 pages), Saving time (32 pages), and Expanding time (36 pages). Followed by Notes, Illustration credits and Index.

[1st edition, fair] An interesting book which is a useful compilation of information from other sources. Only a little of it is directly relevant to mechanical watches: Early American watches (4 pages), Watch manufacturing (6 pages), Wrist watches (7 pages), Railroad watches (1 page) and Presentation watches (3 pages). Of these, only the section on the history of wrist watches is good; the remainder are too short and give just a superficial summary.

R2476 Stephens, WB**The horological collection of Dr William Barklay Stephens**

San Francisco: National Association of Watch and Clock Collectors, 1951, 23 x 15 cm, 16 pp, 14 ill. Collection (English).

Reprinted from the NAWCC Bulletin, No. 41, 1951, pp 15-29.

The collection was housed in the California Academy of Sciences.

[reprint of NAWCC Bulletin, poor] The article begins by describing the cases housing the collection with irrelevant details. A plan of the display is provided and the contents of each case summarised. There are 13 photographs which, in the reprint, are quite inadequate.

There is no useful information about the items and not enough detail to make this a useful companion when visiting the collection. So the booklet is pointless.

R2477 Stern, M**Die uhrmacherei, profiwissen für den praktiker**

werkzeuge, arbeitsverfahren, tricks und tipps - Band I

Berlin: Historische Uhrenbücher, 2008, 24.5 x 17.5, 234 pp, ill.

Repair (German).

Seven chapters: The Chronograph and its function; Mathematics at the wrist; Polishing and cleaning; The staking tool; Jewelling; Crystals; and Dials."

"This book contains an unbelievable abundance of information, which is for everyone interested in watchmaking."

R2478 Stern, M**Horology CD Roms**

Berlin: Michael Stern, 2000, CD Rom.

Repair, technical, tools (German).

Reproduced on a CD Rom (requires Acrobat Reader and a browser).

Michael Stern has transferred a number of German books onto CD Rom. At present there are 15 CDs:

CD 1: Flume "Das Flume buch 1887-1937"

CD 2: Jendritzki "Werkstattwinke des uhrmachers" (3 vols) and Jendritzki "Die reparatur der Armbanduhr" (1949).

CD 3: Bockle, Brauns, Jendritzki and Schmidt "Lehrbuch für das uhrmacherhandwerk" (2 vols, 1951).

CD 4: Schultz "Der uhrmacher am werktisch" (1933).

CD 5: Jendritzki "Der moderne uhrmacher" (1988) and Jendritzki "Der uhrmacher an der drehbank" (1982).

CD 6: "Taschenuhren, chronographen, stoppuhen und andere komplizierte taschenuhren".

CD 7: "Drehen und drehmaschinen in der uhrmacherei", Manuals and catalogues for lathes, including Lorch.

CD 8: Lehotzky "Mechanische uhren mit fachzeichnen" (1961).

CD 9: Giebel "Complete works". I presume this contains the three books "Der einfluss der hemmung auf den gang der uhr", "Trigonometrische berechnungen in der uhrmacherei" and "Die feinstellung der uhren".

CD 10: "Elektrische und elektronische uhren". Three books by Lehotzky, Schmidt and Krug (not in this bibliography).

CD 11: Menny, "Die Funktion der Uhr" (1994); Mann, "Porträt einer Taschenuhr" (1986); Krug, "Mechanische Uhren" (1987); Jäger, "Werkstatterfahrungen - Uhreninstandsetzung" (1972).

CD 12: Firt, "Die handwerksmässige Feinstellung der Uhren" (1956); Moritz Grossmann, "Abhandlung über die Konstruktion einer einfachen, aber mechanisch vollkommenen Uhr" (1880); Moritz Grossmann, "Abhandlung über das Regulieren der Uhren" (1880); Norbert Schömann, "Das richtige und schnelle Gangsetzen des freien Schweizer Ankerganges" (1950); Emil Unterwagner, "Die Feinstellung der Kleinuhren" (1949).

CD 13: Georg Jacob-Katalog 1911; Georg Jacob-Katalog 1950.

CD 14: Werksucher by Jacob, Berger, Engelkemper and Switzerland.

CD 15: Books by Caspari, Geissler, Grosch, Loeske, Rothmann, Saunier, Schwanus, Vogel.

As well as reproducing the books, some CD Roms have extra material and two include animations.

R2479 Stewart, D; Holland, WJ; Coggeshall, AS**Catalogue of the collection of watches**

belonging to Mr HJ Heinz of Pittsburgh

Pittsburgh: Carnegie Institute, nd (1917), 23.5 x 16.0 cm (29.5 x 22 cm), 31 pp and 33 plates.

Collection, catalogue (English).

Originally published in the Annals of the Carnegie Museum (vol 12). The annual report for 1917-18 states:

"During the past year we have issued parts 3 and 4 of vol. XI of the Annals and Part I of Volume XII. The latter is an illustrated catalog of the collection of watches deposited in the Museum by Mr. H.J. Heinz, and in addition to the regular issues your Director had an edition of several hundred made as a reprint, and neatly bound, with a view to meeting the demand of this collection; and an edition deluxe of fifty copies on large paper was printed for the owner of the collection, as a compliment to him, he, however, kindly consenting to defray the cost of binding which is called for in such a case."

The deluxe volume is 29.5 x 16 cm in leatherette boards and the public printing 23.5 x 16 cm in half

cloth and green papered boards.

“Deposited by him in the Carnegie Museum, published by the authority of the Board of Trustees of the Carnegie Institute November 1917”.

A brief introduction followed by the catalogue of 6 pocket sundials, 2 chatelaines and 92 watches. All are illustrated by black and white photographs of cases and dials. The catalogue provides brief, factual notes defining each piece.

[1st edition, fair] Historically interesting, but the lack of explanatory and interpretive detail makes it a collector's item rather than a useful book.

The collection is in the Carnegie Museum of Natural History.

R2480 Stockel, HFA

Anweisung für liebhaber des uhrenbaues

Munich: , 1802, 8vo.

Description, technical (German).

Listed in Robertson, but undoubtedly in error for J. M. Stockel “Praktische lehre oder anweisung über den uhrenbau in seinem ganzen umfange”.

R2481 Stockel, JM

Praktische lehre

oder anweisung über den uhrenbau in seinem ganzen umfange, nach welcher ein jeder liebhaber die besten und richtigen uhren aller art selbst auf eine leichte und fassliche art verfertigen kann

München: Joseph Lindauer, 1820, 8vo, 14, 199 pp, 16 fld plates.

Description (German).

The title is also given as “Praktische lehre uber die uhrenbau in seinem ganzen umfange”.

A practical manual on clocks, explaining the making of all kinds of clocks, from tower clocks to wall clocks, including the required calculations and measurements. The work clearly illustrates the instructions given, showing wheels in different sizes, dials, weights, etc., as well as a circular calendar with the rising and setting of the sun and the moon, also depicting the signs of the zodiac.

Only clocks.

R2482 Stockholm Nordiska Museet

Catalogue ur och urverk

kulturbilder ur tidmätningens historia

Stockholm: Nordiska Museet, 1955, 143 pp, 107 ill.

Collection (Swedish).

R2483 Stolberg, L

Die kutschenuhr, satteluhren, karossenuhren, alkovenuhren

Munich: Callwey, 1993, 29 x 26 cm, 262 pp, 300 ill.

Description, history, illustration (German).

Description and history of travelling clocks and watches.

R2484 Stolberg, L

Ich trage, wo ich gehe stets eine uhr bei mir

Klagenfurt: Carinthia, 1982 (1980), 23 x 23 cm, 182 pp, 200 ill.

Description, illustration (German).

I carry, where I go a watch is always with me.

Decorative watches, dials and keys.

R2485 Stolberg, L

Lexikon der taschenuhr mit literaturverzeichnis

Klagenfurt: Carinthia Verlag, 1995 (1983), 30 x 21 cm (22.5 x 22.5 cm), 468 pp, ill, 112 plates (408 pp, 45 plates).

Dictionary (German).

4 editions. Revised by H. Jendritzki and F. Weger.

R2486 Stoltz, V; Parkhurst, EH

William Wallace Dudley and his masonic watch

USA: Bowman Technical School (USA: National Association of Watch and Clock Collectors), 1979 (1968), 18 pp, 22 ill.

Description (English).

Originally published in the Bulletin of the NAWCC No 136 (1968) and reprinted by the Bowman Technical School.

Biography of Dudley; History of the Dudley Watch Co., its bankruptcy and successor companies. Including descriptions of watches, production and a 2-page interchangeability chart.

This is a matter-of-fact, very competent history of Dudley and its Masonic watches and well worth reading.

R2487 Stone, Gene

The watch

New York: Abrams, 2006, 9.25 x 9.25 inch, 256 pp, 500 ill.

Collecting, illustration (English).

A survey of vintage and contemporary men's wristwatches covering fifty brands “from Patek Philippe and Rolex to Seiko and Swatch”. The book includes information on buying, collecting, and maintaining watches.

"The book is a survey of the best vintage and contemporary men's wristwatches that is as visually compelling as it is informative to read. A well-made man's wristwatch combines inspired design, technical innovation, and precise craftsmanship. Vintage watches are filled with sentiment and history, and are often passed from wrist to wrist across generations. Today, designers use cutting-edge techniques and materials to create some of the most complex miniature machines ever attempted. The book provides essential wisdom on buying, collecting, and maintaining these timepieces. Illustrating the text are more than 500 photographs of men's watches, including remarkable details of dials and movements, selected for their beauty and diversity from collections around the world."

R2488 Stott, V**An investigation of the problems relating to the use of pivots and jewels in instruments and meters**

London: National Physical Laboratory, 1931, 4to, 55 pp, 56 ill.
Technical (English).

R2489 Strazzi, M**Lancette & C.**

un secolo di orologi da polso, la storia, la tecnica, il design
La Chaux-de-Fonds: Pressision, 2005, 466 pp, 1200 ill.
(Italian).

A well-illustrated year-by-year analysis of the main events concerning the watch industry from 1900 to 2000.

"The book illustrates the adventure of the wristwatch as never before: year by year, model by model, picture by picture. Lancette & C. runs through a century of technique and design, adding 1200 pictures, unpublished photos and period advertisements. Lancette & C. represents an important point of reference for enthusiasts and the collectors."

R2490 Strazzi, M**Rolex dalla A alla Z**

gli orologi, la storia, il mito
La Chaux-de-Fonds: Pressision, 2007, 28 x 25 cm, 254 pp, ill.
Identification, illustration (Italian).

R2491 Streeter, EW**Catalogue of jewellery, watches and clocks
Catalogue, with designs and prices**

of diamond ornaments, and machine jewellery, in 18-carat gold, also of english machine-made watches & clocks

(London: Hancock & Co), nd (ca 1880), 8vo, 132 pp, ill (84 pp, 500 ill, 1 plate).

Catalogue (English).

Several editions, the reprint being of the 1885 edition.

R2492 Strom, A**Skelett-uhren**

Biel: Strom Chromos, 2006, 8vo, 140 pp, ill.
Illustration (German).

The grand tradition of skeleton timepieces.

R2493 Stuart, W; Boles, D**Watch and clockmakers in Ireland**

Ireland: Celbridge, Co., 2001, 114 pp, 10 plates.
Makers (English).

R2494 Stubs, Peter**Illustrated catalogue of watch and clockmakers tools**

nd (1790), 14.5 x 9 inch, 36 pp, ill.

Tools (English).

Crom "Horological shop tools 1700-1900" reproduces plates from the 1801, 1851 and 1890 catalogues.

R2495 Sturm-Bednarczyk, E**Phantasie-uhren**

kostbarkeiten des kunsthandwerks aus der sammlung Therese Bloch-Bauer
Wein: Brandstatter, 2002, 29 x 24 cm, 80 pp, 115 col ill.
Catalogue, illustration (German).

R2496 Sturm, FX**Montres du Genève 1630-1720**

La Chaux-de-Fonds: Musée International d'Horlogerie, Basel: Gschwind, 1978, 22 x 15 cm, 60 pp, 29 plates.

Collection, catalogue, description (English, French, German).

The descriptions are in English, French and German.

Also given as 96 pp, 73 ill.

One of three separate booklets describing 87 watches of the Dr E. Gschwind collection.

R2497 Sturm, FX**Montres françaises 1580-1680**

La Chaux-de-Fonds: Musée International d'Horlogerie, Basel: Gschwind, 1983, 76 pp, ill.
Collection, catalogue, description (English, French, German).

The descriptions are in English, French and German.

One of three separate booklets describing 87 watches of the Dr E. Gschwind collection.

R2498 Sturm, FX**Pautex and his contemporaries**

the collection of the museum of clocks, watches and enamels in Geneva

Tokyo: Sufunotomo, 1992, folio, slip case.

Collection (English).

This has been advertised as printed in 1892 and 1983 by the same publisher!

R2499 Sturm, FX**Stackfreed 1540-1640**

La Chaux-de-Fonds: Musée International d'Horlogerie, Basel: Gschwind, 1979, 50 pp, ill.

Collection, catalogue, description (English, French, German).

The descriptions are in English, French and German.

Also given as 117 pp, 78 ill.

One of three separate booklets describing 87 watches of the Dr E. Gschwind collection.

R2500 Sully, Henry**Règle artificielle du temps****Unterricht von der eintheilung der zeit**

De la Division naturelle & artificielle du Temps, des Horloges & des Montres de différentes constructions, de la manière de les connoître & de les régler avec justesse

Paris: Gregoire Dupuis, nd (1714), 17.0 x 10.0 cm, xxii, 433 pp, 3 ill, xv pp, 3 pp book list, 5 fld plates, 1 table (xxvi, 145 pp, 1 fld plate) (114 pp, 1 fld plate).

(French).

Three editions in 1714, 1717 and 1737. The modern facsimile reprint is of the 3rd edition of 1737.

German translations were printed in 1746 and 1754.

The 1714 edition is available as a Google Book PDF file (with plates scanned folded and so useless, and may not be complete).

The third edition is in 7 parts:

Part 1 (183 pages) is "Règle artificielle du temps" and has 11 chapters: The construction of clocks and watches in general; The different types of clocks and watches and their accuracy; The physical and mechanical reasons why watches are not as accurate as clocks; Natural and artificial time; Apparent and mean time; Time by the fixed stars; Using apparent and mean time to regulate clocks and watches; Remarks on choosing watches; The principle reasons why one cannot judge the quality of a watch by tests; The use of the balance spring; and General rules for managing watches.

Part 2 (pages 184-192) contains remarks by Leibnitz on Sully's book.

Part 3 (pages 193-236) is a description of a watch of new construction by Sully.

Part 4 (pages 236-239) is a report by Sebastian, Varignon, Cassini and Saurin.

Part 5 (pages 239-272) is a critical history of escapements by Sully.

Part 6 (pages 273-413) is by Julien Le Roy and includes: Preface; Memoire on the watch of Sully; 5 descriptions of new horizontal and universal sun dials; Remarks on the construction of sun dials by Buterfiels; A new construction of the train for chimes and alarm; 5 descriptions of chiming and alarm trains; A new way to construct large clocks and brief description of a large clock; A problem in mechanics; A new arrangement for the cadrature of clocks with repetition; A history of horology from 1715 to 1729.

Part 6 (pages 414-433) is a memoire on horology by Pierre Gaudron with a description of a new clock with weights.

Reviewed in Baillie "Clocks and watches: an historical bibliography".

R2501 Sussex, Duke of**Catalogue of the collection of the duke of Sussex**

London:, 1843, 13 pp.

Collection, catalogue (English).

The full title is "Catalogue of the very celebrated and unique collection of regulators, clocks, chronometers and watches of the duke of Sussex".

Listed in Tardy.

R2502 Sutter**La montre ancienne a coq**

Grenoble:, 1911, 35 pp, 3 plates.

History (French).

Listed in Robertson and Tardy.

R2503 Sutton, KS**Clock and watch guide**

: National Book Club, ca 1950, 11.5 x 8.5 inch, 31 pp, ill.

Description (English).

Undated.

R2504 Swartchild**Catalogue of tools, materials and supplies**

of every description

Illinois: Swartchild & Co, 1951 (ca 1930), 30.0 x 22.5 cm, 610 pp, ill (668 pp, ill).

Catalogue, identification, tools (English).

Produced in many editions, a few of which are:

B-177, 1932; B-232, 1935 of 668 pp, ill; B-500, 1951 of 610 pp, ill.

American supply company catalogue including tools, materials, findings, etc.

[B-232 1935, fair] Probably the most useful parts are the indexed sections showing American and Swiss movements, although these are largely superseded by Ehrhardt and Meggers "American watches beginning to end, identification & price guide" and Pritchard "Swiss timepiece makers 1775-1975" and hence not indexed here. The prices are fascinating!

R2505 Swartchild**Condensed quick reference material book**

USA: Swartchild & Co, 1963, 21.5 x 13.5 cm, 63pp, ill.

Repair (English).

"An efficient time-saver for most of your everyday look-ups."

Recommended stock list (4 pages showing setting parts for 108 models); All imported models (44 pages, list of manufacturers' calibres giving staff and stem ordering numbers for the Swartchild, Bestfit, Quickfit and Marshall systems); Material systems (9 pages, descriptions of material cabinets); Crowns (2 pages, list of crown size); and Shock proof units (2 pages, illustrations of Incabloc, KIF, and other shock resisting balance jewels).

[1963, fair] Very useful in the 1960's, but now largely ephemera unless you have access to and can order original parts.

R2506 Swartchild**Swiss material catalogue and watchmaker's guide**

USA: Swartchild & Co, 1956, 322 pp, ill.

Catalogue, makers, repair, tools (English).

R2507 Swartchild**The answer, a solution to your bench problems**

USA: Swartchild, 1923, 68 pp, ill.

Business (English).

"The book was written so that retailers could charge customers correctly for repairs and so that customers could understand that it was the correct charge."

R2508 Swartchild, S**Encyclopedia of repair prices for watchmakers and jewelers**

Chicago:, 1910, 7.75 x 5.5 inch, 97 pp, ill.

Business, repair (English).

Detailed charges for fixing and repairing watches, clocks, jewelry, music boxes, engraving, etc.

R2509 Sweazy, BG**Supplement to master watchmaking**

aids in estimating and repairing

USA: Chicago School of Watchmaking, 1952, 10.5 x 14.0 cm, 23 pp, no ill.

Repair (English).

A diagnostic booklet giving symptoms and possible causes. Each page is in 3 columns: Trouble, Possible causes and Suggested corrections, and there are 26 problems covered in all. This information is presented in 5 sections: Winding mechanisms (5 problems), Winding and setting mechanisms (3 problems), Setting mechanisms (2 problems), Irregularities in running (12 problems), and Stoppers (4 problems).

[1952 printing, fair] The title suggests this booklet is primarily for determining the costs of repairs so that the watchmaker can give the customer a reasonably accurate estimate for a job. Many of the suggested corrections are obvious (for example "roller jewel loose: re-cement roller jewel) and so the information is not aimed at teaching watch repair. However, it could be used in conjunction with the repair estimates in Sweazey "Master watchmaking, modern shop methods" to work out a total value of work to be done.

R2510 Sweazy, TB; Sweazy, BG**Master watchmaking**

a modern, complete, practical course

USA: Chicago School of Watchmaking, 1978 (1947), 28.0 x 21.5 cm, 982 pp, 1371 ill in 36 parts.

Repair (English).

Printed between 1947 and 1978 with individual parts having different copyright and reprint dates.

The page and illustration counts include the pages to be returned for grading.

There are also modern reprints (photocopies) and a complete copy on CD ROM.

Produced in 34 separate parts or lessons. Each lesson finishes with test question pages which were to be answered, cut out and returned to the Chicago School of Watchmaking for grading, There are also self test questions and a couple of progress examinations. Copies often have these test sections missing. The lessons are:

Lesson 1: Introduction and casing watches.

Lesson 2: Crowns, stems, sleeves and bows.

- Lesson 3: Fitting watch crystals and attachments.
- Lesson 4: Nomenclature and sizes of watches.
- Lesson 5: Mainsprings.
- Lesson 6: Motor and jeweled barrels.
- Lesson 7: Selecting the mainspring.
- Lesson 8: Assembling watches.
- Lesson 9: Winding and setting mechanisms.
- Lesson 10: Cleaning watches.
- Lesson 11: Timing, rating and regulation, followed by proficiency examination 1.
- Lesson 12: Factory set train jewels.
- Lesson 13: Factory balance hole jewels and roller jewels.
- Lesson 14: Friction jewel.
- Lesson 15: Replacing factory balance staffs.
- Lesson 16: Truing balance wheels, followed by proficiency examination 2.
- Lesson 17: Poising balance wheels.
- Lesson 18: Collecting and truing hairsprings.
- Lesson 19: The overcoil hairspring.
- Lesson 20: Fitting hairsprings in watches, followed by proficiency examination 3.
- Lesson 21: Principles of the lever escapement.
- Lesson 22: Principles of the lever escapement.
- Lesson 23: Types of escapements.
- Lesson 24: Drawing the lever escapement.
- Lesson 25: Drawing the lever escapement.
- Lesson 26: Matching the escapement, followed by proficiency examination 4.
- Lesson 27: Tools - hardening and tempering, followed by proficiency examination 5.
- Lesson 28: The lathe.
- Lesson 29: Lathe work.
- Lesson 30: Lathe work.
- Lesson 31: Lathe work.
- Lesson 32: Practical job methods, followed by proficiency examination 6.
- Lesson 33: Electronic timing machines.
- Lesson 34: Electronic timing machines.

Each lesson has five parts: assignments (what is to be read and the tasks to be done), the lesson itself, job sheets (which give step-by-step instructions for performing particular tasks), and self test questions. The job sheets also include information about specific watches (for example, the Hamilton interlock stem) which are not covered in the lesson. This structure makes it very clear to the student what knowledge and skills are to be achieved.

In addition to the 34 lessons, I know of 3 other booklets:

The part titled 333 "Problems and solutions" contains 333 questions with answers.

The unnumbered part "Tools and materials of the trade" lists tools with illustrations and gives advice on ordering materials.

The unnumbered part "Universal Geneva chronographs" (5 pp, 1 ill) gives instructions for the repair of these watches. There is no illustration of the movement.

[mixed 1960-1978 printings, excellent] I read this set of watch repair lessons immediately after *American Horologist* "A practical course of instruction in the science of horology" (which see) and the difference between them startling. Whereas *American Horologist* begins with skill development and is presumably a course for students attending a school, Sweazy provides a correspondence course for the student at home and which aims to develop the ability to make money from repairing watches. So Sweazy begins with the obvious, how to open a watch case and get the movement out of it, and then explains how to replace stems, crowns and crystals, all of which he regards as very lucrative work. More to the point, it is work that requires very few skills and the student can learn how to do these basic tasks even if he later finds that difficult jobs, like making balance staffs, is beyond him.

Where the student is taught matters. Both the *American Horologist* and Bulova schools commence with difficult skills presumably to weed out those students who will not make the grade as early as possible. In contrast, for Sweazy that does not matter as there are few overheads for a correspondence course.

More importantly, Sweazy's approach is far more likely to interest and stimulate the learner. Right from the first day he starts doing tasks which create a sense of achievement and which can earn him money, if he rashly dares to take in work at that stage! Instead of laboriously practicing filing, sharpening graters and turning brass for no apparent purpose, real work on real watches is the focus. And I have no doubt that students will find this approach far more satisfying.

There are some obvious faults in the first few lessons. Some tools and some watch parts are mentioned, but their purpose and form are not described. For example, what is a pin vice, what does it look like and how is it used? A rather trivial matter perhaps, but not to the novice who hasn't got one and has been asked to use one. Tools are described in a separate section, and if this was distributed to the students at the start and referenced, then most of that problem would be overcome. What is really missing is a lesson or two right at the start which explains the basics of watches and how they work. With that the lessons would make a bit more sense. In particular, lesson 4 gives details of watch part nomenclature before the

student knows what these parts are for and how they function. Certainly this is done in the context of how to order parts, and maybe Sweazy considered it irrelevant for the student to know more than names, but I think it would create some frustration.

More importantly, I don't agree with the order in which some things are covered. We have to wait until lesson 8 before we learn how to strip a watch and clean it, and this is far too late. In contrast, motor barrels are covered in lesson 6 which is far too early, and lathe work, which is necessary for replacing balance staffs in lesson 15, does not appear until lesson 28.

In addition, some instructions are too vague. For example, the use of the timing machine to detect errors is OK, but Sweazy has previously glossed over adjustment and there is no adequate explanation of adjustment for isochronism, temperature and positions.

And the course is limited to American pocket watches, although other pocket watches and wrist watches are mentioned in passing.

There is no doubt that this course is very good, but I am not sure if it deserves the excellent rating which I have given it. However, there is no such thing as the perfect book, and Sweazy has certainly done a far better job than most repair book writers. As anyone learning should have several books, not just one, I think this course deserves to be included.

[Remark] A 1957 brochure states that the complete home study course cost about \$150. For this, the student was supplied with:

35 lessons (36 manuals); this presumably includes part 333.

Tools and Materials of the Trade.

How to repair Universal chronographs. (This is hopelessly inadequate and should not have been printed.) 10 business guide manuals; see Sweazy "Master watchmaking, modern shop methods".

There was also other material including a starter tool-kit some watch parts.

R2511 Sweazy, TB; Sweazy, BG

Master watchmaking, modern shop methods

USA: Chicago School of Watchmaking, 1960 (1950), 23.0 x 15.0 cm, 78 pp, no ill in 10 parts.

Business (English).

Ten booklets: Securing a job, Starting in business for yourself, Opening a store of your own, Store arrangement, Advertising methods, Window display, Selling policies and methods, System in figuring prices, Operating costs, profit margin, book-keeping, records, and How to get ahead financially.

[1960 printing, good] Just because a person has successfully completed training as a watchmaker, it does not mean he has any idea of how to earn a living from his skills. The purpose of this supplementary series of booklets is to develop an understanding of what is required to successfully get a job or run a business.

Although dated (the circa 1960 prices are interesting compared to today's values) the information and suggestions are both interesting and useful.

R2512 Swigart, E & J

Illustrated manual of american watch movements

USA: S. LaRose Inc (USA: E. & J. Swigart), ca 1994 (1952), 27.5 x 21.5 cm, 209 pp, ill.

Identification (English).

The reprints (there may be more than one) only give the 1952 copyright date.

Detailed parts lists for many, but far from all, American watches. There are sections for Elgin (72 pages), Illinois (23 pages), New York Standard (1 page), Hamilton (26 pages), Waltham (46 pages), South Bend (5 pages). These illustrate the parts as well as give parts numbers.

The parts lists are followed by tables of mainspring sizes (with illustrations of end pieces), and illustrations of case stems, bows and crowns. Finally there is a short section on Bulova parts.

[reprint, good] The decreasing availability of parts makes such books less useful than they were. However, the clear illustrations of the parts and mainspring end pieces mean this book still has some value for identification as well as part replacement. Indeed, I have a watch that was missing a setting spring and I had no idea of its shape. The Swigart illustration enabled me to make a replica.

R2513 Swigart, E & J

Illustrated manual of american watch movements

supplement No. 1 (1953)

USA: E. & J. Swigart, 1953, 4to.

Identification (English).

R2514 Swigart, E & J

Watch and clock material catalogue

USA: Swigart, 1931, 4to, 302 pp, ill.

Repair (English).

R2515 Swinburne, J

The mechanism of the watch

England: NAG Press, 1950, 21.5 x 14.0 cm, 88 pp, frontis, 61 ill including 1 plate.

Technical, theory (English).

14 chapters: The centimeter-gram-second system (2 pages); The mainspring (13 pages); The train (9 pages); Jewels (4 pages); Escapement (7 pages); The hairspring (12 pages); Sines and cosines (4 pages); Pivot friction (4 pages); Disturbing factors (7 pages); Balancing the balance (2 pages); Magnetism (3

pages); Oil (7 pages); and Adjustment (3 pages).

The is no index.

[1st edition, fair] Written by an electrical engineer who, when about 80 years old, became interested in watches and produced this "collection of stray notes". The notes, a bit disjointed at times, express his opinions on watch design and ideas for changing and perhaps improving it. They are supported by a few experiments on watch movements, most of which were inconclusive.

Gardner, in "Catalogue of the Torrens collection", says "Swinburne joins Rawlings in being one of the few modern writers who ever thought for himself". I agree the thinking is original, suggesting new forms of gearing, mainsprings and examining friction in some detail. But the impression I get is of someone out of his depth, suggesting improvements in the design of a thing he doesn't know enough about.

Science has an unfortunate problem. When faced with very complex systems there is a tendency (a need?) to simplify in order to express and manipulate ideas mathematically. Consequently, theory sometimes yields results that are fascinating and provide guidance, but may have little practical relevance. Also, simplification can be carried too far and lead to erroneous conclusions.

Swinburne's writing is very exact when describing sine functions, principles of friction and so on, but he becomes imprecise and even fanciful when applying these general engineering principles to watches. His ideas often seem impractical (double mainsprings), abstract (asymmetric gears) or vague (jewelling). Despite this there is much stimulating material and some very interesting discussions of problems such as friction, lubrication and balance spring overcoils. (The incomprehensible and incorrect expressions on the bottom of page 11 are explained on page 45.)

R2516 Swiss expert; Robinson, TR

Modern watch repairing and adjusting

London: NAG Press, 1934 (1931), 22.0 x 14.5 cm, 118 pp, 121 ill.

Repair (English).

Undated, but the 2nd edition publication data gives the date 1931.

[1st edition] See Borer & Robinson "Modern watch repairing and adjusting" for details of the first and second editions, and Bowman & Borer "Modern watch repairing and adjusting" for the third American edition.

R2517 Swiss Watchmakers

Answers that sell the fine Swiss watch

Switzerland: Swiss Federation of Watch Manufacturers, 1953, 23 pp, ill.

Miscellany (English).

A sales aid for watch sellers.

R2518 Swiss Watchmakers

Grand indicateur complet de l'industrie horlogerie

Sweizerischer uhrenanzeiger

Swiss watch directory

Directory of the watch and manufacture trade of Switzerland

Bienne: (St Imier:), nd (ca 1885), 8vo, 1248 pp (245 pp) (140 pp).

Makers (English, French, German).

Many editions. The 1958 printing has 1248 pages.

One source lists the authors as Fellhauer-Calame and Schuler, presumably the editors and/or publishers. Pertuch "Horological books and pamphlets in the Franklin Institute library" lists a 140 pp edition in 1885-6 by FL Davoine.

Grand complete guide to the horological industry. Directory of Swiss watch manufacturers, etc. The 2002 edition lists information by city, manufacturer, allied trades and trademarks.

Pertuch also lists Charles Gros "Directory of the watch and manufacture trade of Switzerland" (St Imier:, 1893 to 1895, 245 pp). I presume this is another early edition and I have not listed it separately.

R2519 Swiss Watchmakers

Official catalogue of Swiss watch repair parts

Switzerland: Vogt-Schild (Switzerland: Les Fabricants Suisses D'horlogerie), 1973 (1949), 23.0 x 18.0 cm, 1 volume with 2 parts of 130 pp, ill and 155 pp, ill (2 volumes, 135 pp, ill and 154 pp, ill).

Identification, makers (English, French, German, Spanish).

Later editions were printed in 1969 and 1973. Update sheets were produced and the pagination is approximate.

Catalogue of movement identification and parts for Swiss ebauches.

A brief introduction defining terminology is followed by the main body which shows, for each model, a photograph of the dial plate and outline of the winding and setting parts; the primary identifying parts. Some models show both plates.

[edition M 1949, fair] Volume 1 covers Ebauches SA companies and is organised by type; lever movements, chronographs, cylinder movements and specialities. Volume 2 deals with independent companies and is organised by manufacturer.

Originally used to order replacement parts it is now not of much use for that purpose, as many parts are no longer available. However, it is still of some use for identifying movements and makers. Unfortunately the coverage of independent companies is poor, many having empty sections.

[edition O 1955, mediocre] By the 1955 edition O the book had reduced to a single volume containing both sections. Although similar in content it is less useful.

R2520 Swiss Watchmakers**R2520 Swiss Watchmakers****Swiss watchmakers art**

La Chaux-de-Fonds: Swiss Watch Chamber of Commerce, ca 1950, 9 x 6.75 inch, 32 pp.

History (English).

A brief history of Swiss watchmaking.

R2521 Swiss Watchmakers**The inside story of the fine swiss watch**

Switzerland, USA: Swiss Federation of Watch Manufacturers, 1950, 28 pp, ill.

Description (English).

A sales aid to explain a watch mechanism to customers. It has facing pages printed upside-down so that the customer and seller can read the text at the same time from opposite sides of a counter.

R2522 [Switzerland]**Deux siècles de haute horlogerie la montre française de 1580 a 1780**

Geneva: , 1995, 94 pp, b/w ill.

Illustration (English, French).

Two centuries of the French watch. With a glossary and list of makers.

R2523 [Switzerland]**Die uhrmacherfamilie der Vulliamy**

Switzerland:, 1968, 21 x 15 cm, 16 pp, 3 ill.

History (German).

Journal offprint?

R2524 [Switzerland]**Inauguration Technicum Neuchâtelois 1953**

le Locle, la Chaux-de-Fonds

Le Locle: Glauser-Oderbolz, 1953, 8vo, 123 pp, ill and 121 publicity illustrations.

Miscellany (French).

Brochure produced on the extension of the Technicum Neuchâtelois and the inauguration of new buildings for students. With illustrated articles and an outline of completed work.

Louis Huguenin was the director-general.

R2525 [Switzerland]**L'achevage de l'échappement a ancre**

Biel: Intercantonale Corporation des Acheveurs d'Echappements, 1922, 8vo, 39 pp, 12 ill.

Technical, watch making (French).

This is probably a later edition of Gammenthaler "L'achevage de l'échappement a ancre après dorure".

R2526 [Switzerland]**L'horlogerie ancienne dans les collections privées suisses**

Switzerland: Chronometrophilia Journal, 1998, 150 pp, ill.

Catalogue, exhibition (French).

The date is also given as 1995.

Ancient horology in private collections.

Exhibition catalogue of watches and clocks from private collections.

R2527 [Switzerland]**L'horlogerie en suisse**

notice publiée par la Société Intercantonale des Industries du Jura a l'occasion de l'exposition nationale suisse

Geneva: Société Intercantonale des Industries du Jura, 1896, 20.5 x 13.5 cm, 92 pp.

History (French).

R2528 [Switzerland]**L'industrie suisse de la pierre de synthèse**

Switzerland:, nd, 16 x 21 cm, 8 pp, 12 ill.

Description (French).

Undated.

The manufacture of artificial jewels.

R2529 [Switzerland]**La suisse horlogère**

plaquette commémorative publiée a l'occasion du centenaire de la république neuchâteloise 1948

La Chaux-de-Fonds: , 1948, 29.0 x 23.0 cm, 81 pp, 15 plates, 2 ill.

History (French).

Another source gives 10 plates.

R2530 [Switzerland]**Notice historique sur la classe d'industrie et de commerce**

et sa section d'horlogerie dans leurs rapports avec l'industrie horlogerie suivie de leur participation de l'exposition nationale suisse a Genève en 1896

Geneve: privately printed, 1896, 8vo, 5 ill, 16 plates.

Exhibition (French).

"Catalogue des objets exposes revue de la collection rétrospective d'horlogerie".

- R2531 [Switzerland]**
Ordonnances pour l'art de l'horlogerie
 vues et approuvées par le magnifique conseil des deux-cents, le 11^{me} septembre 1745
 : E. Latour (Genève: Pierre Pellet), 1892 (1745), 23 x 14.5 cm, 16 pp.
 History (French).
 Limited edition of 150 copies.
 Statutes for the art of horology, seen and approved by the magnificent Council of the Two Hundred, the 11th September 1745.
Pertuch specifies 116 pages.
- R2532 [Switzerland]**
Quelques notices theoriques et pratiques
 pour apprentis remonteurs
 Bienne: , 1912, 20 x 13 cm, 30 pp, 10 ill.
 Watch making (French).
- R2533 [Switzerland]**
Rapport sur une montre a engrenage hélicoïdal
 instrument a mesurer les épaisseurs, note sur les vernis
 Genève: Bulletin de la Société des Arts, 1837, 21.5 x 13.5 cm, 24 pp.
 Repair, technical (French).
 Journal issue?
 Report on a watch with helicoidal gears, an instrument to measure depths, note on polishing.
- R2534 [Switzerland]**
Travail et emploi des pierres dures en horlogerie
 Genève: Journal Suisse d'Horlogerie, 1891, 24.5 x 16 cm, 24 pp, 8 ill.
 Technical (French).
 The manufacture and use of jewels in horology.
There are four booklets under the general title "Manuel de horloger praticien". One is by Ditisheim, two by Dubois-Sandoz and one without an author (listed here).
- R2535 [Switzerland]**
Un beau métier, horloger!
 La Chaux-de-Fonds: Chambre Suisse de l'Horlogerie, 1952, 21.5 x 15 cm, 31 pp.
 Miscellany (French).
- R2536 Symonds, RW**
Thomas Tompion, his life and work
 London: Spring Books (England: B.T. Batsford), 1969 (1951), 30.0 x 23.0 cm, 320 pp, including 272 ill, 4 colour plates and 10 ill, 2 fld plates.
 History (English).
 There was a limited, deluxe edition of 350 copies in a slip case as well as a general first edition. Some deluxe "limited" copies are not numbered. It may have been printed more than once in 1951.
 Seven chapters: Background (7 pages); Craftsman and scientist (11 pages); The King's watch (6 pages); The great craftsman (20 pages); His clocks (26 pages); Clock casemaking (10 pages); His watches (8 pages).
 Followed by The will of Thomas Tompion (4 pages); Notes to the plates (43 pages); and Appendices (16 pages, Petition of the London clockmakers 1622; Von Uffenbach's account of John Flamsteed and the Royal Observatory; Extracts from letters of John Flamsteed to Sir Jonas Moore; Sir Christopher Wren's memoranda on clocks; An account written about 1760 of the equation clock by Tompion and Banger; Newspaper advertisements for lost Tompion watches; Tompion robbed of a watch; The finest-built watch; Extracts from letters of Captain William Winde).
[1st edition, fair] The first four chapters, which are the biography of Tompion, are very interesting. The biography is more a history of the times; as Symonds notes, very little is known about Tompion and much of the text concerns Hooke (and the invention of the balance spring), Graham and others. However this probably makes it more interesting and useful.
Surprisingly there is very little about Tompion's watches and the one relevant chapter is general and descriptive. Unfortunately the few plates of watches are barely fair.
An interesting book, but not of any great merit, at least in terms of the watch content.
- R2537 Tait, Hugh**
Clocks and watches
 England: British Museum, 1986 (1983), 21.5 x 21.5 cm, 72 pp, 73 plates.
 Description (English).
 73 timepieces in color or b&w drawn from the collections of the British Museum and especially the Student's Room for Horology and Scientific Instruments. The book has chapters on: Weight-driven 'frame' clocks, Spring-driven 'frame' clocks, Spring-driven 'plated' clocks and watches, Pendulum and balance-spring mechanisms. It includes an Index.
"From the grand long-case clocks to the most exquisite of watches, this book shows how invention and mechanical ingenuity have been matched with craftsmanship and artistry for more than five hundred years. Clear diagrams and color photography enable the reader to appreciate some of the most fascinating functional objects ever made."

R2538 Tait, Hugh; Coole, PG**Catalogue of watches in the British museum**

volume I the stackfreed

London: British Museum, 1987 (1983), 22 x 22 cm, 88 pp, 21 ill and 48 b/w plates.

Collection, description, history, illustration (English).

The pagination is also given as 135 pp, including the plates.

The second edition was revised by David Thompson.

The book traces the obscure beginnings of watches using pictorial and documentary evidence from Italy, Germany, England and Holland. The 64 examples are arranged according to design. Each piece is described and its technical and historical aspects analysed.

"There were supposed to be 6 titles in the series. Sadly, only book 1, described here, and book 6 were actually published."

However, I can only find book 1 and book 4, Randall and Good "Catalogue of watches in the British museum, volume VI pocket chronometers, marine chronometers and other portable precision timekeepers".

R2539 Takahashi, Morio**Tokei shuri no tebiki**

Tokyo:, 1950, 78 pp, ill.

Repair (Japanese).

Introduction to watch and clock repairing.

R2540 Takeda, Kanemori**Tokei buhin seisokuho keitaidokei**

Tokyo: Shiryosha, 1949, 73 pp.

Repair (Japanese).

How to make watch parts.

R2541 Tallqvist, H**Urens och urteknikens historia**

Stockholm: Björck & Börjessons Bokförlag, 1939, 8vo, 336 pp, 271 ill.

History (Swedish).

Limited edition of 500 copies

History of horology.

"This standard history of horology in Swedish is scarce and sought after, handling adeptly both technical and historical considerations."

R2542 Tarasov, SV**Technology of watch production****Teknologiya chasovogo proizvotatva**

Jerusalem: Israel Program for Scientific Translations (Moscow: Mashgiz), 1964 (1956), 24.0 x 17.0 cm, 446 pp, 377 ill, 96 tables.

Technical, watch making (English, Russian).

There is a loose 10 page addendum "Introduction to Technology of Watch Production by S. V. Tarasov" by EA Battison of the Smithsonian Institute.

A technical manual describing the machinery and processes for mass production of watches.

There are 10 chapters: Fundamentals of technology (33 pages); Metals used in watch production (19 pages); Stamping processes (41 pages); Automatic turning (62 pages); Milling the teeth of gear wheels, pinions and clutches (46 pages); Basic machining operations for plates, bridges and cocks (58 pages); Machining the escapement parts (35 pages); The manufacture of cases, dials and hands (27 pages); Finishing operations (44 pages); and Assembly and adjustment of watches (60 pages).

There is a brief bibliography of relevant Russian texts. No information is given on watch design.

[1st edition, excellent] Being an engineering textbook describing specific machinery it is not easy reading. But it is a very important work because it provides a precise, detailed examination of tooling and processes. Even though particular machines are described, this is the only horological text I know of that provides an understanding of such machines. And as Russia's original tooling came from America and Switzerland there is considerable relevance to manufacture in other countries.

There is a wealth of information on different processes, including the specification of standards and controls for producing the quality and accuracy needed for interchangeability. Importantly, automatic and semi-automatic lathes (based on Swiss screw lathes) and pantograph milling machines are specified, with examples of their set up and the design of control cams.

English language books on factory watchmaking are very few. Marsh "The evolution of automatic machinery" is too superficial, giving only an incomplete history with very little detail. And Abbott, in Smith "The Lancashire Watch Company, 1889-1910" is inadequate although he does give a bit of information on machines. The other book of note (which I haven't yet read) is Favre-Bulle "Le calibre de montre".

R2543 Tardy**65 portraits d'horlogers célèbres**

1935, 65 plates.

Makers (French).

Limited edition of 20 copies.

R2544 Tardy**Dictionnaire des horlogers français**

Paris: Tardy, 1971 to 1972, 24.0 x 15.5 cm, 764 pp, about 1500 b/w ill.

Dating, makers (French).

Originally published in 2 volumes. Most copies are the single volume, soft cover reprint published by Tardy's widow, which may have been reprinted.

A list of about 25,000 French makers (with illustrations of watches, engraving designs, a clock and a few escapements), followed by notes (on hallmarks, trade marks and fusee chain making), ebauches from 1800 to 1889, and indexes.

[Single volume edition, excellent] Like the Baillie, Loomes and Pritchard books, this is an essential reference.

Unfortunately the additional material is largely mediocre and the book would be as good if these were omitted. In particular, the photographs are generally poor; this is most notable in the appendix giving illustrations of calibres from 1800-1889, which is of little use. The description of fusee chain making, with rough but adequate hand drawings, is derived from Diderot and d'Alambert.

R2545 Tardy**Du gnomon a la montre**

origine de la mesure du temps

Paris: Tardy, 1986 (1950), 26 x 21 cm, 118 pp, 112 ill.

History (French).

From sundial to watch, origin of time measurement.

History of timekeeping.

R2546 Tardy**General bibliography of time measurement****Bibliographie générale de la mesure du temps**

Paris: Tardy, 1980 (1947), 24.0 x 16.0 cm (26 x 17 cm), 423 pp (352 pp).

Bibliography (English, French).

The first edition was limited to 150 copies.

The second edition was produced in 1957 and 1980 and has been reprinted. It has bilingual French/English introductory text and glossary of terms.

A bibliography of about 4,500 titles (including articles from journals and magazines) with an addenda of 422 titles.

The book contains the bibliography, classification by general subject matter, classification by place of publication, and French-English and English-French glossaries.

[2nd edition reprint, very good] The bibliography entries are not numbered, but the addenda (mainly pre 1800 works) are numbered and keyed into the bibliography. Some entries are author cross-references. The classifications give author, language and date. The glossaries are keyed to the page number of corresponding subject classification entry.

The bibliographic entries are simple and often give just author, title and date; but usually size, pagination and place of publication are included. No information is given about contents other than that which can be gleaned from the title and it is unclear if smaller items are pamphlets or journal articles. As it only covers publications to circa 1950 many reprints do not appear.

There are several indications that many entries have been uncritically taken from other sources, including Robertson "The evolution of clockwork"; one date is given as "600 fr"! Consequently some data should be viewed hesitantly.

Despite these limitations it is a most comprehensive bibliography and an essential reference for book collectors and researchers.

For the sake of completeness I have included some information from Tardy in this bibliography. However, his bibliography contains a wealth of valuable entries I have not included, especially those on other aspects of horology.

R2547 Tardy**International hallmarks on silver collected by Tardy**

Paris: Tardy, 1993 (ca 1985), 16.0 x 12.0 cm, 552 pp, many ill.

Dating (English).

The body of this book consists of a world-wide, country-by-country listing of hallmarks, followed by place name and symbol indexes.

[reprint, good] Although more valuable for other areas of silverware, it may be useful for silver marks on watch cases from countries other than England, America and Switzerland.

R2548 Tardy**La montre**

(i) les échappements a recul, le spiral, la compensation (ii) les échappements a demi recul, les échappements a repos (iii) les échappements libres a ancre

Paris: Tardy, 1988 (ca 1951), 30 x 21 cm (27.0 x 21.5 cm), 181 pp, 395 ill (three volumes of 38 pp, 51 ill, 78 pp, 164 ill and 66 pp, 180 ill).

History, technical (French).

This book is always listed as written by Tardy (the pen name of H. Lengelle) but he was the editor, the actual authors being E. Duclos (escapements), P. Magaud (translations) and A. Jarry (silent

escapements).

Originally produced in three, continuously numbered parts which are sometimes sold separately. The actual pagination is (i) 1-38, (ii) 39-116, (iii) 117-181. It is usually given incorrectly as 37 pp, 116 pp and 181 pp because the pages and illustrations are numbered consecutively. It is undated but always given as 1951.

Reprinted in a single volume under the title "Les échappements de montre".

An historical study of watch escapements.

Part (i): Movements (4 pages, introduction to early watches and movements:

The escapement (4 pages); The Balance (6 pages); The balance spring (10 pages); Compensation (10 pages).

Part (ii): The 18th century watch (6 pages); Semi-recoil or semi-rest escapements (4 pages); Resting escapements (14 pages); Resting lever escapements (5 pages); The cylinder escapement (18 pages); The virgule escapements (4 pages); The double virgule escapement (4 pages); Duplex escapements (11 pages); Balances (2 pages); Balance springs (3 pages, regulators); Wheels (2 pages); Friction (5 pages).

Part (iii): The lever escapement (3 pages); Other research on lever escapements (7 pages); Draw (4 pages); The fork (5 pages); Banking (7 pages); Various forms of lever escapements (2 pages); English lever escapements (6 pages); Swiss lever escapements (16 pages); Other lever inventions (1 page); Pin lever escapements (9 pages); Silent escapements (5 pages).

[1st edition, very good] *This is a very good and comprehensive survey, oriented towards French watchmaking and which complements those of Gross and Chamberlain. Most of the illustrations are good. The omission of chronometer escapements is a bit surprising; perhaps another part was planned but not produced.*

The early survey (ascribing cutting engines to Fardoil) is good, with the development of the balance spring focussing on Huygens and Thuret. However, the discussion of compensation is actually an essay on John Harrison and longitude.

The second part has a very good examination of escapement variations, with details of those by Berthoud, Le Roy and Breguet, and extensive descriptions of the cylinder and duplex (including information on the performance of Berthoud marine chronometers with cylinder escapements). The section on friction outlines the work of Camus and Sully.

The third part on the detached lever escapement begins with Mudge's escapement and other early designs, including details of escapements by Tavan. Then developments are described in the context of lever design; the inclusion of draw, methods of unlocking and transmitting impulses, and banking and safety actions. After which the book returns to a more conventional style, illustrating variants grouped into four main classes based on the escape wheel form. The final section, on silent escapements is more relevant to alarm clocks than watches, but it is interesting nonetheless.

R2549 Tardy

Les principaux calibres de montres

identifies par leur plaque de remontoir, frein de tirette

Paris: Tardy, ca 1950, 4to, 5 parts of 82, 36, 18, 22 and 20 pp, ill.

Identification (English, French, German, Spanish).

In four languages.

Most sources give 4 parts. One gives 5 sections, the extra one being a listing of interchangeable parts.

Identification of watches from their winding parts design.

R2550 Tascione, Bob

Learn to turn lathe videos

USA: Bob Tascione, 1998, 4 video tapes or DVDs.

Repair (English).

Lesson 1, "Learning the basics first" is 2 DVDs covering fundamental lathe use.

Lesson 2, "Pivoting and doing the jig" is 2 DVDs covering clock arbor pivoting.

[Lesson 1, good] *The first DVD shows some watchmakers' lathes, discusses the choice of collets for holding rods and graver sharpening. Then Tascione demonstrates turning shoulders on a piece of brass rod. In the second DVD we learn how to duplicate the part made in the first DVD and how to make a brass clock bushing (catching a center and drilling).*

Tascione is not very good at explaining. Graver rake is mentioned somewhat obscurely, different graver shapes are not explained, and sharpening is glossed over. He also wastes a lot of time chatting, as when telling us how to choose the right size collet and discussing pivoting even though it is not covered. This time should have been used better.

However, he is very good at demonstrating, and the lesson will be useful for beginners to see how to turn, and it takes away some of the mystery of lathe work.

R2551 Tascione, Bob

Pocket watch course

Stems, sleeves and crowns

USA: Bob Tascione, 1990 to 1996, 6 video tapes or DVDs, 71 pp, 60 ill and 28 pp, 1 ill.

Repair (English).

Lessons 1-3: Disassembly, cleaning and assembly of an American pocket watch.

Lessons 4-5: Replacing balance staffs.

Lesson 6: Replacing and adjusting American negative set stems, sleeves and crowns.

Each lesson is approximately 50 minutes.

There are two accompanying books: "Pocket watches and why they work" (71 pp, 60 ill) and "Bob's watch repair trouble shooting notes 1" (28 pp, 1 ill).

[Videos, very good?] Lesson 1: The first lesson shows the disassembly of a three-quarter plate, 21 jewel American pocket watch. It assumes the viewer knows basic terminology and has an understanding of the design and functions of watches. It also makes some assumptions regarding the use of tools; in particular how to hold and use a screwdriver is not explained. However it is a very good explanation of disassembly. Lesson 2: The second lesson finishes disassembly (removing the mainspring and balance cock cap jewel). It then briefly covers cleaning by machine and cleaning the balance and balance spring by hand, followed by replacing the mainspring. It concludes with a discussion of the Illinois Sangamo lever-set system; this is difficult to follow because there is no diagram to give an overview of the mechanism.

Lesson 3: The third lesson shows one type of negative set keyless mechanism, after which the movement is assembled, oiled and put back in its case.

These three lessons are good and the viewer learns a lot from actually seeing someone perform the various tasks. Unfortunately there is no mention of full-plate movements with potences, whose disassembly and assembly have to be handled differently; some time is wasted and with a bit more editing this could have been covered.

Lesson 4 Staffing: This lesson covers removing the balance-spring and roller and making a balance-spring remover. I think it takes too long to get only this far, considering that actually removing and replacing a staff is not mentioned. However, what is covered is done well, and being able to watch someone harden and temper steel takes much of the mystery out of the process.

Lesson 5 Staffing: After some further discussion of rollers, we are shown how to remove and refit a riveted balance staff, using a new old-stock staff. After which removing and replacing friction staffs is covered. Again, watching the process makes it much less daunting and gives the learner more confidence to tackle the task himself.

The sudden jump from the first 3 lessons to staff work was surprising. In part Tascione justifies this by stressing the fact that the videos should be seen as adjuncts to books. It also makes sense in that replacing staffs is probably the most common repair after replacing mainsprings, and the learner can certainly work out how to do many tasks from books without seeing them.

Lesson 6 Stems, sleeves and crowns: This video looks at American negative set stems and sleeves and additionally covers bows and fitting crowns. It is disappointing because too much time is wasted and not enough covered. For example, we do not see how to use a sleeve wrench! However, adjusting sleeves is done well, and the learner can easily pick up most of the other techniques without much help.

The videos were made by Tascione alone, without a camera man, and it shows up in some places where shots are out of focus. In addition the quality is best described as amateur. However, it is very difficult to take close-up shots of a watch movement while it is being manipulated by a repairer; hands and tools necessarily get in the way and interfere with the view. In fact this aspect is an advantage. The videos show a real person doing tasks including some fumbles and minor problems. As a result, they are much more realistic, and so instructive, than a cleaned up, professional video would be.

Although I am not a professional repairer I have done many things. So I was pleased that I learnt a few things from this course and I think it would be useful for beginners.

[Pocket watches and why they work] The book that comes with the videos has 8 sections: Tools of the trade; Why it works; Escapement action; Safety action; Motion works; Timing out; Cleaning; and Business tock!. These are followed by addresses of suppliers, associations and museums.

"Tools of the trade" lists the absolute minimum that a beginner should have and provides no information about many other tools that are needed. "Why it works" is basically a description of the barrel and mainspring with very brief remarks on the rest of the watch. This is consistent with the videos and the other booklet (see below) in that the course actually only teaches two things: mainspring and balance staff replacement. 16 pages of the book are devoted to explaining the action of the Swiss (American) lever escapement. This is quite good, but the space would have been better used covering more relevant topics. "Motion works" provides an inadequate explanation of motion and keyless work and how to tighten a canon pinion. "Timing out" explains how to check the rate of a watch and adjust it by adjusting the regulator and the spacing of the regulator pins. "Cleaning" explains how to clean watches by hand. Cleaning is glossed over in the videos and this section is useful. Finally, "Business tock!" gives some advice on setting up in business. This section should be omitted because the student who has studied this course is not yet competent to work; there are a vast number of different skills that are needed which have not been covered, and the student would very quickly discover that many jobs brought to him would be beyond his abilities.

[Bob's watch repair trouble shooting notes 1] This booklet can be downloaded after purchasing the watch repair course. It contains: Introduction; Mainspring problems; Overwound watch; Positional error; Mainspring barrel problems; Mainspring catching and slipping; Lubricants, oils and mainspring grease; Resources (addresses of watch supply houses, watch repair tool sources, associations and booksellers); and Recommended books.

This booklet is poor. Most of it concerns mainsprings and some general remarks about oils. The page on overwound watches explains the symptoms but says nothing at all about causes or remedies. More than 5 pages are devoted to positional error but which have nothing at all to do with positional adjusting; this

is something well beyond the abilities of a beginner and I suspect no more than a handful of professional repairers are capable of doing it. Actually the section is concerned with diagnosing faults which cause serious variations in different positions and it has little to do with adjusting. The best part is the list of books which is a very sensible choice of references for teaching watch repair.

Tascione himself points out that the course is simply an adjunct to reading watch repair books. Viewed in this light it is quite good, because watching someone working on a watch provides the learner with insights that cannot be obtained from reading alone. But by itself the course is far too restricted and it does no more than provide a useful introduction to form the basis for serious study of watch repair. In this context it is worth viewing.

R2552 Tavan, Antoine

Description des échappements les plus usités en horlogerie

Genève: Gruaz (Geneva and Paris: Commission de la Société établie a Genève pour l'avancement des arts), 1851 (1831), 27.5 x 21.5 cm, 2 volumes 50 pp and 12 plates (44 pp, 12 plates).

Description, technical (French).

The first edition was not published under Tavan's name. One source gives 1854 for the 2nd edition. "Rédigée par une commission de la société établie a Genève pour l'avancement des arts, précédée d'un rapport fait a ce sujet, en 1806, a la première classe de l'institut de France et accompagnée d'un atlas de douze planches".

See also Dubois "La tribune chronométrique, scientifique et biographique".

R2553 Tavares, JM; Oliveira, FC de

Relogios e relojoeiros

Lisbon: Ancora, 2006, 198 pp, ill, plates.

Makers (Portuguese).

Alphabetically arranged entries listing makers, brands, retailers, collectors and horological scholars.

[1st edition, review by Fortunat Mueller-Maerki] *Over the course of history there have been a handful of great horological nations: Germany, England, France, Switzerland, the USA. There are good and reasonably complete directories of historic makers and brands available for all of them, and most serious horological collectors know the standard works: Abeler, Baillie, Loomes, Pritchard, Spittler and Tardy.*

Other countries have a rich horological history as well: Italy, the Netherlands, Austria, Japan, the Scandinavian countries, Canada, and Spain all have produced noteworthy clock and watchmakers, as well as directories listing them, although these titles are harder to track down.

Then there are countries who hardly ever appear on the radar screen of horological researchers. One of them is Portugal. Until recently, there was virtually nothing published about Portuguese timekeepers and the people behind them. That void has now been partially filled.

With some 750 alphabetically arranged entries it lists known makers, brands, retailers, collectors and horological scholars, with short factual entries ranging from a couple of lines to a full page. On virtually every page there are illustrations (many in color). The text is in Portuguese, which will somewhat limit the number of Americans buying the title.

The authors deserve our gratitude for the big work that goes into creating such a directory. This is always a labor of love; nobody (neither authors nor publishers) earns any money producing such specialized titles. Thank you Mr. Tavares and Mr. Correia de Oliveira for contributing to document the horological heritage of mankind.

R2554 Taylor, JC; Wolfendale, A

The excitement of time

John Harrison, the Royal Society and time measurement

Isle of Man: Fromanteel, 2006, 88 pp, ill.

History, catalogue (English).

Produced for the Royal Society's Science Exhibition.

Includes bibliography and index.

Described as: "Provides a fitting tribute to the work of Harrison who declined membership of the Royal Society, as well as threading through the developments by George Graham, Tompion, Fromanteel and more up to date inventions."

May be only clocks.

R2555 Taylor, Rev A

The watch and the clock

New York: Phillips and Hunt, 1883, 8vo, 16 pp.

(English).

Listed in Robertson "The evolution of clockwork" and Brearley "Time telling through the ages".

A moral tale?

R2556 Tebbutt, L

Stamford clocks and watches and their makers

USA: Dolby Brothers, 1975, 8vo, 173 pp, 106 b/w ill.

Makers (English).

Limited edition of 500 copies.

Some copies were reportedly destroyed by fire.

R2557 Terrier, JC**Note sur l'échappement a ancre a repos circulaire**

nd, 8 pp.

Watch making (French).

Listed in Tardy.

R2558 Terrier, JC**Note sur le réglage des montres a nouveau système de raquette**

1855, 12 pp, 1 plate.

Watch making (French).

Listed in Tardy.

Note on the adjustment of watches by a new system of the regulator.

R2559 Terrisse, SA**Prestigious watches**

New York: Rizzoli, 1997, 25.5 x 28.0 cm, 192 pp, ill.

Description (English).

Timeless virtuosity (1 page); The first pages of time (1 page); Introduction (4 pages); Portfolio (12 pages); Lines of time (34 pages); A step in time (26 pages); Time in a thousand pieces (42 pages); Alain Silberstein (8 pages); Audemars Piguet (8 pages); Baume & Mercier (8 pages); Breguet (8 pages); Cartier (6 pages); Chopard (8 pages); Eberhard (6 pages); Vacheron Constantin (8 pages).

There is a 1 page bibliography.

One reviewer wrote: "This is by far the most attractive book on watches that I have read to date. The photographs are of the highest quality and the editorial is well written and researched. This book is not a technical manual, it is a collectors book that portrays the most beautiful examples of the watchmaking tradition."

But another stated: "Glossy pictures, looks more like a picture book, a little bit of history of some companies, absolutely no in depth information, almost no information about movements. I regret that I wasted my money on this book."

R2560 Terry, WN**Exhibition of early clocks and watches**

1966, 18 pp.

Exhibition, makers (English).

*Supposedly useful for makers around Northamptonshire.***R2561 Teuber, Johann Martin****Vollstandiger unterricht von der gemeinen und hohern dreh-kunst**

nebst einem anhang von der laquier-kunst ...

Regensburg: JB Lang, 1756 (1740), 4to, 211 pp, frontis, 30 fld plates.

Tools (German).

Said to be the first German work on lathes. The plates illustrate various lathes (including those designed for watchmakers, lens grinders, engineers, craftsmen, etc), the materials employed and the finished products. Many of the lathes described are for ornamental turning and making medallions. Pages 201-11 discuss lacquering techniques.

R2562 Thevenaz, L**Faussaires d'autrefois 1754-1954**

La Chaux-de-Fonds: Administration du Bureau de contrôle de La Chaux-de-Fonds, 1954, 8vo, 127 pp, 14 ill.

History (French).

Limited edition of 600 copies. Drawings by Charles Humbert

Forgeries of the past. A study of counterfeiters in the mountains of Neuchâtel.

Listed by Gardner "Catalogue of the Torrens collection" without comments. It may include horological fakes.

R2563 Thevenaz, L**Histoire du pays de Neuchâtel des débuts de l'horlogerie**

collection publiée à l'occasion du centenaire de la République Neuchâteloise

Neuchâtel: Comité directeur du centenaire de la République neuchâteloise, 1948, 8vo, 121 pp.

History (French).

In "Le pays de Neuchâtel. Collection publiée à l'occasion du centenaire de la République (1848-1948)" which is a 5 volume set.

R2564 Thieme, U; Becker, F**Allgemeines lexikon der bildenden unterricht**

Leipzig: Engelmann and Leipzig: Seemann, 1907 to 1950, 4to, 37 vols.

(German).

General dictionary of form.

R2565 Thiout, Antoine**Traite de l'horlogerie mécanique et pratique**

Paris: Editions Palaise Royale (Paris: Samson) (Paris: Charles Moette et al), 1972 (1741), 28.0 x 21.5 cm, 1 volume, 400 pp, 91 fld plates (2 volumes of 28, 175 pp, 50 fld plates and 225 pp, 41 fld plates).

Dictionary, technical, tools (French).

The first edition was published by Charles Moette, Pere Prault, Hyppolite-Louis Guerin, Pierre Clement, Pierre-Andre Debats, Louis Dupuis and Charles-Antoine Jombert in Paris with page 200 incorrectly numbered 180.

A second edition was printed in 1767.

The modern reprint is of the first edition and additionally includes "Des lettres de Massoteau de Saint Vincent et Julien le Roy et de la reponse d'Antoine Thiout".

Volume 1 covers six topics: Definitions of terms (28 pages); Descriptions of tools (60 pages and 38 plates); Escapements (40 pages, including an essay by Enderlin); Two essays on the teeth of wheels by Camus and Enderlin (35 pages); Verge escapement design by Sully; and The description of a lathe for turning oval objects.

Volume 2 has 144 pages describing clocks and 70 pages describing watches, followed by some additional notes on clocks. It includes a proposal for bimetallic compensation pendulums by Deparcieux and an 18 page discussion of watch examination by Gaudron.

[1st edition, excellent?] This book is primarily a descriptive survey with the focus on the superb plates; whereas most books use plates to illustrate the text, Thiout uses the text to explain the plates. The only exceptions to this are the sections written by other authors. Volume 1 is a description of parts, perhaps most noted for its comprehensive survey of tools which includes a universal indexing plate. But it also contains two important essays on gearing (by Camus and Enderlin) and an analysis of the verge escapement by Sully. Volume 2 describes clock and watch designs. The watch section begins with details of a common verge watch and goes on to calibres for watches showing seconds, repeaters, alarms, and so on.

Thiout has done not much more than catalogue tools and timepieces and detail his own inventions, providing a survey of horological mechanisms, although the sections written by other authors are undoubtedly of major importance.

Baillie says this is "by far the best work written on the construction of watches and clocks". In contrast, Moinet (quoted in Saunier's treatise) says it "is without doubt very badly composed, and the printing is still worse" but readers "may still find useful ideas in it". I cannot agree with either. I feel Berthoud's "Essai sur l'horlogerie" is a more significant work, but Thiout is certainly a wonderful book and one of the best descriptive treatises.

Crom "Horological shop tools 1700 to 1900" has reproduced many of the plates showing tools and the escapement drawings appear in Gros "Echappements d'horloges et de montres".

R2566 Thiry, A; Knight, A

L'age d'or de l'horlogerie liegeoise

2003, 4to, 133 pp, 100 ill.

History (French).

Catalogue for an exhibition in the Musée d'Ansembourg.

The first part of the book covers the instruments for measuring time from antiquity to the Middle Ages. The second part traces the history of horology from the Renaissance to the nineteenth century, detailing the various types of machinery of the inventors of Liège, and the aesthetic and artistic types of clocks and watches.

The third part examines the major artists of Liège, giving new insights into the personality of Dieudonne-Hubert Sarton, with emphasis on the mechanical innovations he made in various scientific fields. "Inventor and perfectionist, it is proved that our illustrious watchmaker developed an automatic watch, through a document filed at the Academy of Sciences in 1778."

The last chapter is a directory of horologists and manufacturers in the Principality of Liège and its surrounds, including more than 800 names of which about 400 have been added by André Thiry, doubling the number of names identified by Florent Pholien.

R2567 Thisell, AG

Science of watch repairing simplified

a treatise on the lever escapement and watch repairing

Chicago: AG Thisell, 1946 (1942), 21.0 x 14.0 cm, 200 pp, 38 ill (208 pp, 39 ill).

Repair (English).

Three editions in 1942, 1944 and 1946.

Chapters 36 and 37, on Paulson and Watchmaster timing machines, are missing from the third edition, but the pagination is correct and they have been deliberately omitted by the publisher; other editions may have them.

38 chapters. The first 18 chapters are a reprint of Thisell "The junior watchmaker" (which see) with the addition of one diagram and minor text changes; this part describes the examination and setting up of American lever escapements. The remaining chapters are concerned with the use of timing machines, the adjustment of watches (for position, temperature and isochronism) and miscellaneous faults.

Thisell was an instructor at the Elgin Watch Co.

[3rd edition, very good] The book is clear, well written and a useful contribution to the manipulation of lever escapements. It is certainly worth reading.

The section on timing machine traces and their interpretation is good, but (as with other books) I find there is not enough explanation of how to deduce faults from traces. Thisell shows traces produced by defined faults whereas I would prefer to be shown traces and have an explanation of how to deduce faults from them.

The following chapters on adjustment are good, with a nice discussion of balance spring pinning points.

R2568 Thisell, AG**The junior watchmaker**

a treatise on the lever escapement

USA: AG Thisell, 1925 (nd), 19.0 x 13.5 cm, 97 pp, no ill, errata sheet (91 pp).

Repair (English).

The only copies noted are the second edition.

Two introductory chapters (skills required, and watch cleaning and inspection) are followed by 16 chapters covering the examination and setting up of American lever escapements.

See Thisell "Science of watch repairing simplified" for a later edition.

Thisell was an instructor at the Elgin Watch Co.

[2nd edition, good] *A very good description. Although there are no illustrations and the English is occasionally strange, I had little difficulty understanding the steps and techniques.*

Thisell and others have been strongly criticised for advocating banking to drop, which has resulted in many watches with damaged banking pins. I suspect this over-enthusiastic application results more from misunderstanding by jobbers than faulty principles. It is a simple operation requiring little skill, and many repairers probably did it because they could do it, rather than out of necessity. Indeed, I suspect they may not have understood or even read the rest of the book! Thisell describes how to correct faults, and if he is to be criticised it is for not stressing that corrections need only be made if a fault has been found rather than as a matter of course.

R2569 Thomann, C**Les dignitaires de l'horlogerie 1923-1967**

Neuchâtel: Editions du Griffin, 1981, 28 x 21 cm, 188 pp, 44 ill.

Biography, history (French).

"La merveilleuse et tragique épopée des derniers régleurs de participaient aux concours de l'observatoire chronométrique de Neuchâtel, 1923-1967".

R2570 Thomas, FA**Home study course****A complete course of instructions in practical watch repairing**

USA: Wisconsin Institute of Horology, 1938 (1909), 25.5 x 17.5 cm, 18 parts of 393 pp, 16 loose fld plates (16 parts).

Repair (English).

At least 3 editions in 1909, 1921 and 1937-38.

The first edition of 1909 has 43 lessons in 16 parts or "letters", and is sub-titled "A complete course of instructions in practical watch repairing for the beginner and the theoretical construction of escapements".

The second edition of 1921 has 18 parts containing 23 lessons and is sub-titled "A complete course of instructions in practical watch repairing for the beginner and those who wish to improve". The lessons are divided into three parts:

Part 1 (76 pages, 4 plates): Forward; Elementary work (6 lessons on Filing); Filing (Continued); Lathe work; Lathe work (Continued); Pivoting; and Jeweling.

Part 2 (72 pages, 3 plates): 4 lessons on Clock repairing.

Part 3 (245 pages, 9 plates): 11 lessons on Watch repairing followed by 2 supplements (lessons 12 and 13) on Watch case and jewelry repair, and The business end of the watchmaking trade.

[2nd edition 1921, excellent] *Each lesson was to be distributed only after completion of the previous one. The aim of the course was to develop watch jobbing skills and the emphasis is on the practical repair problems of American and Swiss watches. There is no theory.*

The 6 general lessons cover filing, hardening steel, grinding and polishing, turning, pivoting and jeweling. The lessons on staff making and pivoting are especially good.

The section on clock repair is inserted specifically to enable the student to gain practice "on a larger scale" and to "work with greater ease on watches after having become familiar with the methods employed on clocks". It is interesting to contrast this sensible approach with that of many English authors.

The topics covered in watch repair are basic assembly and disassembly, classification of faults, pivot work, uprighting, basic lever escapement work, cleaning cases, mainspring and barrel problems, centre wheel problems, motion work, pivot problems, depthing, the lever escapement, balance staff making, movement examination and cleaning, rust (although using tea is not mentioned), flat hairspringing, regulation of lever and cylinder watches, Swiss watch repairs, duplex and chronometer escapements, cylinder escapement, case repairs, jewelry, business practices. The approach is based on what would be useful for a jobber repairing ordinary watches. So some topics (such as the details of adjusting, wheel making and overcoiling balance springs) are omitted or glossed over, and a few dubious techniques suggested. Where practical, use of purchased material is naturally preferred (something much more difficult for us these days).

See also Wisconsin Institute of Horology "Samples of mechanical drawings as applied in horology".

[Remark] *I think it may be an advantage if a teacher is not too bright. For then he or she often had difficulty learning and thus has a better appreciation of the problems students face and the course structures required to satisfy educational needs. Sometimes very intelligent people cannot comprehend why ordinary people have trouble understanding things they find easy and so make poor teachers. I don't know how bright Thomas was, but he certainly had a very good idea of how to teach. For example, early*

on he covers turning and staff making without worrying about particular dimensions or making parts fit. Later he returns to these topics, with some useful repetition, and examines actually fitting parts. This approach enables the student to develop skills without being overburdened by detail and frustration, something that many other authors fail to understand. Although some things are glossed over or a bit vague, the result is excellent.

So, despite de Carle's books being highly regarded, and possibly better in factual content, I think Thomas is a much better teacher and has produced a much more useful text for the beginner.

R2571 Thomas, U; Leiter, A

Taschenuhren sammlung Philipp Weber Pforzheim

Pforzheim: Sparkasse Calw, 1997, 22 x 22 cm, 216 pp, 209 ill.

Collection, catalogue (German).

Catalogue of a private collection. Pocket watches from 1550 to 1923.

R2572 Thommen, A

Die betriebsorganisation in der uhrenindustrie

Basel: Helbing & Lichtenhahn, 1949, 171 pp.

Technical (German).

Work organisation in the horological industry.

Dissertation.

R2573 Thompson, David

The British Museum watches

The history of watches

London: British Museum Press; New York: Abbeville Press, 2008, 25.0 x 25.5 cm, 175 pp, ill.

Collection (English).

Two printings, with different titles, in England and America

Introduction (4 pages) followed by 77 two-page spreads showing watches selected from more than 4,500 in the British Museum. The watches are presented chronologically with detailed descriptions and two to six color photographs of the dial, case and movement. With a glossary and index.

[1st edition, good] The English title is "British Museum Watches" with the words "British Museum" in very small letters. The author or the publisher must have felt this would not attract American buyers, and so the American edition is called "The history of watches". However, this is quite misleading. The book does not contain a history of watches. It simply illustrates and comments on a few particularly fine examples from the 16th to the 20th centuries. Being presented chronologically and containing a few remarks on historical events, such as the invention of the balance spring, gives it an historical flavour. But the text is far too fragmentary for the book to deserve such a title. In addition there are huge gaps, inevitable when so few items are considered. Notably there is almost nothing on post 1850 watches and American watchmaking, in particular, is largely ignored. Also, there is not one chronograph and not one modern Swiss mechanical watch. One reviewer says that the British Museum has very few samples in these areas and both he and I agree that the book should not have tried to encompass later watchmaking. The descriptions of the watches provide general statements about them, together with some short biographies of makers. The descriptions of early watches focus on the cases and decoration. There is almost no technical information at all, which is a pity. For example, there is a good photograph of the motion-work of a 17th century watch made by Roberts, but no explanation of it, even though it is the motion-work that makes the watch interesting. Later, the motion-work of an Ellicott watch is described, but there is no illustration! Then a very unusual watch by Edward Massey is described in a way that makes almost no sense to me. These and a few errors seriously detract from the book.

The photographs are excellent, but too often they are simply attractive and not informative.

The author does not explain why he wrote this book, but he does comment on the difficulty of choosing only 77 watches from a collection of over 4,500. Clearly it is not a documentation of the collection, and it is not a coherent history, and so I am not sure why it was produced. Perhaps if the author has spelt out some specific aims the result would have been better.

[Remark] There seems to be a cultural difference between English and American horologists. The English consider Ingold to be the source of all machine watchmaking, and claim that Dennison and the Swiss copied his ideas. Thompson holds this view, despite the lack of evidence to support it. Certainly it is clear that Ingold had nothing to do with the development of Swiss watchmaking, which largely took place after 1876 and David's reports. In the case of Dennison, he and Ingold may have met and Dennison may have been influenced by Ingold's tools. But it is well documented that Dennison's attempts to make machinery were disastrous and successful American machinery was designed by others. So there appears to be two options. If Dennison copied Ingold's ideas, then his abject failure demonstrates that Ingold's tools were unsatisfactory. Or, if Dennison did not use Ingold's ideas, then Ingold had no influence on watch manufacture other than his abortive attempt in England. Either way, Ingold appears as a person with impractical ideas that led nowhere.

R2574 Thompson, David

Watches in the Ashmolean Museum

Oxford: Ashmolean Museum, 2007, 22 x 16 cm, xx, 92 pp, ill.

Collection (English).

20 page history of the watch, catalogue of the collection, and 10 pages of short biographies of makers. With a glossary and index.

The catalogue describes and illustrates a selection of 31 pocket watches from 1540 to 1869. The collection is mainly made up of three bequests, including the Bnetinck Hawking in 1894, the J.Francis Mallett in 1947, and the Bullivant collection in 1974, comprising 120 watches. Together these make the Ashmolean collection one of the most important outside London.

R2575 Thomson, A**Time and timekeepers**

London: T. & W. Boone, 1842, 17.5 x 11.0 cm, 195 pp, 54 ill.

Description, history, miscellany (English).

It is available as a Google Book PDF file.

A number of short topics in three section:

Time (33 pages) including natural divisions, cycles, sidereal and mean time.

Sundials, sand glasses and clepsydrae (3 pages).

Clocks and watches (154 pages). The topics relevant to watches are: Watches invented (5 pages); Repeating clocks (4 pages); Balance spring (6 pages); State of horology in France and England (3 pages); Henry Sully (7 pages); Chronometers (15 pages); Various claims to priority of invention (4 pages); Watches of the present time (4 pages); Construction of watches (11 pages); Compensation balance (4 pages); Calculations with the assistance of a seconds watch (6 pages); Hints for the selection of watches (10 pages); and Necessary precautions (7 pages).

[1st edition, good] *A general book for the lay person, described by one reviewer as "good" and by another as "a London dealer's puff".*

There are many such introductory books, written to appease the curiosity of a casual interest and certainly not scholarly tracts. This is one of the earliest and a very good one. Well written and containing much of interest, including a very good biography of Henry Sully, it most certainly doesn't deserve to be regarded as mere puff.

Both Britten "Former clock and watchmakers and their work" and Atkins & Overall "Some account of the Worshipful Company of Clockmakers" note the role of Thomson and his book in achieving the restoration of the memorial stone to the grave of Tompion and Graham.

See Britten "Old clocks and watches and their makers" for a further comment.

R2576 Thomson, R**Antique american clocks and watches**

: Galahad Books (Princeton: Van Nostrand), 1978 (1968), 9.5 x 6.5 inch, 192 pp, 64 ill, 12 figs.

Description, history (English).

There may have been 2 printings, 1968 and 1978; the 1958 date given by one source is probably a misprint.

An introductory book primarily on clocks. It ends with 21 pages on watches in three chapters: Early American watchmakers; The Waltham story; and The watch factories.

[1st edition, 1968, fair?] *I don't own this book, but I must have looked at it somewhere, because my impression is that the watch content is not very interesting; and hence the low grading. Of course, the clock content may be much better. There are two reviews below because I think the different opinions given are worth comparing.*

[Review by D.H. Shaffer] *In reviewing a book of non-fiction, one should comment on the amount of substantive material the author injected into the book and the skill with which he transmitted this to the reader. One might also note the extent to which the author found an identifiable audience and remained faithful to them. With these thoughts, we are now ready to commend "Antique American Clocks and Watches" from three points of view:*

The choice of topics included in this book was made with great intelligence. After some brief remarks about primitive timekeeping, the book settles down to a well-planned discussion of English clock and watchmaking. This section is neither an introduction nor a fill-in; it is a deliberate attempt to give a foundation for the coming chapters on American horology. Those chapters treat American clockmaking in three parts: The Pennsylvania School, the Boston School, and the Connecticut School. As the story of horology is developed for each of these regions, interconnections are established, not only among the schools but to the legacy from the English. No attempt is made to be exhaustive in treating centers of clockmaking activity. For example, the clockmakers of New Hampshire are mentioned only briefly and Munger does not even appear in the index. But since the author seems to be aiming at a view of the main flow of this craft and industry, we cannot fault him for omitting some tributaries and eddy currents.

The book ends with a less ambitious treatment of American watchmaking: first the early makers, then the Waltham Co., and finally a brief survey of some 19th century watch factories.

The author's style is lucid and moving. He has included numerous technical drawings in addition to illustrations of clocks and watches; all these add to his success in conveying his thoughts to us. Like all books, it has its imperfections, but I do not find any serious breach of fact among them and most of my specific comments, were I to give them, would simply pick some nits. However, there are three suggestions for improving subsequent editions that I would like to pass along. First, a bibliography for further reading would be welcome. Many readers will be inspired by this volume to read more, and would be glad to have Mr. Thomson's suggestions on the subject. Second, a closer connection between the portfolio of illustrations in the center of the book and the text should be developed. The clocks and watches shown will illustrate the story well if they are permitted to do so. Third, a sharper terminus for the discussion of American clockmaking is needed. The story rather dribbles away after 1840, which is

acceptable, but the author could make this more definite and we would be especially grateful if he told us why he was stopping there.

The book at hand is not a source book for horological research. Neither is it a treatise on American horology. But it is a thoughtfully conceived and splendidly executed treatment of American clock and watchmaking that is intended for an intelligent but somewhat inexperienced collector who has more than a superficial interest in the subject. In my opinion it has no serious rival for this audience. Further, the content provides considerable thought even for a student of horological history. I congratulate Mr. Thomson on a book I commend to many. I was waiting for such a volume to appear and am delighted to announce that a learned and literate author has produced one.

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[**Review by Henry B. Fried**] Other than the books by Palmer, Nutting, Drepperd, Eckhardt and Drost, there are few books on American clocks as compared, for example, with the British. Richard Thomson has aimed this book at the experienced collector. It begins with a chapter which traces the beginnings of timekeeping from the "biological clocks" which regulate a person's daily living, to the sundial, the calendar, the clepsydra, hour-glass, wick-lamp, weight driven mechanical timekeepers, spring-driven ones, and their escapements.

A chapter, "Our English Heritage," pays homage to that country's contributions, yet doesn't neglect the genius of Huygen's pendulum and hairspring. Other advances such as rack-and-snail striking are cited. Thomson points out that when the changeover from balance or foliot clocks took place, the movement was no longer required to appear square with the striking train behind the time train, since with winding from the front the two trains could be placed side by side. Thomson continues with the individual contributions of Fromanteel, Quare, Knibb, Clemnt, Graham, East, and Tompion, as well as other Englishmen who must have influenced the early American makers in style of cases and dials if not in the refinements of the movements. While one must agree with the author that Tompion's clocks fetch a top horological dollar, his statement that, "Tompion, and his productions which survive are art works commanding Rembrandt prices today," will raise some eyebrows.

The development of the watch is also mentioned with the use of the stackfreed and the fusee, the various escapements from the verge, cylinder, duplex, rack lever, detent and lever escapement. The line drawing showing the rack lever unfortunately shows the entrance jewel reversed.

The American watch story is told in the last chapter of twenty pages. The earliest, Thomson says, were those of Philadelphia, signed by Thomas Stretch who died in 1765. Thomson says that Goddard's watches had the American eagle design on the balance cocks. Goddard, however, made many without the eagle design. While the author says that Goddard's watches appear to have been assembled and finished from imported parts, Keith, second president of the Waltham Watch Company, and an apprentice of Goddard, said that the plates, wheels and other brass parts were cast by Goddard himself; his workmen filed and turned them into shape. Hands, dials, round and dovetail brass and steel wire, main and hairsprings, balance verges, chains and pinions were all imported and were bought through the Boston material houses at "war prices."

The Pitkin Brother's account and the Waltham story, as well as a recounting of some of the major companies complete the book. There are short serial number lists of Waltham, Elgin, and Illinois watches. The author states that keywound watches were produced in America until about 1875. But Waltham, for example, continued to produce their 1883 model in lots of over a thousand until the spring of 1919. These later ones were marked "Sterling, American Watch Company," and "American Waltham Watch Co.," all after 1910. The last keywinders were in a lot with serial numbers 22575001 to 22577000 in 1919.

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R2577 Thury, M

Etude sur les conditions actuelles de la fabrication de l'horlogerie a Genève

1874, 8vo.

Description (French).

Graffigny gives the date 1877.

Study of the current circumstances of horological manufacture in Geneva.

R2578 Thury, M

Systématique des vis horlogères

exposition d'un système général

Genève: L.E. Privat, 1878, 8vo, 58 pp, 5 fld plates.

Technical (French).

Extract from the Journal suisse d'horlogerie.

Standard screws for horology.

The standard described was adopted by the British association.

R2579 Thury, M

Théorie et construction des outils pour les mesures des épaisseurs

a l'usage spécial de l'horlogerie

Geneva: H. Georg, 1877, 54 pp, ill.

Tools (French).

Theory and construction of tools for measuring thickness, applicable to horology.

R2580 [Tic-Tac]**Les coqs de montres du Mont St Michel**

et leur classement historique, leur utilisation

France: Mont St Michel (Paris:), 1905 (1900), 36 pp, 74 ill (36 pp, 50 ill).

Collection (French).

Three dates are given; 1900, 1902 and 1905.

Some sources give the title as "Les coqs de montres et leur classement historique, en vente au Mont St Michel et au musée Suisse de l'Exposition Universelle de 1900".

It may be an earlier edition of Coignon "Les coqs de montres du Mont St Michel de la collection de M.E. Coignon".

The watch cocks of Mont St Michel and their historical classification, their use.

This book has not been seen. It has been described as watch cocks in the museum and their use for making jewellery.

See also Tombelaine "Le mont-saint-michel et ses merveilles" and Imbert & Villenoisy "Les coqs de montres, leur histoire, leur decoration".

R2581 [Timex Corporation]**Once upon a time, my first Timex watch**

Canada: Timex Corporation, ca 1983, 8.5 x 6 inch.

Prose (children) (English).

A story book with a history of time keeping and instructions on how to tell the time. The book contained a genuine Timex watch.

R2582 Timex Corporation**Service manual and parts catalogue**

USA: Timex Corporation, 1975 (ca 1961), 9 x 7 inch, 97 pp, ill.

Repair (English).

Several dates including 1961, 1970 and 1975.

Loose leaf binder with information on servicing Timex manual, automatic and electric watches.

R2583 Tishchenko, OF**Chasovye zubchatye zatsepleniya**

Moscow: Mashgiz, 1950.

Watch making (Russian).

Gearing for watches.

R2584 Tissot, A**Voyage de Pierre Jaquet-Droz**

à la cour du roi d'Espagne, 1758-1759

Neuchâtel: Baconnière, Cahiers de l'Institut Neuchâtelois, 1982, 21 x 17 cm, 191 pp, 11 ill.

History (French).

D'Après le Journal d'Abraham Louis Sandoz.

R2585 Tissot, L; Bujard, J**The territory of Neuchâtel and its horological heritage****Le pays de Neuchâtel et son patrimoine**

Switzerland: Editions de la Chatiere, 2008, 30.5 x 25.0 cm, 389 pp, ill.

History (English, French).

Separate English and French editions.

A collection of articles on the nature and impact of watch making on the history of the Neuchâtel region. In four sections:

Part 1, The beginnings of horology: A fragmented production (18 pages, Philippe Blanchard); Horological society (20 pages, Sandra Lena); Horological habitats (44 pages, Nadja Maillard); Creating knowledge (12 pages, Helene Pasquier); and Luxury and ordinary items (14 pages, Claude-Alain Kunzi).

Part 2, The triumph of horology: The concentration of men and machines (18 pages, Thomas Perret); The manufacture of cities (38 pages, Nadja Maillard and Claire Piguet); Urban mechanisms and architectural objects (20 pages, Claire Piguet); and Perfecting a heritage (44 pages, three articles on excellence, aesthetics and exactness by Thomas Perret, Claude-Alain Kunzi, and Virginie Babey & Claire Piguet).

Part 3, The direction of horology: Feast and famine (10 pages, Francesco Garufo); Innovating and producing (14 pages, Helene Pasquier); The social question (10 pages, Francesco Garufo); and Cities transformed (18 pages, Nadja Maillard).

Part 4, The renaissance of horology: A canton under the influence (6 pages, Thomas Perret); Remodelled industry (10 pages, Helene Pasquier); Electronic horology (12 pages, Thomas Perret and Alain Maurissen); The virtues of patrimony (18 pages, Nadja Maillard and Thomas Perret); and A heritage for all (18 pages, Cecile Aguilhaume, Nicole Bosshart, Caroline Junier Clerc, and Lawrence Vaucher).

There are 20 pages of notes, primarily references to source articles and books.

There is no index.

[1st edition, fair] The first three sections in this book cover different chronological periods: "The beginnings of horology", from the 18th century to about 1875; "The triumph of horology", from about 1875 to the end of World War I; and "The direction of horology", from about 1920 to the mid 1980s. In contrast, the fourth section, "The renaissance of horology", is a mixed bag with some post 1980s information, but

also including a discussion of JeanRichard.

The preface states: "The Swiss watchmaking tradition ... today must face the unforeseeable. It must adapt, and quickly!" This is a sentiment relevant to the 1970s and 1980s, but by 2008, when the book was published, watchmaking had adapted, with a massive scaling down of the industry and the almost exclusive specialisation in "haute horlogerie", the production of extremely expensive items and lavish jewellery for wealthy collectors. However, this statement fits the structure of the book which largely ignores post 1980 developments and makes me wonder when the articles were originally written; the book may well be 30 years out-of-date.

Each section has a mix of articles. There is one article best described as sociology, five articles on architecture and town planning, and ten articles on horology. These articles by different people necessarily vary in style and quality, and often they are only tenuously related. And so I found it easier to review each group rather than attempt to discuss them in the order in which they are presented.

The single "sociological" article is *Horological Society* (20 pages by Sandra Lena) and refers to the first period. It begins with a brief discussion of the division of labour and the corresponding social status of different workers, with women at the bottom. It then describes living spaces, furniture, clothing, social activities, libraries and food. It is an interesting overview of lifestyle, but there is no comparison with other regions in Switzerland and it is not clear if Lena is detailing aspects unique to Neuchatel or common in other cantons as well.

The five architectural articles are spread throughout the book.

"*Horological Habitats*" (44 pages by Nadja Maillard) refers to the first period. It begins with a description of the organisation of horology and the joint "farmer-horologist". She then looks at the design and construction of farm and village houses, providing a number of quotes from contemporary sources. This is followed by a detailed examination of the rebuilding of *Le Locle* and *La Chaux-de-Fonds* after they were largely destroyed by fire, providing information on the street plans developed and building regulations. Unfortunately the article is too long for what it covers and omits some necessary background, such as the significance of the *Henriopolis* project which is not explained. I found the almost theorising style, using what I presume is the "language of architecture", uncomfortable, and it seemed to me to be an attempt, in hindsight, to clothe probably practical decisions with an architectural significance they did not have.

"*The Manufacture of Cities*" (38 pages by Nadja Maillard and Claire Piguet) relates to the late 19th century. In contrast to the previous article, this one begins with a few disjointed pages containing a poetical introduction, a brief discussion of lighting, some vague remarks about serial production, and some even vaguer remarks about factory architecture, working conditions and opposition to mechanised production. Then Maillard provides brief descriptions of particular factory buildings. These do not seem to serve a purpose and are often unclear because there are no photographs of the buildings, just some blue-print plans coupled with obscure terminology, which would be alright for architects but not for most readers. For example "set apart by their rustic texture and the vernacular motif of the pediment framings", and later "... enhanced vernacular vocabulary, rationalised plan, simplified range of chromatic and picturesque effects, volume seen as an articulated block". In one place a photograph is mentioned, but it does not appear in the book, suggesting some unsatisfactory editing; and elsewhere buildings are described without illustrations. After a short section, written by Claire Piguet, on the *Billodes* factory (*Zenith*) which I found vague and superficial, Maillard continues by discussing the design of villas for watchmakers, the role of *Le Corbusier* and the development of housing for workers.

"*Urban Mechanisms and Architectural Objects*" (20 pages by Claire Piguet) is another study of urban planning and factories in the second period, including an interesting history of the development of factories which is more accessible to the non-architect than Maillard's discussion. As an aside, it contains the interesting suggestion that the "current mode of production was born in Switzerland, was exported from there ..." with the implication of to America and so the system should be called the *Swiss System of Manufacturing!*

Nadja Maillard continues her theme in the third period in the article "*Cities Transformed*" (18 pages), which examines changes in ideas of town planning. Much of it describes the complaints and attacks on the "boring" orthogonal planning and architecture of the past, but after that I found the discussion of the "garden estate" somewhat obscure and lacking purpose. There is an interesting example of irrelevant illustrations. There is one, four-line mention of freemasonry in the entire book, but this caused the publishers to include four photographs of masonic watches!

Finally, "*The Virtues of Patrimony*" (18 pages, Nadja Maillard and Thomas Perret) has 2 pages by Maillard on the modern *Corum* factory building, made obscure by inadequate photographs. This is followed 5 pages, also by Maillard, which contain remarks on museums, including blueprints of a building and 2 irrelevant photographs of watches. I really have no idea why this bit was included. (The remainder of the section, by Perret, is on horology and will be considered later.)

It appears that all these articles have been written by an architect for architects. From my layman's point of view I feel I have learned nothing and my understanding has not improved. May be professionals will benefit, but I suspect what I see as rather vague generalities lacking depth probably will not help them much either.

The ten horological articles are also spread throughout the book.

The first, pre 1850 section has three articles. The first is "*A Fragmented Production*" (18 pages by Philippe Blanchard). The purpose of this article is to describe the system of *etablissage* as the final phase of production, of assembling, finishing, etc. That is, the *etablisser* received parts from independent

suppliers, finished and sold watches. And it is suggested that “there was no director who imposed technical guidelines and ensured their application throughout the production chain”. Later this is emphasised when Blanchard writes “the etablisserieur, who had no organisational authority over the productive network, can therefore not be the originator of a ‘system’. He purchased elements and assembled them to produce watches, which he then sold”. Central to this view is that the designer, the architect of the watch’s movement does not form part of the etablissement system, and so Breguet, Roskopf and others were not etablisseries.

Unfortunately, this does not make sense. An essential aspect of etablissement is the need to purchase parts of specific dimensions to fit the specific watch calibre being manufactured, and the etablisserieur must have exerted control over his suppliers, including inspection. Further, it was most likely the etablisserieur who decided who would supply him with parts and what parts should be produced. That is, the etablisserieur was the originator and the independent workers were subject to technical constraint. There is no doubt that Roskopf was an etablisserieur, Buffat making it clear that the structure of his manufacturing fits that model perfectly. But he was also the architect. Breguet also was an etablisserieur for at least some of his production.

However the article is necessarily vague because the word etablissement tries to characterise a quite variable style of manufacture. For example, the Longines factory bought parts from independent suppliers and used outworkers, but I doubt if it would be described as etablissement; and yet I cannot see how Roskopf can be excluded. That is, the word describes a hard to define flavour rather than a specific system.

Three minor points should be noted. First, in two places Blanchard lists the division of watchmaking into a number of trades, in one case specifying 10 and in the other 9 activities. However, this is obviously far too crude as there were 30 or more separate trades by the time he is writing about (circa 1780). To mention “blacksmith” (springs) and “mechanic” (trains) is crude simplification. Second, some financial data is given, but the currency is not explained and its relative value not stated. Third, nearly all the illustrations are purely decorative and not related to the article.

The second article is “Creating Knowledge” (12 pages by Helene Pasquier). This article looks at the development of education, from JeanRichard and apprenticeships to the horological schools. There is very little information on what was taught in schools and how it was taught, and the article ends abruptly, giving the impression it was not finished. There are better surveys of education elsewhere.

Finally there is “Luxury and Ordinary Items” (14 pages by Claude-Alain Kunzi). To begin with, this article is a bit strange because luxury watches are not mentioned. The focus is on “economical” (good value for money) watches and “cheap” (bad quality) watches. However, the term “economical” does not seem useful because it encompasses watches of any value; indeed, the article is illustrated by a Breguet souscription watch and a Jurgensen chronograph, neither of which could be described as economical. Roskopf’s watch is included in this group to distinguish it from the shoddy, poorly made watches belonging to the “cheap” variety. However, the rest of the article is very good, examining the manufacture of cheap watches and fakes, and it concludes with some very interesting remarks on the fact that museums ignore the cheaper but very important productions of Switzerland.

The second period, from about 1875 to the end of World War I, has two articles. “The Concentration of Men and Machines” (18 pages by Thomas Perret) is a good, general survey of the development of factories in parallel with etablissement, including interesting statistics of the number and sizes of factories, which varied from a single person to a few hundred workers. (In 1905 there were 4,500 separate enterprises.) This is followed by a discussion of the development of laws and factory regulations to protect workers’ health and safety, and control working hours. “Perfecting a heritage” (44 pages) is actually three articles in one, on excellence, aesthetics and exactness by Thomas Perret, Claude-Alain Kunzi, and Virginie Babey & Claire Piguet). These articles provide good, if brief general histories of the development of horological schools and research, advertising, and the Neuchatel Observatory.

The third period, from about 1920 to the mid 1980s, has three articles. “Feast and Famine” (10 pages by Francesco Garufo) is an economic history of the times, looking at the causes of crises, the development of cartels, employment and production. “Innovating and Producing” (14 pages by Helene Pasquier) again considers the impact of the cartels and then discusses the development of non-mechanical watches from the 1950s on. Finally, “The Social Question” (10 pages by Francesco Garufo) is a history of employment and unions. Some terms are not explained and it appears to have been written for Swiss people rather than other readers.

The fourth section, which has four articles on horology, is a strange mixture. “A Canton Under the Influence” (6 pages by Thomas Perret) is a too brief look at the effects of the oil and quartz crises and how Neuchatel adapted. “Remodelled Industry” (10 pages by Helene Pasquier) examines the quartz crisis and the failure of the Swiss to predict the consequences and adapt fast enough. It then comments on the move from selling watches to selling aesthetic and fashion values. Again, it is too brief and just a summary of events. “Electronic Horology” (10 pages by Thomas Perret) is a history of the development of the quartz watch. The article ends with 2 pages (by Alain Maurissen) on time, frequency and atomic clocks. “The Virtues of Patrimony”, as noted above, has 10 pages by Thomas Perret. This is an examination of the different myths which have developed around Daniel JeanRichard and the influence they have had on the stereotypical and picturesque view of the character of Neuchatel. It is probably the most interesting part of the whole book. Finally, A heritage for all (18 pages by Cecile Aguilleaume, Nicole Bosshart, Caroline Junier Clerc, and Lawrence Vaucher) provides brief histories of four horological museums.

My overall impression of the book, and the horological articles in particular, is that I gained very little

from reading it. The foreword states: "the (authors) were careful to present the latest research done on the history of Neuchâtel's horological production" and it goes on to say: "this book invites us to reconsider horological history by studying the traces left by individuals, places, and objects involved in horological activity". This is re-affirmed near the end of the book by Thomas Perret, who writes: "In a book that aims to present a new view of the state of research in horological history ...". But the horology is rather superficial and the focus is on Neuchâtel rather than its main industry. Indeed, many statements are vague generalisations, but to attempt to describe the "character" of an industry or a locality necessarily results in a vague view of trends, within which individual enterprises or people vary significantly from the artificial norm.

Looking back, I get the impression that these articles are like school exercises. They read as though someone has asked each writer to summarise information on a topic which they are to glean from books and articles. This is re-enforced by the extensive quotations from the very large number of references given in the 20 pages of notes. What is lacking is interpretation. The book probably does "present the latest research" but it does not present any views, especially not "a new view of the state of research". It simply provides a convenient précis of the work of others. As such it is useful, but uninspiring.

It has been pointed out to me that: "Most watch collectors see the Swiss Jura Mountains as one homogenous territory. Which culturally and historically it is not. ... It is not surprising that American readers throw all those regions into the same pot and assume practices were identical". However, the book fails to distinguish Neuchâtel from elsewhere, and it is devoid of comparisons with other regions in Switzerland. In this sense it and its title are inadequate.

R2586 Toillon, E**Besançon, ville horlogère**

Joué-lès-Tours: Alan Sutton, 2000, 24 x 16 cm, 128 pp, ill.
History (French).

A regional French history of watch and clock making.

R2587 Tolke, HF; King, J**IWC International Watch Co, Schaffhausen**

Zurich: Verlag Ineichen, 1987 (1986), 28.5 x 25.5 cm, 238 pp, 387 ill, 2 genealogical trees, slip case.

Dating, description, history, identification (English, German).

English and German editions. There an ordinary edition (cloth boards, dust jacket, 3500 copies) and a deluxe edition (full calf, slip case, numbered, 500 copies).

The illustrations are numbered 1 - 264, but many have multiple parts.

Jurgen King was the head of the construction department at IWC.

Foreword and introduction (5 pages) followed by 17 sections:

The first 7 sections are a history of IWC: Prehistory (13 pages), IWC-Schaffhausen (12 pages), The final rescue (9 pages), The third and fourth generations (8 pages), IWC international (4 pages), Probus Scarfusia (14 pages), and Illustrations part 1 (Jones and Seeland calibres).

The next 6 sections form a technical study: Patented constructional details (20 pages), The Pallweber-IWC (10 pages), Illustrations part 2 (Pallweber calibres), The competitors (6 pages), Illustrations part 3 (58 pages, decorated cases, marksmen's watches, complicated watches and deck watches), and The IWC automatic (22 pages).

The book concludes with Illustrations part 4 (17 pages, wrist and dress watches), Bibliography (1 page of sources for the history), List of movement numbers (11 pages), Illustrations part 5 (7 pages, movements), and Indexes by person and subject.

[1st edition, excellent] There is not much to say about this book because it is excellent.

It begins with a very thorough history of the company from its founding by the American Florentine Jones to after the second World War. The authors are to be commended because they have meticulously distinguished between historical fact and supposition.

The text of the rest of the book provides technical descriptions of three features of IWC watches: regulators, the Pallweber motion-work for digital displays, and self-winding mechanisms. These descriptions are based on patent drawings and include patents not used by IWC but by other makers. It is very rare for a single company book to recognise the existence of other watch makers. All too often, such books imply that the particular maker is the greatest and no-one else has ever invented anything of importance. However, Tolke and King have put the IWC patents in context and so provide an excellent examination of them. Indeed, although directed at people interested in IWC, the book contains much of general interest.

Unfortunately, there is too much missing from the technical descriptions. The Jones and Seeland calibres are glossed over, as are IWC's complicated watches. And the Engineer range of non-magnetic watches is barely mentioned.

The most startling omission is that the Elgin I movement is mentioned (with a photograph), but there is not one word to explain this name. The only information I could find from other sources is wonderfully vague: "The Elgin I movement represents a transition within IWC production, and was produced in several variations from 1879 to 1887. No one knows why they are called Elgin although I heard one person affiliated with the factory speculate that some of the designs or parts may have been supplied by Elgin, a famous and large U.S. pocket watch company. There also are IWC Elgin II and III calibres." A quick check showed that the Elgin I movement is completely different from watches made by the Elgin Watch Company USA and the name remains a mystery.

It is apparent that the authors limited themselves to features invented by IWC and omitted all ordinary

or derived designs. This is a pity as they are very competent, very good writers and could have made the book much more valuable.

Interspersed within these sections of text are several groups of photographs, which vary from adequate to excellent. With the exception of the photographs of the Jones, Seeland and Pallweber calibres, they are not tied into the text and add only a little to the book. Too often when looking at a photograph I wanted more information and I feel the text should have been expanded to cater for this need.

Despite these criticisms, the book is an excellent contribution to the history of watchmaking.

[Remark] Two quotes deserve being repeated. The first is: "F.A. Jones's bold decision to undertake this venture led to the fact that the only watch factory founded by an American still producing fine precision watches is situated at Schaffhausen."

The second raises a point worth further consideration: "Swiss watch producers ... were not able to free themselves from an old deep-seated concept: it was considered that watch movements with better performance were more expensive than others, so that a clear relationship existed between the price of a movement and its quality as a timekeeper." Of course, the quartz revolution overthrew this view and now cheaper is better! Indeed, the Swiss watch industry had to change completely. Whereas it used to manufacture timepieces for people to use every day, it now only manufactures boutique works of art for display and self satisfaction. But I have not yet read any study on the implications of this transformation.

R2588 Tombelaine, Marquis de

Le mont-saint-michel et ses merveilles

l'abbaye, le musée, la ville et les remparts

Paris: Armand Colin; Musée du Mont-Saint-Michel, 1935 (1892), 18 x 12 cm (16mo), 149 pp, ill.

Collection (French).

Several printings with various paginations including 103 (1892) 114 (1893?), 149 (1912), 164, 174 (1930, 1932, 1933, 1935), 181 (c1900) and 188. Some differences may be due to including advertisements.

One chapter is devoted to watch cocks.

See also Coinon "Les coqs de montres du Mont St Michel", Tic-Tac "Les coqs de montres du Mont St Michel" and Imbert & Villenoisy "Les coqs de montres, leur histoire, leur decoration".

R2589 Tomes, PA

The watch and clock museum of the NAWCC

Ephrata USA: Science Press, 1988, 23.0 x 26.5 cm, 117 pp, ill.

Collection (English).

Two simultaneous printings; a limited edition of 1000 copies (hardback) and a soft cover "unlimited" edition.

Seven chapters: Marking time, the earliest timepieces (10 pages); Geographical comparisons (22 pages); European pocket watches (16 pages); Revolution in America (22 pages); American pocket watches (16 pages); Technological revolution (20 pages); and The design of time (9 pages).

[1st edition, mediocre] A pleasant coffee table book of illustrations showing a few pieces from the NAWCC museum. There is very little text with no technical information or references, but some good colour photographs.

There is also a related video tape.

R2590 Tomlinson, C

Cyclopaedia of useful arts

mechanical and chemical, manufactures, mining and engineering

London and New York: George Virtue, 1854, 25 x 17 cm, 2 volumes 832 and 1052 pp, 2472 ill, 44 plates. Description (English).

Undated but often given as 1852 or 1854. Somewhat ambiguously described. There are 39 engraved plates and 5 wood plates.

Alphabetical with volume 1 covering Abattoir to Hair-Pencil and volume 2 from Hammer to Zirconium. Volume 2 contains an article on horology with 22 pp, 30 ill and 1 plate (of the Royal exchange clock).

Inspired by the Great Exhibition of the Works of Industry of All Nations held in Hyde Park London in 1851. There is a long introductory essay on the exhibition, including an account of the construction of the Crystal Palace and describing many of the exhibits.

R2591 Tope, John

Clockmaker watchmaker lathe basics

2005, 4 DVDs or 3 VHS tapes, 38 pp, ill, manual.

Repair (English).

A course for the beginner. It includes choosing a lathe, maintenance, and lessons on hand turning. The course running time is 4.5 hours.

[USA: Tick Tock Productions] I have not seen this, but a preview suggests it may be more relevant to clockmaking than watchmaking.

R2592 Tornehave, B

Bornholmske urmagere

Kopenhagen: Bornholms historiske Samfund, 1983, 175 pp, ill.

(Danish).

The story of the watch.

R2593 Torphammar, P**Amateur watchmaking**

Sweden: P Torphammar, 2004, 21.0 x 15.0 cm, 103 pp, 62 ill.

Repair (English).

"A beginner's guide to understanding how a watch movement works and a start for learning watch repairs".

15 chapters: Introduction, General principles, The classical movement, Complete model of the classical movement, Jeweled bearings, Gear ratio analysis, Your workshop, Some helpful hints, Preparing for disassembly, Disassembly of the movement, Cleaning, Assembly, Oils and oiling, and Final assembly.

There are 4 appendices (Disassembly scheme, Oiling scheme, Basic dictionary, and Disassembly photos) followed by an index.

[1st edition, very good] This book has a very simple aim: to teach the complete beginner how a watch works and how to disassemble, clean, oil and assemble a simple wrist watch. And it does so very well. The explanations are clear and the illustrations are excellent. It is a very good "first book" for anyone who wants to do more than just look at watches.

The only fault is that Torphammar gives no information about what to do next, and a few carefully chosen references would have helped. Also, it is rather dear. Once the basic skills have been mastered, such books, even if they are treasured, spend the rest of their lives in a bookcase and I think they should be priced with that in mind. But even so, this book is one of the best places for a novice to start.

R2594 Townsend, George E**Almost everything you wanted to know about american watches**

and didn't know who to ask

USA: Heart of America Press (USA: George E Townsend), nd (1971), 23.5 x 15.0 cm, 87 pp, ill.

Dating, identification, makers (English).

Some first edition copies are numbered. The spiral bound reprint is on photocopier pages.

A preface and list of abbreviations followed by five sections: List of American watch companies (61 pages covering Ball, Elgin, Hamilton, Howard, Illinois, Waltham, other US companies and including movement diagrams and some serial number dating information); Some names found on American watches (4 pages); Line drawings of American watches (14 pages); Identifying and collecting American watches (2 pages); and Serial number listings (4 pages). Flowchart style diagrams of company inter-relationships are given with some names of officers.

The reprint includes a 1993 price guide.

[1st edition, good] Although somewhat limited and superseded by Ehrhardt & Meggers "American watches beginning to end", it is an interesting book.

R2595 Townsend, George E**American pocket and wrist watch balance staff interchangeability list**

USA: Heart of America Press, nd (1984), 28.0 x 21.5 cm, 36 pp, ill.

Repair (English).

Probably reprinted several times (even though page 27 suggests a limited edition of 200 copies), but only the original date is given.

Primarily this book is a listing, in overall height order, of balance staffs of American watches. Also included are a few European watches. This list is followed by some extracts from American company data sheets, with three from Hamilton providing useful detail. Finally there are scale drawings of staffs from some American companies.

[1st edition, fair] Much of the data has been gathered from bottles of staffs distributed by a particular supply company, and many other dimensions have been measured from specific watches. Sometimes the information is too vague to be of practical use and overall it lacks the completeness and authority of manufacturer data. Also, the lack of a cross-reference listing or index by maker reduces its usefulness. Nonetheless, it may be of some value as a source of information.

See also DCN "DCN stock catalogue (balance staffs)" and Ronda "Ronda stock catalogue (balance staffs)".

R2596 Townsend, George E**American railroad watches**

USA: Heart of America Press (USA: George E Townsend), nd (1977), 28.0 x 21.5 cm (8vo), 74 pp, ill, 18 pp advertising (43 pp, ill).

Dating, identification, price guide (English).

The spiral bound photocopier reprint has extra material added by Ehrhardt; a 1983 price guide, catalogue extracts, and advertising.

This text consists primarily of movement diagrams of railroad standard watches signed by Waltham, Elgin, Illinois, Hampden, Hamilton, Howard, Rockford, South Bend and Ball; together with brief comments and some illustrations of dials.

[reprint, fair] Superseded by Ehrhardt and Meggers "Railroad watches; identification and price guide" and "American watches beginning to end".

R2597 Townsend, George E**E. Howard Watch Co watches 1858-1903**

USA: Heart of America Press, nd (1983), 11 x 8.5 inch, 48 pp, ill.

Dating, identification (English).

Including extracts from catalogues.

[Review by Henry B. Fried] George E. Townsend was at the top of the list of authorities on American watches. Before his recent death, he had compiled a listing of Howard watches, each illustrated by his own fine line drawings in meticulous style. This booklet is a result of his exhaustive research into this company's products.

In this booklet of 48 pages there are illustrations of over 65 movements with side drawings showing some distinctive details.

This book contains a history of the company, description of the movements, size designations, serial productions and dates of manufacture. Also, there is a casing comment that all movements left the factory uncased, and the various case makers who made cases expressly for these odd-sized movements are listed. Especial movements by Howard, such as the use of the resilient escapement, are noted and explained. Townsend has made many very fine drawings of parts of the movements which should help the collector and repairer, giving dimensions of various critical parts, and he has included drawings and dimensions of all staffs. Reproductions from Howard material catalogs are included as well with detailed comments by the author. There are charts of specifications for the various movements and the details of the various series running by serial numbers, pages of hand-drawn fine illustrations of parts not seen in Howard material catalogs. Also, all known Howard movements are pictured. The details of hands, hole-size, color, and shape, are listed.

To this Roy Ehrhardt has added an appraiser's guide to the current value of each movement illustrated and listed. This last effort of Col. Townsend, together with the editing of Ehrhardt, makes it a good addition to the other Townsend publications.

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R2598 Townsend, George E

The watch that made the dollar famous

encyclopedia of dollar watches

USA: Heart of America Press (USA: George E Townsend), nd (1974), 4to (23.5 x 15.0 cm), 146 pp, ill (45 pp, 109 ill).

Identification, price guide (English).

The reprint is on photocopier pages and has later material, including a price guide, added.

A brief history and definition of dollar watches is followed by short summaries of American manufacturers and their products. The summaries contain the names of some people involved, notes on production, company name changes, watch names and movement diagrams.

The book concludes with an alphabetical list of watch names and a list of relevant patents.

[1st edition, fair] The book is primarily a useful list of information to aid the identification of dollar watches. For collectors of such watches it would be a handy reference.

The book is said to have been revised in 1994 with "hundreds of new photos added".

R2599 Townsend, George E; Ehrhardt, R

Unfinished second edition of almost everything you wanted to know

about american watches and didn't know who to ask

USA: Heart of America Press, 1996, 28.0 x 22.0 cm, 160 pp, ill, ads.

Makers, identification, dating (English).

The unfinished second edition consists of a list of American companies in the same format as the first section in the first edition (which see); however all companies are in alphabetical order with the five main companies selected by Townsend incorporated into the list. There are 6 introductory pages containing an index, abbreviations, list of US companies, names on US watches, and a list of companies not illustrated.

[1st edition, good] This is grandiosely titled "Unpublished new research" and states "Author and editor Roy Ehrhardt, Jr." In fact all Ehrhardt did, according to his introduction, was to publish Townsend's work.

The original book is good and worth reading, but it most certainly is not a major or essential reference. In contrast, this is a much more substantial book with far more information. Being just a novice with regard to American watchmaking, I will not draw a comparison with Ehrhardt & Meggers "American watches beginning to end", which I consider the outstanding basic book. However, Townsend's books are simply a listing of movements with illustrations and there is no useful analysis. Consequently it adds nothing to the information in the Ehrhardt & Meggers book unless there are some illustrations that do not appear there; unfortunately it would take a lot of work to discover any.

[Remark] I have not indexed this book.

R2600 Treherne, Alan

The Massey family

clock, watch, chronometer and nautical instrument makers

England: Newcastle-under-Lyme Museum, 1977, 29.5 x 21.0 cm, 37 pp, ill.

Exhibition, history, technical (English).

Catalogue for an exhibition at the Museum of Newcastle-under-Lyme, England.

Introduction (16 pages): Massey family tree, Massey's patent ship's log, biography and Description of the Massey lever escapement.

List of items in the exhibition (20 pages, no illustrations).

[1st edition, good] Although the catalogue is of little interest, being unillustrated, the first part gives

a useful summary of the family and provides one of the few adequate descriptions of Massey lever escapement types.

R2601 Treloar, M**Horology catalogue 15**

Australia: M Treloar, 1994, 21.0 x 21.0 cm, 24 pp, no ill.

Bibliography, collection, catalogue (English).

Sale catalogue of 648 books from the collection of Reece Allan, an Australian watchmaker.

[1st edition, good] A wonderful and fine collection. Sadly many had been sold before I discovered it.

R2602 Tremayne, A**Everybody's watches**

London: NAG Press, ca 1940, 18.0 x 12.0 cm, 64 pp, ill.

Description (English).

"The design, manufacture and adjustment of usual and unusual watches described in a non-technical way for the information of the wearer".

A detailed description of watches, part by part, followed by notes on time, watch manufacture and a guide to purchasing.

[1st edition, fair] A good and reasonably clear explanation, but continual references to unexplained or unillustrated features makes me think that the novice would find it difficult to follow on first reading.

It is unlikely to be of much interest unless one happens across a copy or collects odd books.

As an aside, yet again I read "ten thousand (jewel screws) would only fill a fair sized thimble". Maybe this is English conservatism at its best as Shugart ups the stakes to 47,000; or are American thimbles bigger? Exciting stuff, but surely quite unrealistic, and I find such nonsense annoying.

R2603 Tremayne, A**One hundred years after**

being a little history of a great achievement

Birmingham: Dennison Watch Case Company, 1912, 18.0 x 13.5 cm, 11 sheets with 8 pp text, 1 tipped in plate and 8 pp catalogue with 7 ill.

Miscellany (English).

Three chapters: 1812 birth and America (3 pp), 1874 move to England and death (2 pp) and 1912 the present day (3 pp). Followed by a catalogue of watch cases with each illustration hand tinted gold (probably gold leaf).

[1st edition, very good] A superb piece of manufacturers' puff produced for the centenary of Dennison's birth and the introduction of the Dennison safety watch bow. Wonderfully printed on excellent paper and devoid of information, as all good puff should be, it leaves the reader with a warm glow and the feeling that Dennison single-handedly saved the world.

R2604 Tribune des Arts**Hommage mondial a Breguet**

Genève: La Tribune des Arts, 1991, 48 pp, ill.

History (French).

A special edition of the newspaper "Tribune des Arts" dedicated to Abraham-Louis Breguet. It includes historical articles about Breguet and his creations as well as information about the present Breguet workshops and products.

R2605 Tribune des Arts; Tortella, G**Patek Philippe Museum opening guide**

Geneva: Tribune des Arts, 2002, 11.75 x 8.25 inch, 81 pp, ill.

Collection (English).

Supplement to "Tribune des Arts".

Illustrated guide to the new Patek Philippe Museum in Geneva, with a history of Patek Philippe and its most famous timepieces.

R2606 Trincano, L**La boîte de montre et sa fabrication****La boîte de montre, matières premières - caractéristiques - fabrications - contrôle modèle**

Bienne: Magron, 1924, 19 x 14 cm, 118 pp, 15 plates (103 pp, 11 pp ill, 1 fld plate).

Watch making (French).

The watch case and its manufacture.

I presume the two different titles reflect the two editions.

R2607 Trincano, L**Les pierres fines****Die edelsteine und ihre bearbeitung**

et leur préparation pour l'horlogerie

für die uhrmacherei, bijouterie und industrie

Besançon: E. Magron, 1926 (1918), 96 pp, 55 ill (73 pp, ill).

Description, technical (French, German).

German edition in 1923.

Jewels and their preparation for horology.

R2608 Triplin, J**Watch and clock making in 1889**

with a view of the british section at the French International Exhibition
London: Crosby Lockwood & Son, 1890, 21.5 x 14.0 cm, 142 pp, frontis.

Description, history (English).

“An account and comparison of the exhibits in the horological section of the French International Exhibition”: Introduction, Horological literature, Schools of horology, Chronometer makers, Watch manufacturers, Turret clock manufacturers, Clock manufacturers, Tools for clock and watch makers, Inventors, Shopkeepers, Watch-case makers, Timers, Engravers, Gilders, Platform escapement makers, Escapement material makers, Watch jewel makers, Balance-spring makers, Mainspring makers, Pinion makers, Wheel and wheel-cutter makers, Hand makers, Dial makers, Screw makers, File makers, Morocco watch case makers, Watch importers, Musical boxes, Optional hall-marking at Geneva, and Conclusion.

[1st edition, mediocre] Triplin was vice-president of the British Horological Institute and is best known for his translations (with Rigg) of Saunier's books. Such a background, coupled with the rarity and high price of this book, suggested it should be both interesting and useful. However, with one exception it is neither. It is dull and superficial, often going no further than to list the names of exhibitors and what they displayed. Indeed, if this book had been the only source of information about Triplin, then I would have to presume that he was horologically ignorant and just a hack journalist who couldn't write very well.

The first section (which is little more than an advertisement for Triplin's translations) is followed by the most interesting part of the book, a 26-page, detailed description of the teaching program at the Besancon school of horology, together with some other useful remarks about education.

The rest of the book mainly consists of general, often vague, remarks. For example, Triplin spends 21 pages trying to examine different watchmaking systems, and he spends a little time describing Rotherham's exhibit and that company's machinery. But he never comes to grips with machine manufacturing and seems not to understand its importance. The only American companies present were Trenton and Waterbury, but surely he was aware of Waltham and that company's contributions to earlier exhibitions; so the absence of a useful discussion on mechanisation is very surprising. However, he does show some awareness when discussing inventors, quite enthusiastically criticising the many useless ideas on display. But after that the book tails off into short and uninteresting sections, momentarily enlivened by some remarks on hallmarking in Geneva.

After reading this book I have learnt very little and feel I have wasted my time and money.

R2609 Trueb, LF**Die zeit der uhren**

historie, modelle, hersteller

Ulm: Ebner Verlag, 1999, 24.5 x 17.5 cm, 564 pp, ill.

Description, history (German).

Description of the Swiss and international horology industries in 3 parts. Part 1 principles of clockwork, part 2 components, and part 3 descriptions of companies.

R2610 Trueb, LF**The world of watches**

Germany: Ebner Publishing, 2005, 24 cm, 440 pp, 330 ill.

Makers, history (English).

Revised English edition of “Die zeit der uhren, historie, modelle, hersteller”?

Profiles of hundreds of watch companies from Switzerland, Germany, Japan, Hong Kong, Italy and the United States.

Brand histories, market strategies, top models and collections.

A “Who's Who” in watch-movement manufacturing.

Overview of 500 years of watch history and technology.

R2611 Tsuji, Mampei**Saishinshiki kakushu tokei**

narabini chikuonki seimitsu shuriho

Osaka: Osaka Tokei Gakuin, 1946, 349 pp.

Repair (Japanese).

5th edition in 1946.

Precise repair of various clocks, watches and phonographs.

R2612 Turner, AJ**Of time and measurement**

studies in the history of horology and fine technology

England: Ashgate Publishing, 1993, 23.0 x 15.5 cm, 321 pp, ill.

History (English, French).

A collection of papers by A.J. Turner which were originally published in various journals. The book is in three sections containing 17 articles in English and 5 in French: Sundials, zodiacs and time, Mechanical horology, and Precision instrumentation.

There are three papers relevant to watches and chronometers: “An emblematic watch by Gribelin” (8 pages), “L'Angleterre, la France et la navigation” (22 pages, originally published in Cardinal “Ferdinand

Berthoud 1727-1807”), and “Documents illustrative of the history of English horology I: two letters addressed to Thomas Mudge” (3 pages).

[Remark] In his preface, Turner says “re-publishing essays originally published in disparate journals performs the service of negating a certain amount of effort on the part of those who might wish to read them”. Although this has merit, there is the disadvantage of including much that is irrelevant for some readers. Only 33 pages interest me and I already have 22 of them in the book they originally appeared in. So I am unlikely to buy a book to read just 4% of it and, for me, it would be better to get photocopies of the original papers.

R2613 Turner, AJ**Time**

The Hague: Tijd voor Tijd Foundation, 1990, 29 x 25 cm, 248 pp, ill.

Catalogue, exhibition, illustration (English).

Catalogue of an exhibition in Holland with 810 items and containing many pieces from private collections. With text by HF Bienfait, E Dekker, W Dijkhuis, V Icke and AJ Turner.

R2614 Turner, WJ**British craftsmanship**

London: Collins, 1948, 8vo, 322 pp, 152 ill, 48 plates.

History (English).

The seventh volume in the “Britain in pictures” series.

This book includes “British craftsmen” by Thomas Hennell, “British furniture makers” by John Gloag, “English glass” by W. B. Honey, “English pottery and porcelain” by Cecilia Sempill, “British clocks and clockmakers” by Kenneth Ullyett (50 pp, ill), and “English popular and traditional art” by Enid Marx and Margaret Lambert. The introduction is by W. B. Honey.

A general history with a few watches discussed.

R2615 Tyler, EJ**Clocks and watches****Schöne alte Uhren**

historic timepieces, 100 fascinating pictures

London: Hampton House (England: Sampson Low) (England: Golden Press) (Bayreuth:), 1977 (1974), 30.0 x 22.0 cm, 80 pp, 102 ill.

Description, history (English, German).

Separate English and German editions with various dates and publishers.

An introduction followed by 40 short sections, each describing one type of clock or watch in roughly chronological order. Watches are covered in 15 sections.

[1975 edition, fair] Purely descriptive with no discussion of mechanisms, and the terms used (such as verge and scapewheel) are not explained.

Although an adequate history of horology, the book is ordinary and of no great merit. The only bit that interested me is the brief look at the development of railroad time control in England.

R2616 Tyler, EJ**The craft of the clockmaker**

New York: Crown Publishers, 1974 (1973), 25.0x 19.5 cm, 96 pp, 84 ill.

History, tools (English).

American and English printings.

A chronological history of clocks and watches with the focus on manufacture and repair.

There are 7 chapters: The first clocks (6 pages); The sixteenth and seventeenth centuries (13 pages); The long-case clock (17 pages); Tools and techniques of the early clockmakers (12 pages); The watch (10 pages); Clocks in the nineteenth century (20 pages); and Modern developments (6 pages).

There are 3 short appendices and a 2-page index.

[1st American edition, very good] The book is a general description of making and repairing clocks and watches, interleaved with some information on the development of timepieces. The focus is on the tools and methods of clockmaking.

It is a well written introductory book for the person who wants to understand the basic processes of making and repair. Although lacking the authority and detail of Weiss it nevertheless provides a very good overview for the beginner, coupled with basic historical context and some social comment.

R2617 U.S. Department of Commerce**Measurement of time and tests of timepieces**

Washington: US Government Printing Office, 1914, 39 pp.

Description (English).

See Gould “Testing of timepieces”.

R2618 Uchida, Hoshimi**Evolution of Seiko, 1892-1923**

Tokyo: Seiko Corp., 2000, 148 pp, ill.

History (English?).

A volume in the series “History of the Japanese clock and watch industry”.

R2619 Uchida, Hoshimi**Osaka Watch Incorporated**

Japan: Hattori Seiko Co., 1986, 73 pp.

History (English?).

A volume in the series "History of the Japanese clock and watch industry".

R2620 Uemura, Tsunezo

Tokeigaku kowa, tokei seizo shuri jiten

Osaka: Uemura Shuppan-Bu, 1925, 536 pp.

Repair (Japanese).

Watch repair and adjusting.

R2621 Uglietti, A

Orologi da polso (Wristwatches)

Italy: Frederico Motta Editore, 2007, 7.25 x 5 inch, 384 pp, ill.

Illustration (Italian, English).

Italian and English parallel text.

Introduction; Companies; Instant classic wristwatches; Glossary; Bibliography.

[1st edition] "As much status symbols as pieces of jewelery and miracles of new technology, the watches covered in this small handbook make up a comprehensive history covering 200 years, including the most important names in luxury wristwatches and some of their best examples."

R2622 Ullyett, K

Clocks and watches

England: Hamlyn, 1971, 12mo, 159 pp, ill.

Description, history (English).

The story of time measurement from shadow clocks to computer systems.

"The book details all the main types of clocks and watches, and has diagrams to show how the different mechanisms operate. Clocks and watches from Europe, America and the Far East are described; and the influence of prevailing fashion on case design assessed. Time-keeping at sea and in outer space, the development of the electronic watch and the astronomic clock are described and illustrated in detail."

R2623 Ullyett, K

Watch collecting

Chicago: Henry Regnery Co (London: Frederick Muller), 1970, 21.5 x 16.5 cm, 144 pp, 34 plates, 4 figs.

Collecting, description, history (English).

Eight chapters: On acquisition (9 pages, a general introduction to collecting watches); Landmarks (8 pages); Escapements (22 pages); Casework (10 Pages); Case lore (10 pages); Japanese and Turkish delights (14 pages, including details of Japanese timekeeping); Watchmakers at work (13 pages, mainly a brief history of British problems between 1797 and 1817); and To the reader (16 pages, books).

There is a 23 page glossary and an index.

[1st edition, fair] "A delightful book for the beginner, written with enthusiasm and full of anecdotes and comparisons to awaken the reader's interest. Although now dated and in places superficial, it is hard to think of a better "first" book to give someone."

Well that was my opinion when I first read it many years ago. But I have just read it again and my opinion has changed.

The introduction suggests the focus is on what the ordinary collector may be able to acquire in the 1970s, and this is reinforced by later remarks about older and rarer watches costing as much as a Rolls Royce or a house. But almost without exception Ullyett talks about early, museum quality watches pre 1725. The main exceptions are Breguet (of course), some remarks about electric watches when discussing escapements, and Turkish market watches.

Indeed, the book is best described as fireside chats on the early history, styles and dating of watches. Although easy to read and very interesting, much of it is barely intelligible to the novice because Ullyett uses unexplained terminology and so assumes the reader has quite a bit of knowledge. This is especially obvious in the chapter on escapements where insufficient illustrations and inadequate descriptions mean that this aspect of watches remains a mystery.

The final chapter, To the reader, neatly summarises my problem with this book. It begins by discussing book collecting, not reading, and this is most obvious when Ullyett writes: "Every keen watch-collector must have at least one "Chapuis", but which one, and in what language, is a matter of choice". I find this advice ludicrous. Books are to educate, to be read. Certainly book collectors have books for other reasons, but they are book collectors, not watch collectors. So when Ullyett has the opportunity to suggest further reading (and so overcome some of the limitations of his book) he fails badly. And when he does get around to books to be read he quickly moves to clock books and makers lists.

There is a lot of interesting material in the book and I still think it is worth reading. But only after the reader has ceased to be a beginner and learned a reasonable amount from other books.

R2624 Ulric of England

German military timepieces of world war II

England: Ulric Publishing, 2009 (ca 1996), 12 x 8.5 inch, 3 volumes.

Description, price guide (English).

Includes luftwaffe chronographs and kriegsmarine deck watches. Mainly wristwatches?

There is much confusion because sellers fail to distinguish between these three volumes, and one source suggests a world war I book (which does not exist).

"German military timepieces of world war II volume 1" was originally published in 1996 and the 2nd edition was published in 1999. It is 48 pp, 90 ill and is described as a "concise publication detailing most

of the important timepieces utilised by the German forces during World War II, these include the special Luftwaffe chronograph wristwatch and the Kriegsmarine deck watches along with service-contract watches from all three services.”

“German military timepieces of world war II volume 2” is 136 pp, 150 ill and is described as “The complex field of German military timepiece serial numbering has long remained an unknown and unrecorded area. Ulric of England has at last achieved an exciting breakthrough in this subject, allowing the collector/researcher to understand the numbering techniques employed by the German forces. Detailed numbering analysis tables are included throughout the book. These tables will allow the reader to date a timepiece by the serial numbering for the first time. Virtually every known type of German military timepiece, including all the aircraft clocks, has been photographed and described in this volume. All of these are clearly detailed in date and serial number order; the book is further enhanced by various archive documents, drawings and period photographs showing timepieces in use.”

“German military timepieces of world war II volume 3, German Army/Waffen-SS” published in 2009 is 144 pp, 300 ill. It “details all known pocket watches, wristwatches and clocks relating to the German Army and the Waffen-SS, and specifically charts all serial numbering systems.”

R2625 Unic**Paper pocket watch dial advertising**

nd.

History (English).

Journal article?

R2626 Union de Banques Suisses**L'industrie horlogère suisse**

Zurich: Union de Banques Suisse, Département Economie politique, 1986, 12mo, 64 pp.

History (French).

Publication No 100 in the series “Etudes de l'UBS sur les questions économiques, bancaires et monétaires”.

R2627 Universal Geneve; Bonifacio, I; Rivolta, L**Universal Geneve, 100 years of horological tradition****Universal Genève, 100 ans de tradition horlogère**

Rome: Sothis Editrice, 1994, 28 x 20 cm, 144 pp, ill.

History, catalogue (English, French, Italian).

A detailed history of the Universal watch company and a technical study of the wristwatches produced. The book was published to celebrate Universal's 100th anniversary and includes the Antiquorum auction catalogue of 151 Universal wristwatches sold at a special sale the same year.

The is considerable confusion between this book and the Antiquorum auction catalogue with the same or similar title.

R2628 Universo SA**Cinquante ans de la Société Générale des Fabriques d'Aiguilles**

de Montres 1909-1959

Switzerland:, 1959, 25 x 21 cm, 72 pp, 110 ill.

History (French).

Fifty years of the manufacture of watch hands.

R2629 Unterwagner, E**Das fortschrittliche ankergang und spiralsetzen**

Ulm: Neue Uhrmacher Zeitung, 1958, 8vo, 67 pp, 68 ill.

(German).

Advancement in the lever escapement and balance spring.

R2630 Unterwagner, E**Die feinstellung der kleinuhren**

grundlegendes handbuch für den fortschrittlichen uhrmacher

Ulm: W. Kempter, 1949, 21 x 15 cm, 358 pp, 196 ill.

Repair (German).

The regulation of watches, basic handbook for the progressive watchmaker.

R2631 Uresova, Libuse**European clocks****Alte uhren****Montres et horloges**

an illustrated history of clocks and watches

London: Peerage Books, Paris: Grund, Prague: Artia Verlag, 1986, 28.5 x 22.0 cm, 240 pp, 161 ill.

Description, history, illustration (English, French, German, Czech).

Separate English, French and German editions.

Four sections: The origins of timekeeping (14 pages on elemental clocks); Mechanical clocks (25 pages); Domestic clocks (141 pages); and Watches (37 pages).

These are followed by a bibliography, a list of clock collections, a list of the illustrations and index.

[1st edition, fair] The introduction begins “This book deals with clocks exclusively from the viewpoint of art history, treating them purely as artefacts”. The book is primarily an historical study of the development of case styles, and consequently contains only 37 pages including 26 colour plates that

concern watches, primarily enamel and form watches.

Although not a notable work, the illustrations are good and the text clear. It is made more interesting by being based on illustrations of clocks and watches in Prague museums with a few from other European collections.

R2632 US Census Department

Report on the manufactures of the United States

at the tenth census June 1 1880

Washington: US Government Printing Office, 1883, 30.0 x 25.5 cm, 1198 pp, ill, 16 plates, 13 maps.

Description, history (English).

Volume 2 of the 10th US Census 1880.

The statistics of manufactures (476 pages) followed by monographs on Power used in manufactures; The factory system (by Carroll D. Wright); Interchangeable mechanism (by Charles H. Fitch); Hardware, cutlery, etc.; Iron and steel; Silk manufacture; Cotton manufacture; Woollen manufacture; Chemical products and salt; and Glass manufacture.

The section on interchangeable mechanism (vi, 88 pp) was written by Charles H. Fitch and covers fire arms, ammunition, sewing machines, locomotives and railroad machinery, watches, clocks, and agricultural implements. There are 8 pages on watches and 2 pages on clocks with no illustrations.

[1st edition, fair] The section on the factory system is a very interesting study and should be read in conjunction with the section on interchangeability. Although it centres on the history and development of the cotton industry, the general principles are applicable to developments in the watch industry. It examines the problems caused by the lack of skilled labour and the subsequent invention of machines to increase output using unskilled labour. Evidence is provided supporting the view that the creation of factories in fact improved the conditions of workers and they were beneficial to all aspects of manufacture. One interesting comment is that the first factory in the world to process raw materials to the finished product under one roof (spinning and weaving cotton) was set up in Waltham in 1814. So this town has two claims to fame.

The section on watches is an interesting overview of manufacturing methods, including an outline of factory organisation and general remarks about machine tools. It provides a contemporary overview and gives some insight into the processes. Unfortunately Fitch does not provide a historical context and only describes; he does not analyse the methods and their results. However, the history of and methods used in the arms industry provides a very useful complement.

See also the 12th census of 1900 which is said to have "significant" sections on the horology industry.

[Remark] One of the most interesting sections in David "Rapport a la Societe Intercantonale des Industries du Jura" is that relating to watch records and interchangeability. I was rather surprised to find this mentioned by Fitch as I have no recollection of reading an assessment of it in other, more modern books. More surprisingly, the record was described in 1867 in the book "Eighty years progress of the United States" by Thomas Kettell: "The sizes of the several pivots and jewels in each watch are carefully recorded under its number, so that if any one of either should fail in any part of the world, by sending the number of the watch to Waltham, the part desired may be readily and cheaply replaced with unerring certainty." (This was quoted in Hauptman, "The Boston Watch Company", NAWCC Bulletin, October 1963, number 106, pp 938-39.) It seems that the remarks of Fitch and the other few mentions have been overlooked.

R2633 US Commissioners; Knight, EH

Reports of the United States commissioners

to the Paris universal exposition, 1878

Washington: US Government Printing Office, 1880, 8vo, 5 volumes of 464, 548, 595, 686 and 702 pp, ill, plates.

History (English).

Volume I: Report of the Commissioner-General, with accompanying papers, including lists of exhibitors and of awards.

Volume II: Fine arts, education, wood carving, textile fabrics.

Volume III: Iron and steel, ceramics and glass, forestry, cotton.

Volume IV: Chemical processes, mining industries, steam and gas engines, machines and machine tools, clocks and watches, railway apparatus.

Volume V: Agricultural implements, agricultural products, live stock, horticulture, pisciculture.

Volume 4 (686 pp, index, folding frontis, ill, 3 folding col plates) contains reports on chemical processes (T E Jenkins), mining industries (J D Hague), steam and gas engines (A J Sweeney), machines and machine tools (W T Porter), clocks and watches (E H Knight) and railway apparatus (W A Anderson).

R2634 US Navy Department

Manual for Overhaul, Repair and Handling of Hamilton Ship Chronometer

with Parts Catalog

USA: Arlington Book Company (Washington DC: Navy Department), 2000 (ca 1940), 98 pp, 112 ill (iv, 94 pp, ill).

Repair (English).

The facsimile reprint has been published in 1988 and 2000.

The book has been listed under C.D. Wheelock.

The book describes the principles of operation of the instrument and gives detailed information and

instructions for its operation, maintenance, repair, overhaul, testing and adjustment.

"The relevance of detailed instruction goes beyond the Hamilton Ship Chronometer, providing techniques and processes valuable in all types of repair."

R2635 US Ordinance School**Ordnance school text, ordnance timepieces**

OS 9-66

USA: Aberdeen Proving Ground Ordnance School, 2006 (1943), 23.0 x 15.0 cm, 2 volumes 127 pp, 63 ill (including 9 fld) and 106 pp, 95 ill (including 4 fld).

Repair (English).

Known to be published in 1943, 1945 and 1949, with a modern (print on demand?) reprint.

Volume one has four sections (covering general description, tools and disassembly, repair and assembly, and care of timepieces) followed by references to other military publications. The timepieces described are the M1 message centre clock, Elgin 7 and 17 jewel pocket watch, Elgin stop watch type B, Elgin 7 and 15 jewel 8/0 wrist watch, Hamilton models 992B and 987A, Waltham 9 and 17 jewel pocket watch and Waltham 9 jewel 6/0 wrist watch.

Volume 2 has 10 chapters: Introduction, Elgin tank clock, Elgin A-11 navigation watch, Bulova model 10AK wrist watch, Waltham tank clock, hairsprings, balance assembly, escapement, jewels and expedient methods. These are followed by identification and reference appendices and an index.

[1st edition, good] *Almost the same as US War Department "Ordnance maintenance wrist watches, pocket watches, stop watches, and clocks - technical manual TM 9-1575" (which see), but with the addition of tank clocks. A very clear, precise description of basic repair techniques and specific American calibres.*

R2636 US Tariff Commission**Watches**

Washington: US Government Printing Office, 1947, 9 x 6 inch, 179 pp.

Trade (English).

War Changes in Industry Series, Report 20.

"Prepared in response to requests from the Committee on Finance of the United States senate and the Committee on Ways and Means of the House of representatives".

A detailed study of the American watch industry and foreign competition.

R2637 US War Department**Operation, service and overhaul instructions for master navigation watch**

type AN5740 Navy stock no. R88-W-510 (Hamilton)

no publisher (USA: War Department, Navy Department), ca 2004 (1945), 28.0 x 21.5 cm, 33 pp, 37 ill.

Repair (English).

Joint publication by the US War Department and US Navy Department. Published in 1945 with a revision in 1956.

There is an undated modern reprint without publisher.

The first 24 pages describe the operation and overhaul of the Hamilton 4992B navigation watch and is in 7 sections: Introduction, Description, Preparation for use, Operation, Service inspection, Disassembly, repair and assembly, and Test procedure. The remaining 9 pages are a parts catalogue with detailed parts explosion diagrams.

[reprint, good] *A very useful book for owners of 4992B watches.*

The first 11 pages provide a detailed description of the watch, its action and general operating instructions. This is followed by 2 pages on problems emphasising that the watch can only be repaired by specially trained personnel.

Section 6 (10 pages) provides detailed, step by step instructions to disassemble, clean, assemble and lubricate the watch. The only repair instructions are a brief comment on balance spring truing using truing calipers and "If at all possible, broken or damaged parts be replaced". Finally there are very brief notes on testing, requiring the watch to function within 2 seconds per day (only testing dial and pendant up). Temperature tests were included, but have been deleted from the 1956 revision.

R2638 US War Department**Ordnance maintenance wrist watches, pocket watches, ...****The watch and clock book**

... stop watches, and clocks technical manual TM 9-1575

USA: Heart of America Press (USA: Arlington Book Co) (USA: Arco) (USA: War Department), 1989 (1945), 23.0 x 15.0 cm, 222 pp, 218 ill.

Repair, tools (English).

There appear to be at least four reprints; in 1948 by Arco (with the title "The watch and clock book"), perhaps in 1958 (US War Department?), in 1989 by Arlington and a more recent spiral bound photocopy by Heart of America Press.

Four sections (covering general description and maintenance; specific pocket and wrist watches; stop watches; and message centre clocks) followed by references to other military publications and an index.

[1st edition, good] *A typical manual, watches, for the repair of. As a result it is clear, precise and concise, if a bit pedantic at times. It assumes the reader is a qualified repair person and concentrates on details; for example, there are excellent diagrams showing the precise points for bending balance springs to level and centre.*

The majority of the book gives detailed instructions for assembly and disassembly of specific timepieces;

Hamilton model 992B, Elgin 7 and 17 jewel, Waltham 9 and 17 jewel, Hamilton model 987A, Elgin 8/0 wrist watch 7 and 15 jewel, Waltham wrist watch models 10609 and 10617, Bulova wrist watch model 10AK, Elgin stop watch type B class 15 and the M1 message centre clock. I discovered the instructions for removing a Hamilton 992 from its case do not apply to the 4992 model.

It is a very good, clear reference for overhauling these particular models and has much information of general applicability.

See also US Ordinance School "Ordinance timepieces OS 9-66".

R2639 Usher & Cole**A watchmaking centenary 1861-1961**

London: Usher & Cole, 1961, 24.5 x 18.5 cm, 20 pp, 18 ill.

History (English).

History of the Cole family and its successor, Usher & Cole which joined Camerer Cuss in 1958.

This is probably the same as the appendix in Camerer Cuss "The Camerer Cuss book of antique watches" which has 16 pp, 18 ill, 3 portraits.

R2640 Usher, JW**An art collector's treasures**

illustrated and described by himself

London: Chiswick Press, 1916, 39.0 x 28.5 cm, 223 pp, 79 plates.

Description, illustration (English).

Limited edition of 300 copies. The title page states 80 plates.

"Being a record historical and descriptive of the art collection formed by James Ward Usher (of Lincoln) 1886-1914."

Description of a collection of porcelain, Battersea enamels, watches and portrait miniatures illustrated by the author's watercolours.

Part 1: Old Chelsea, Worcester and Other Porcelain. Part 2: Battersea Enamels. Part 3: Antique Gold Watches. Part 4: Objects of Historic Interest. Part 5: The Cabinets and Their Contents. Autographs.

The collection was given to the city of Lincoln.

R2641 Usher, JW; Williamson, GC**Collection of objects of art formed by James Ward Usher of Lincoln**

England: privately printed, 1900, 58 pp, b/w ill.

Collection, catalogue (English).

Limited edition of 50 copies produced for private circulation.

Also said to be about 100 pp suggesting there are about 40 plates.

R2642 USTC**400 years in the history of watchmaking, 1525-1925**

USA: United States Time Corporation, ca 1925, 17.5 x 13.5 cm, 23 pp, 32 b/w ill.

Collection (English).

Undated; date deduced from title. The front cover of my copy has "Presented by the Dayton Company" and another source gives the publisher as the Higbee Company. Both are probably distributors of the booklet.

A booklet illustrating 20 of the 100 pieces in the collection of the United States Time Corporation, showing watches from 1525 to 1925.

[1st edition, mediocre] The photographs (of dials and cases) are poor, and the text captions suggest the booklet was an exhibition catalogue. The last two watches are made by Ingersoll and there are no watches after 1914. An uninspiring pamphlet that should be allowed to die a natural death.

R2643 Vacheron & Constantin**A time story in history**

Switzerland: Vacheron & Constantin, 1989, 50 pp, 20 plates.

History, illustration (English?).

The development of Vacheron & Constantin from the founding of the company by Jean-Marc Vacheron in 1755 to the late 20th century.

R2644 Vacheron & Constantin**Horological complications**

the passion and the pleasure

Switzerland: Vacheron & Constantin, 2002, oblong 4to, 97 pp, ill, slip case.

Illustration (English).

R2645 Vacheron & Constantin**Petit guide de Genève**

ca 1901, 12mo, 20 pp, ill, 2 fld plates.

Miscellany (French).

Nothing to do with watches, but with 5 pages of advertisements for Vacheron & Constantin.

R2646 Vacheron & Constantin**Suite de 22 photographies en couleurs**

présentant, de manière groupée, 155 modèles de montres

Switzerland: Vacheron & Constantin, nd, 38 x 28 cm.

Illustration, identification (French).

A set of 22 colour photographs illustrating 155 watch models.

R2647 Vacheron & Constantin

R2647 Vacheron & Constantin
Vacheron & Constantin
 in Geneva since 1755
 1973, 4to, 79 pp, ill, slip case?.
 (English).
 Advertising catalogue?

R2648 Vacheron Constantin; Gardaz, Emile
Keys of time, tales by Emile Gardaz

Geneve: Vacheron Constantin, Lausanne: Scriptor, 1995, 25.5 x 21.0 cm, 95 pp, plates.
 Illustration (English).
 Captioned photographs of watch keys interleaved with fifteen short stories about different aspects of the words "key" and "time".
[1st edition, good] The book documents a collection of watch keys acquired by Vacheron Constantin. The colour photographs provide a very good survey of key styles, but there is no information about them. The short stories are enjoyable but unrelated to the illustrations. See also Kaltenbock & Schwank "Watch-keys, three centuries of history and development".

R2649 Valliere, R de

Choses vues aux Etats-Unis

Bienne:, 1924, 8vo, 34 pp.
 History, watch making (French).
 The state of American watchmaking.

R2650 Varenne, F

Montres et horloges

Paris: Editions Grund, 1974, 29 x 25 cm, 166 pp, 100 ill, 8 plates.
 Description (French).

R2651 Varkaris, J; Connell

Early Canadian timekeepers

Canada: Art Books International, 1997 (1993), 29 x 23 cm, 265 pp, 500 ill.
 History, makers (English).
 Examination of the Canadian clock business.
 Reproductions of contemporary engraved illustrations, taken from catalogues etc., and maps. Addendum, appendices, endnotes, sources, bibliography, index.
 The book deals with the various areas of Canada: Maritime Provinces and Newfoundland; Lower Canada, Canada East and Quebec; Upper Canada, Canada West and Ontario.
I have been told that it contains nothing about watches.

R2652 Vass, Erzsebet

Az idomeres tortenete

Budapest: Orszgos Muszaki Muzeum, 1984, 24 x17 cm, 81 pp, ill.
 Exhibition (Hungarian).
 What is time? Exhibition catalogue.

R2653 Vecchi, P de; Uglietti, A

Uhren

ein handbuch für uhrenliebhaber und sammler
 Germany: Kaiser, 2002 (2001), 23.5 x 15 cm, 225 pp, 200 ill.
 Description, illustration, collecting (German).
 Printed in 2001, 2002? and 2004.
 Beautiful 20th century wristwatches with over 200 models described.
 The mechanics of the time; Famous companies; Functions of a wrist-watch; The long-lived watch; The correct purchase; References to the descriptions; Wrist-watches 1900-2000; Mechanical watches; Form watches; Jewelry watches; Electronic watches; Ladies' watches; Military watches; Waterproof watches; Chronographs; Calendar watches; Complicated watches.

R2654 Vehmeyer

Antieke uurwerken

een familieverzameling
 Holland: Westrenen, 1995, 30 x 22 cm, 624 pp, 700 ill.
 Collection, description (Dutch).
 Limited edition of 1000 copies.
 Description of a private collection with 233 clocks from 1530 to 1820.
Only clocks.

R2655 Verhagen, C

Cursus warenkennis

kleinhandel in uurwerken
 Arnhem: , ca 1925, 72 pp, ill.
 (Dutch).

R2656 Verhagen, C

Practische cursus voor horlogemakers met aanhangsel-vragen
 die op de examens gesteld kunnen worden

Alkmaar: , 1930 (1903), 414 pp, ill (438 pp, ill).
 Repair (Dutch).
 2 volumes in 1.

Practical course for horologists.

R2657 Verhagen, C

Theoretische cursus voor horlogemakers

Arnhem: Hertogenbosch, 1925 (nd), 248 pp, ill.
 Technical (Dutch).

Theoretical lectures for horologists.

R2658 Verhagen, C

Van gnomon tot precisie-uurwerk

Schieden: Unie van Bedrijfs-Organisaties in des Uurwerkbranche, 1948, 12mo, 96 pp, ill.
 History (Dutch).

“Kort overzicht van de ontwikkelingsgang der tijdmeet-instrumenten en haar werking.”

R2659 Verlet, P; Mesnage, MP

La mesure du temps

Paris: Draeger, 1970, 29.5 x 23 cm, 124 pp, frontis, 200 ill, slip case.
 Description, history (French).

Privately printed for the Credit Lyonnais bank.

History of the horology industry from the Middle Ages to today.

Discussion of clocks and watches based on items from French Museums.

R2660 Vermot, M; Bovay, P; Falco, L

Théorie de la construction horlogère pour ingénieurs

Le Locle: Ecole d'ingénieurs de l'Arc jurassien, 2003 to 2006, 31.5 x 24.5 cm, 4 volumes with 4 CDROMs.
 Theory, watch making (French).

Volumes 1 and 4 have been revised.

Volume 1: “Mécanique - théorie”, 317 pp, 157 ill. Five chapters:

Sizes and units (17 pp, 1 ill): SI units; Errors in measurement.

Energy (56 pp, 29 ill): Dimensions of the mainspring; Practical optimisation of the mainspring; Winding; Automatic winding; Characteristics of automatic winding.

Transmission (44 pp, 32 ill): The teeth of wheels; Gearing; Train calculation; Transmission of energy; Faults in gearing; Profiles; Particular profiles; Planetary gearing.

Escapement (6 pp, 3 ill).

The resonator (194 pp, 92 ill): General theory of resonators with one degree of freedom; Balance and balance spring, not perturbed; Balance and balance spring, perturbations due to friction; Balance and balance spring, perturbations due to lack of equilibrium; The Swiss lever escapement; Balance and balance spring, temperature perturbations.

Volume 1 CD: Calculations (Excel spreadsheet); Resonator (calculations and simulations using MathCad software and Excel spreadsheets); Defossez “Théorie général de l'horlogerie” (complete with separate index file); Complete text of Volume 1.

Vol 2: “Mécanique - théorie avancée”, 304 pp, 107 ill. Four chapters:

Theory of perturbations (16 pp).

Theory of synchronisation (32 pp, 14 ill).

Theory of the balance spring (184 pp, 58 ill): Spiral and helical springs; Theory of regulator pins and regulators.

The lever escapement (72 pp, 35 ill).

Volume 2 CD: Resonator (calculations and simulations using MathCad software and Excel spreadsheets); Complete text of Volume 2.

Vol 3: “Mécanique - construction”, 318 pp, 206 ill. Eight chapters and an appendix:

Introduction (6 pp): Plan of work.

Variations of the concept (10 pp, 6 ill).

Calculation and construction (84 pp, 66 ill): Summary; The barrel; Escapement; Oscillating system; Implications of the construction; The stem; The castle-wheel; Hand-setting mechanism; Winding mechanism; Control of distances and safeties; Plan of the plate; Additional mechanisms.

The balance spring (38 pp, 23 ill): The main considerations; Properties; Determination of the spring; Practical and adjustment considerations; Spring collets; Causes of perturbation of the going of a watch.

Horological measures (28 pp, 28 ill): Measures affecting the complete movement; Oscillator measures; Balance measures; Barrel measures.

Automatic winding (36 pp, 26 ill): Train; Oscillating mass; Structure of the automatic module.

Industrialisation of the movement (34 pp, 5 ill).

Casing (50 pp, 52 ill).

Appendix (32 pp).

Volume 3 CD: Calculations (Excel spreadsheets); Plans (Adobe PDF files); Complete text of Volume 3.

Vol 4: “Electronique - théorie”. I have not seen this volume.

This set of books contains a complete course on the design and construction of a simple watch movement with lever escapement. The first two volumes cover the mathematical theory and basic design. The third volume takes this design and converts it into plans for a production watch. The student must be

mathematically competent to university level.

In parallel with the theoretical content, the practical development of a model watch is covered. This is done using Excel spreadsheets and the MathCad software package. The ultimate aim of the course is the specification of watch to be manufactured using computer controlled machine tools.

In addition to the books being available in French only, use of them is severely restricted unless the reader has the MathCad package and can use the many files provided on the CD ROMs.

It should be remembered that, other than automatic winding, no complications are mentioned, so the graduating student is a long way short of the knowledge required by most modern watch manufacturers.

R2661 Veyrassat, B**Manufacturing flexibility in nineteenth-century Switzerland**

social and institutional foundations of decline and revival in calico-printing and watchmaking
 England: Cambridge University Press, 1997, 23.5 x 16.0 cm, 50 pp, no ill.
 History (English).

In Sabel & Zeitlin "World of possibilities, flexibility and mass production in western industrialization".
 See Sabel & Zeitlin "World of possibilities" for my review.

R2662 Vial, E; Cote, C**Les horlogers lyonnais 1550-1650**

Paris: G. Rapilly, 1927, 10 x 8 inch, 253 pp, 12 plates.
 History (French).

Limited edition of 300 copies.

"A well researched book listing early clockmakers in Lyon with details about their lives and work, and with detailed references."

R2663 Vial, M**Cours de réparation**

2005 to 2008, 3 volumes.

Repair (French).

Volume 1: "Horloges et pendules", 2005, 149 pp, ill.

Volume 2: "Montres et chronos", 2005, 149 pp, ill.

Volume 3: "Formation manuelle", 2008, 150 pp, ill.

R2664 Victoria & Albert Museum; Edgecombe, R**Rococo, art and design in Hogarth's England**

London: Trefoil Books, 1984, 26 x 20.5 cm, 333 pp, ill, 26 col plates.

Catalogue, exhibition (English).

Catalogue of an exhibition covering all aspects of the fine and decorative arts in mid-eighteenth century England and containing an essay on gold chasing.

Referenced and quoted in Jagger "Artistry of the english watch".

R2665 Vigniaux, P**Horlogerie pratique****Traite élémentaire d'horlogerie**

à l'usage des apprentis et amateurs

Toulouse: P Vigniaux, 1802 (1788), 20.0 x 12.5 cm, iv, 434 pp, 8 pp tables, 14 fld plates (342 pp, 12 fld plates).

Repair, tools, watch making (French).

One copy of the 2nd edition has the pagination (1)-338, 343-434, but this is incorrect; pages 339-342 exist and contain the "Approbation" and "Privilège Général Du Roi".

Robertson also lists "Traite elementaire d'horlogerie" (1802, 12mo, 446 pp, 14 plates) which I assume is the same book.

Practical horology for the use of apprentices and amateurs.

The second edition contains the following (in order):

Part 1 (60 pages, 14 chapters): A description of materials, tools and their use.

Part 2 (80 pages, 11 chapters): Workshop methods for making a verge watch ebauche.

Part 3 (78 pages, 12 chapters): Movement finishing.

Part 4 (68 pages, 9 chapters): Repairing watches.

Table of the equation of time (1 page).

Glossary (33 pages).

Table of contents (18 pages, actually an index).

Approbation and Privilège général du Roi (4 pages).

Part 5 (112 pages, 7 chapters): Repeater watches.

Table of watch trains (8 pages).

It is likely that the first edition is the same, but omitting the additional material on repeaters and watch trains, which appear after the Approbation, and the last 2 plates which are for the section on repeaters.

R2666 Vigor Bestfit**Tools supplies equipment catalog BK-130**

New York: B. Jadow & Sons, 1981 (nd), 27.5 x 21.0 cm, 244 pp, ill.

Tools (English).

Alphabetical catalogue of jewellery, metal-work and watchmakers' tools and supplies.

[1981, good] A useful and interesting catalogue. However, there are no explanations of the use of any of

the tools.

R2667 Villarceau, Yvon

Recherches sur le mouvement

et la compensation des chronomètres

Paris: Mallet-Bachelier, 1862, 4to, 164 pp, 1 plate.

Technical (French).

Researches on the movement and compensation of chronometers.

Haswell notes this contains an analysis of the proportions of brass and steel in compensation balances.

R2668 Villars, Luis

Le travail a domicile de l'horlogerie

dans le Jura bernois

Fribourg: Porrentruy, 1922, 99 pp.

History (French).

Home working in horology in the Jura.

R2669 Viola, G; Brunner, G

Time in gold, wristwatches

Zeit in gold, armbanduhren

Munich: Signum Medien Vlg; USA: Schiffer, 1997 (1988), 31 x 26 cm, 256 pp, 450 ill.

Description, history, makers (English, German).

I do not know if the 1997 edition is a reprint or has new material.

Survey of gold wrist watches with the histories of 17 major companies in separate chapters.

[1st edition, review by Henry B. Fried] This is not a book on "vintage" wristwatches, but a contemporary report on modern, state-of-the-art design of the products by the most prestigious Swiss watch manufacturers. The history of each production company and its principal personalities is recorded along with photographic essays of their wristwatches. The companies are represented in alphabetical order: Audemars Piguet, Baume-Mercier, Blancpain, Breguet, Cartier, Chopard, Corum, Ebel, Gerald Genta, Girard-Perregaux, International Watch Company, Jaeger-Lecoultrre, Patek Philippe, Piaget, Rolex, Ulysse Nardin, and lastly, the oldest, continuous producer of watches, Vacheron Constantin.

In the foreword of this book on Swiss luxury watches, Wolfgang Fulde, its editor relates the motivation for his literary project and his admiration for current horological excellence which is so worthy of documentation. Each company's history and development, personalities, artisans, and notable products are described. Each company is discussed in alphabetical order. Thus the company started in 1874 by Jules Audemars and Edward Piguet, along with their growth and notable products, is listed first.

Blancpain is represented by a minute repeating women's watch. A men's minute repeating watch followed in 1987 with an automatic winding mechanism as well as moon phases and a perpetual calendar. A 9 ligne minute repeater is also shown.

The house of Breguet with a short history of its founder in the 18th century is covered. Older masterpieces are shown next to look-alikes of the late 20th century descendants in wristwatches. Once housed in Paris, the firm is currently stationed in Le Brassus, Switzerland. A number of pages are devoted to behind-the-dial scenes of modern wristwatch perpetual calendar mechanisms in clear enlarged photographs.

The Cartier story with its design triumphs of the 19th and 20th centuries includes the famous "Tank" watch in which various historical accounts were made in 1917. In this volume, it is stated that it was first offered for sale in 1919, a long year after the formal hostilities ended on November 11, 1918. There is the oft-repeated story that Louis Cartier designed this as an act of appreciation for the contributions of the American tank commanders. America declared war upon Germany on April 6, 1917. To obtain legislative legalities, the training of conscripted men, and draft legislation, the shipping logistics of sending battle-ready troops across the Atlantic with its submarine-infested enemy took some time. The training and use of tanks, mainly French until the engineering, design, and tooling to make these heavy American devices was developed, must have taken much time to transport on available ships for combat. The armistice of November 1918 put an end to a long, costly, and decimating war. Thus there are many who, while acknowledging the tank watch's inspiration, question the otherwise claimed 1917-1918 dates for its conception, design, tooling, assembly, and distribution. In all company publicity releases, no original models are pictured or known to have been offered at auction. Nonetheless, the Louis Cartier genius for design cannot be denied.

Chopard is represented by high-style, gem-studded dials and cases elegantly designed with some men's watches with calendric complications.

Corum shows coin watches, gambling, and sports motif dials and cases, some with auto-grille shaped cases and dials.

Ebel is represented by clear-cut, attractive designs, including strong masculine appearing wristwatches. Gerald Genta also has fine designs, some with exotic motifs, while Gerard Perregaux uses classic designs and high technology, such as the first watch with a 36,000 vibration per hour balance and special escapement. Excellence in quartz technology, and Equation of Time wristwatches stress reliability of performance.

The International Watch Company with its American founder had a history of supplying watches to Germany in both wars. The watches shown are artfully skeletonized wristwatches and pocket watches, some with titanium watch cases.

Jaeger LeCoultre with its Minivox and sturdy, high quality, innovative technology supplied raw

movements to other makers such as Patek Philippe, Meylan, and others. Reversom watches produced the first automatic alarm watch.

Patek Philippe is covered rather well showing the pioneering technology and excellence that has earned it top status through the years. Early bracelet watches of 1850 are shown, taking fifty pages to cover the history and products, old and new of this prestigious company. There are ultra-complicated wristwatches of every description and decorative ladies' models in enamel and platinum.

Rolex, in its 22-page report indicates its pioneering water resistant efficiency in self-winding devices, sports models, and sturdy, heavy, gold watches with chronographs and sturdy ladies' watches as well.

Ulysse Nardin, also produced a wrist tourbillon carriage escapement watch and their famous, newly produced "Astrolabium Galileo Galilei" watch that contain a sun hand, equinoctial hour indication, local hour, a 30 mm / m planisphere, ecliptic circle, equator indication. measure edge indicator, calendric indicator, moon hand, "dragon hand," and, of course, hour and minute hands.

Lastly is Vacheron and Constantin founded in the last quarter of the 18th century, producing today very high quality watches on a limited production schedule also with grand-complications, and the now famous "Kalista," heavily diamond-studded bracelet watch with its 140 gram gold case, 118 emerald-cut diamonds between 1.2 and 1.4 karat each. Priced at five million dollars, it lasted only a few hours in its debut before it was purchased a few years ago.

The book ends with a good section on technical terms and a good bibliography.

This is an important book because it is a fairly accurate contemporary report which can be used as a reference source and will supply many researchers with facts gathered and edited by highly respected authorities.

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R2670 Virchaux, CE

L'influence des monopoles de l'industrie horlogère

sur l'économie de la suisse

La Chaux-de-Fonds: Haefeli, 1951, 8vo, 121 pp.

History, watch making (French).

The influence of monopolies in the watchmaking industry on the Swiss economy.

Thesis for the School of Commerce and Economics, Neuchatel.

R2671 Vitoux, P

L'horlogerie

Paris: France-Empire, 1962, 8vo, 187 pp, ill.

History, watch making (French).

Machine manufacture of watches.

R2672 Vivas, S

L'ancre et la plume

le journal suisse d'horlogerie, 1876-2001

La Chaux-de-Fonds: Musée International d'Horlogerie, ca 2007, 21 x 15 cm, 263 pp, ill.

History (French).

"Acteur et miroir de la culture horlogère - 125 ans d'existence et d'évolution du plus important organe de presse de l'histoire de l'horlogerie suisse."

"The anchor and the pen" was presented by Sebastian Vivas to a conference at the International Museum of Horology in La Chaux de Fonds June 14, 2007.

It traces the 125 years of the most important journal in the history of the Swiss horology, and the reader will discover not only the lives of the writers, but the evolution of an entire industry: its values, its taboos, its mutations and its amazing ability to overcome crises. Distributed worldwide since its birth, the Journal Suisse d'Horlogerie (1876-2001) was showcase, gallery, technical forum, political spokesperson and teacher."

R2673 Vogel, CF

Praktische unterricht von taschenuhren

sowol für die verfertiger als auch die liebhaber derselben

Leipzig: Zentralantiquariat (Munich: Callwey) (Leipzig: Breitkopf), 1980 (1774), 21 x 14 cm, 472 pp, 7 plates (460 pp, 6 plates).

Repair, tools, bibliography (German).

Reprinted in 1977 and 1980.

Practical instruction on pocket watches intended for the maker and the enthusiast.

Detailed instructions for watch construction, assembly and disassembly, repair and tools. It includes ornamental decoration, a bibliography and a German/French glossary.

Reviewed in Baillie "Clocks and watches: an historical bibliography"; he says "Chapter 2 contains an interesting glossary in German and French of all watch parts and tools, and Chapter 9 is a bibliography with particulars of the contents of many books. The main portion of the book consists of detailed workshop instructions on making a watch ... it is verbose and the drawings are bad".

R2674 Vogel, H

Watches of Patek Philippe

Uhren von Patek Philippe

Dusseldorf: H Vogel, 1980, 29 x 21 cm, 164 pp, 132 ill, 67 plates, slip case.

Dating, description, exhibition, identification (English, German).

Bilingual English/German. Also (or only?) in a limited edition of 350 copies.

Catalogue of an exhibition of Patek Philippe pocket watches organised by the Vogel Gallery in Dusseldorf. Includes dates and serial numbers.

R2675 Vogt, H

Die zusammenschlüsse in der Schweizerischen uhrenindustrie

Solothurn: Vogt-Schild, 1934, 8vo, 260 pp.

History (German).

The association in the Swiss watch industry. Dissertation.

R2676 Vogt, R

Der aufbau des uhren fachgeschäfts

Berlin: Alpina German Uhrmacher Cooperative, 1938, 8vo, 88 pp, 67 ill.

Miscellany (German).

The building of the horological specialist company.

Specifications of the workshop, sales room, office, external facade, outside lights and window dressing.

With photographs.

R2677 Vuilleumier, A

Cours de réglage, destine aux régleuses

La Chaux-de-Fonds: Imprimerie Coopérative pour le Technicum, 1954 (1928), 23.5 x 18.5 cm, 80 pp, 152 ill (53 pp, 103 ill).

Repair (French).

Printed in 1928, 1944, 1947 and 1954.

Course of adjusting for female watch adjusters.

There are 24 sections. The first 6 provide an introduction to watches, train calculation and a summary of common escapements with the focus on the lever escapement.

The following sections provide a detailed, largely descriptive examination of balances, balance springs and the factors that influence isochronism.

[4th edition, good] This is a text book for use at the Technicum Neuchâtelois. The 1954 edition is just called "Cours de réglage" and I do not know if it was specifically directed at training women, although my copy used to belong to a female student. It is obviously meant to be used in conjunction with lectures and practical work.

The focus of the book is on balance spring fitting. The early sections are primarily descriptive and general in nature, providing background information for the students. The later sections examine adjusting; balance spring selection, collet fixing, curb pins, overcoiling and the center of gravity, external influences on isochronism, influence of the escapement, influence of balance poise, compensation balances and temperature regulation.

R2678 Vuilleumier, M

Horlogers de l'anarchisme

émergence d'un mouvement, la Fédération Jurassienne

Lausanne: Payot, 1988, 23 x 15 cm, 340 pp.

History (French).

Watchmakers and anarchism, emergence of the Jurassic federation.

R2679 Vuilleumier, R

Le contrôle des machines par les méthodes statistiques

Switzerland: Ebauches SA, 1960 (1955), 102 pp (79 pp).

Theory, technical (French).

R2680 Vuilleumier, R

Les méthodes statistiques au service de la qualité

et liste de symboles

1961, 168 pp.

Theory (French).

R2681 Waagepetersen, C

Gamale ure fra det danske urmuseum

Copenhagen: Danske Urmuseums, 1959, 24.5 x 14.0 cm, 48 pp, 77 ill.

Catalogue (Danish).

Illustrations of clocks, watches and tools from the Danish horological museum

R2682 Wadsworth, JHF

A history of repeating watches

London: Antiquarian Horological Society, 1966, 24.5 x 18.5 cm, 14 pp, 14 ill.

History (English).

Offprint from "Antiquarian Horology". Originally published in parts from September 1965 to June 1966.

In 6 parts: Introduction; Invention; 1686 to 1720; 1720 to 1790; 1790 to 1850; and 1850 to 1965

[1st edition, fair] An historical overview is followed by descriptions (with plates) of repeater mechanisms. Watches by Quare, Tompion, Watson and Breguet are illustrated.

Except for an inadequate explanation of the surprise piece, as usual, it is a fairly good overview of mechanisms and their development. The lack of diagrams is a pity because it is difficult to understand

R2683 Wagner, G

the description from the photographs.

Lecoultre "A guide to complicated watches" is much better but he does not cover the early mechanisms included in this booklet.

See also Watkins "The repeater".

R2683 Wagner, G

Uhren aus vier Jahrhunderten

sammlung Ehrensberger

Freiburg: Augustiner Museum, 1998, 27 cm, 150 pp, ill.

Collection, catalogue (German).

A catalog of a private collection, now housed in the Augustiner Museum in Freiburg, Germany that contains timekeepers from four centuries that once belonged to Emil Ehrensberger.

Clocks, watches and sundials.

R2684 Wagner, J

Mémoire sur le pendule et le balancer

considères comme régulateurs des instruments a mesurer le temps, suivi d'un mémoire sur les échappements simples usités en horlogerie

Paris: Ch. Marechal, 1867 (1865), 8vo, 126 pp, 5 fld plates or 61 pp, few figs.

Technical (French).

Also published without the supplement "Mémoire sur les échappements simples" and hence the two paginations.

Notes on the pendulum and balance, regarding the adjustment of instruments for time measurement, followed by a note on the simple escapements used in horology.

R2685 Wagner, J

Mémoire sur les échappements simples usités en horlogerie

(Paris: Madame Veuve Bouchard-Huzard), 1867 (1847), 4to, 55 pp, 5 plates.

Technical (French).

Note on the simple escapements used in horology.

In six parts; general principles of frictional rest escapements, tangential impulse, the cylinder escapement, a new method of escapement proportioning, virgule and duplex escapements, and other escapements.

See also "Memoire sur le pendule et le balancer".

The first five parts of this work and its plates were reprinted in Dubois "La tribune chronométrique scientifique et biographique" (44 pp, 9 ill, 4 plates).

R2686 Wagner, J; Koller, B; Laterali, A; Simon, P

Documents pour l'histoire du Jura

Switzerland: Economat Cantonal, 1990, 28 x 19 cm, 104 pp, ill, map.

History (French).

History, dates, the campagne, horology, communications, the towns of the Evêché de Bâle.

R2687 Wahle, D

Pocket watch encyclopedia

Chicago: Wahle Publications, 1976, 16 pp.

Dating (English).

Serial number and date lists for American companies with a glossary of terms.

R2688 Walker, FA

International Exhibition 1876 reports and awards

USA: Government Printing Office, 1877 to 1880, 10 volumes.

History (English).

Group XXI includes watchmaking machinery and Group XXV American watches.

R2689 Walker, S

Hull and East Riding clocks, watches

and their London origins including a directory of their makers before 1900

Yorkshire: Hornsea Museum, 1982, 4to, 96 pp, ill, 3 col plates.

Catalogue, makers (English).

Hornsea Museum Publication No. 3.

Catalogue of a 1982 exhibition in Hull.

R2690 Wallace, W

Marking time in Hamilton

1981, 32 pp, ill.

History, makers (English).

300 Years of Lanarkshire watches and clocks.

R2691 Walter, N

The Walter character watch collection, motivarmbanduhren

Düsseldorf: N. Walter, 2007, 322 pp, ill.

Illustration (German).

German text. Limited edition.

A selection of watches from Walter's private collection. Over 1200 photographs of character watches from 1933 to 1993.

R2692 Waltham Watch Co**1885 materials catalogue**

Bristol USA: Ken Roberts Publishing Co (USA: Waltham Watch Company), 1971 (1885), 112 pp, ill. Identification, repair (English).

Catalogue of movements and parts sold by Waltham's agent, Robbins and Appleton.

R2693 Waltham Watch Co**American Watch Company's souvenir catalog**

of the New Orleans exposition 1884-1885

USA: Ken Roberts (USA: Waltham Watch Company), 1972 (1885), 8 x 5.5 inch, 39 pp, ill.

Catalogue (English).

Advertisements of clocks, watches and jewelry. It includes 14 pages describing manufacturing at Waltham (from the Scientific American for August 1884) and trade advertisements.

[reprint, review by Henry B Fried] This is a quaint booklet, a souvenir of the great New Orleans Exposition of 1884 and Waltham's participation in it. The booklet's main feature for the visitor to the Waltham section of the exposition was a report extracted from the Scientific American of that year. In it, the writer, unnamed, recounts the A. L. Dennison story, his influence and associations with Howard and Curtis. The description of the factory (646 feet long and five acres of floor space, 3 1/16 miles of work benches. 4,700 pulleys and assorted other facts and details) are recorded with financial details as well. For supporters of "women's lib," it was proudly noted, "... and it should be added that women get the same wages as men for doing the same kind and amount of work."

Foremen of each department are named and their schedules listed. Stress is laid upon the achievement of interchangeability rather than, "like some hand-made watch polished to death" (a thrust at English traditionalism).

The story chronicles parts-making, quantities, line cut illustrations of the dial firing, jewel making, hairspring calibration, plate departments, case making, escapement, balance manufacturing, pinion cutting, screw making and plate gilding sections.

A strange comment on altering the train to 18,000 beats an hour from 14,400 and 16,200 is made with the comment that 21,600 ticks-an-hour trains were tried without satisfaction. Today, almost all wrist watch trains are 21,600 with some going to 28,800, others 36,000 and one ticking madly away at 43,200 times an hour. Another comment is that "no (drilled) watch jewels are made of diamond" (still true) and that glass was never used nor was quartz crystal. Jewels used then were rubies, sapphires, garnets, occasionally crysolite and aquamarine.

Dial making and firing is described and the timing standards discussed. Silver cases were made at the factory but gold cases were made in New York, and case making, too, comes in for some description.

Another extract from the London Times of 1884 describes pay standards and comments that all is made at Waltham "except mainsprings which are French."

The back cover shows the full view of the huge Waltham factory but the inside back cover reveals two fine illustrations of their new "split seconds chronograph." One illustration shows that they did indeed make one with two superimposed seconds hands which makes this a true split second timer. These, however, did not have a minute recorder. Other advertisements illustrated offer dust covers, magnetic shields, Waterbury regulators, silverware, safes, watch cases, optical goods, fountain pens, Howard gallery clocks, Welch repeating clocks, Gilbert rolling bell alarm carriage-type clocks and even a handsome vintage cornet.

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[Remark] American Watch Co products won five first place awards at this exhibition.

R2694 Waltham Watch Co**Serial numbers with description**

of Waltham watch movements

(USA: M. Trauring) (USA: Waltham Watch Co), nd (1946), 28.0 x 21.5 cm, 119 pp.

Dating, identification (English).

An apparently original printing is dated 1946.

The common reprint of the 1954 edition has no publishing information. A reprint by Manfred Trauring (circa 1948) has been noted, but without details.

A complete list of Waltham movements by serial number, from the start (number 1) to 1953 (number 33,843,800). The list gives the serial number, size, model, grade, plate type, number of jewels, type of balance and whether adjusted or not.

The reprint includes a single page addendum by G.E. Townsend.

[reprint, excellent] Although reputed to contain errors (especially in the first few thousands) and less exciting than a telephone directory, it is one of those books that is excellent because it is so very useful. Essential for collectors of Waltham watches.

R2695 Waltham Watch Co**The home of the Waltham watch**

USA: Waltham Watch Company, ca 1912, 6 x 9 inch, 36 pp, ill.

History (English).

Printed more than once with some quality difference.

Advertising booklet with photographs of the factory.

R2696 Waltham Watch Co**R2696 Waltham Watch Co****The perfected american watch**

(USA: American Waltham Watch Co), 1976 (1898), 22 x 14 cm (20.5 x 12.5 cm), 41 pp, 70 ill (36 pp, 44 ill). Catalogue, price guide, advertising (English).

At least 4 editions (in 1898, 1900, 1903 and 1907) and a modern reprint.

The 1900 edition is available as a Google Book PDF file (USA only?).

Advertising catalogue of Waltham watches directed at retail customers, with estimated prices of cased movements.

[1st edition? 1898, good] A nice piece of puff. It explains why Waltham watches are the best watches and what a railroad grade watch is. It then describes Vanguard, Crescent Street and other high grade movements with estimates of their cost in different quality cases. It concludes with a two-page spread showing the medals won at exhibitions. The illustrations include cuts of factory buildings, a screw cutting machine, the movements described and the medals.

There is no useful information, but as an example of advertising it is interesting.

R2697 Waltham Watch Co**The scientifically built watch**

story of the Waltham watch

USA: Watch & Clock Bookshop (USA: Waltham Watch Company), 1972 (1923), 6 x 3.5 inch, 35 pp, ill (40 pp, ill).

Description, advertising (English).

The 1921 edition is available as a PDF computer file. The 1972 reprint is of the 1923 edition.

The first 17 pages describe without illustrations the main features of Waltham watches and compares them to watches made by the "assembled" (etablissage) system. The remainder is a catalogue of pocket and wrist watches with prices.

[1921 edition, fair] I am used to grandiose statements in manufacturers' puff, but this booklet goes too far, verging on outright lies.

The introduction explains the difference between the Waltham watch ("the only watch in the world in which every unit of the mechanism is made under one roof", ignoring Elgin, Hamilton and some Swiss companies) and the watch assembled from components supplied by a number of different manufacturers. So the latter contains "metallurgical discord" and requires hand work which "whips" it into shape!

Following this are sections on the mainspring (apparently Waltham was the only company to use mainspring barrels), balance spring, the train ("interchangeable" although the pivots were almost certainly of varying size), the smallest screw in the world (this time 47,000 fit in a thimble), the escapement, the balance spring and balance (John Logan invented the balance spring vibrator), the master assembler, timing and adjusting, and medals (Waltham had won more than everyone else combined).

I have the feeling that the writer is looking back nostalgically to Waltham's great days in the late 1800's. In 1876 such statements would have some validity, but in 1921? By then the American companies were being surpassed by the Swiss and this sort of advertising, which smacks of desperation, reflects the beginning of the end for American watchmaking.

R2698 Waltham Watch Co**The Waltham gift book**

USA: National Association of Watch and Clock Collectors (USA: Waltham Watch Company), 1992 (1908), 8vo, 20 pp, 14 ill.

Miscellany (English).

The 1992 reprint is of the 1918 edition and there is a 1972 reprint. It is also available as a pdf file of an undated edition.

An advertising booklet exhorting Americans to buy Waltham watches.

[undated, very good] The writer has directed his attention to the gift giver and the aim has been to apply emotional blackmail to compel the reader to buy Waltham watches. He begins by stressing the joy of giving and then states that it is the American way to recognise anniversaries and events; indeed, it is suggested that not to do so indicates a lack of ideals and implies it is un-American! And, of course, as Waltham watches are better than any other it would be un-American to give anything else. Particular cases are mentioned. American boys are "nurtured" and must be given good watches. Educated young men do not like old-fashioned watches and much prefer a modern Waltham Colonial. The woman who has everything needs a Waltham ten ligne watch (which, from its size specification, might have used an imported movement).

I was tempted to include this in my "best books" list because I base my evaluation primarily on how well a book achieves its stated aims; there is no doubt that this pamphlet is exemplary in that respect. However I can't bring myself to include such a blatant piece of manufacturer's puff despite the pleasure it gave me!

R2699 [Waltham Watch Co]**Waltham watch papers, volumes I & II**

USA: Manfred Trauring, nd (1862), 60 pp.

History (English).

Reprint of "Lost original manuscript printed December, 1862, Waltham, Mass. owned by J. W. Carter, employee of the American Watch Factory, Waltham, Mass."

Volume I: Charles Frodsham "Isochronism of balance-springs", 31 pp.

Volume II: "Compensation by the balance, with observations upon isochronism" (extracts translated

from Jürgensen “Principes de l’exacte mesure du Temps”)

M. Varley “The chronometer and its adjustment” (from the Horological Journal)

“Is it advantageous to jewel a watch throughout” (from the Horological Journal).

[1st edition, fair] The preface to volume 1 states that the “American Watch Company, of Waltham, proposes to issue for gratuitous distribution to its customers and the watch trade, a series of small pamphlets, which shall contain such essays, new and old, on the theory and practice of watch making”.

It is likely that only these two volumes were produced, but I found the content disappointing and uninteresting so it doesn't matter.

One problem: If the original was lost, how did this book get printed?

R2700 Waltham Watch Co

Waltham, the world's watch over time

Waltham and the european made watch

USA: Waltham Watch Company, 1919, 23.5 x 17.5 cm, 48 pp, 25 ill.

Advertising (English).

The title on the cover is “Waltham, the world's watch over time” and the title page is “Waltham and the european made watch”.

A general description of watches and how they are made by Waltham, comparing the Waltham watch with products from Europe.

[1st edition, fair] This is a nice piece of well-printed puff. It describes all the great features of Waltham watches and says “the Waltham watch is probably the only watch in the world made and completed in one factory”, ignoring all the other American companies and many similar Swiss manufacturers. It repeatedly describes European watches as hand-made parts of unknown (and so poor) quality from outworkers, which are haphazardly assembled. The reasoning is lousy and it is biased and self-congratulatory puff.

R2701 Waltham Watch Co

Watch and clock material catalogue

USA: Waltham Watch Company, 1958 (1909), 30 x 23 cm, 136 pp, ill (51 pp, ill).

Repair (English).

Produced in a number of editions of varying content (the 1940 edition of 80 pp). Some have been reprinted.

R2702 Waltham Watch Co

Watchmakers' handbook

ca 1910.

Repair.

See Ohlson “Helpful information for watchmakers”.

R2703 Walthard, Louis

Encyclopédie

ou dictionnaire raisonnée des sciences, des arts et des métiers

: Sociétés typographiques, 1792.

Dictionary (French).

Dictionary of the sciences, arts and crafts.

Mentioned in Crom “Horological shop tools 1700 to 1900”.

R2704 Walther, S; Scharinger, F

Uhrenmuseum Wien museumskatalog

Vienna: Uhrenmuseum Wien, ca 1979, 22 x 16 cm, 210 pp, 224 ill.

Collection (German).

R2705 Walther, S; Scharinger, F

Uhrenmuseum Wien, 1 Schulhof 2 Ein Rundgang

Vienna: Museen der Stadt Wien, 1984 (1979), 8vo, 63 pp and 61 pp plates.

Description (German).

The catalogue is said to describes 250 items in the museum from the 17th to 19th centuries.

The Horological Museum of Vienna began with the purchase in 1917 of two collections of clocks, watches, movements, parts and books.

R2706 Ward, F

Clocks and watches

volume 2, spring-driven

London: Her Majesty's Stationery Office, 1972, 6 x 6 inch, 22 pp, ill.

Illustration (English).

Companion volume to “Clocks and watches volume 1, weight driven clocks”.

Contains 22 printed pages of text with 20 colour plates opposite.

R2707 Ward, F

Clocks and watches of the Victoria & Albert museum

England: Antiquarian Horology Society, 1978, 25 x 19 cm, 30 pp, 52 ill.

Collection, illustration (English).

An offprint from The Antiquarian Horology Journal.

R2708 Ward, F**Time measurement****Descriptive catalogue of the collection illustrating time measurement (Science Museum)****Handbook of the collection illustrating time measurement**

catalogue of the collection of the Science Museum

London: Her Majesty's Stationery Office, 1970 (1936), 21 x 14 cm, 150 pp, 12 b/w plates (2 volumes of 60 pp, 12 plates and 102 pp).

Collection, catalogue (English).

Many printings between 1935 and 1970 which can be listed under different titles.

Originally 2 volumes: Volume 1, Historical review; Volume 2, Descriptive catalogue. Then apparently produced as a single volume in 1966.

A catalogue of the collection in the Science Museum, South Kensington. Includes watches, chronometers and escapement models. The descriptive catalogue lists 509 items.

R2709 Ward, F**Timekeepers**

clocks, watches, sundials, sand-glasses

London: Her Majesty's Stationery Office, 1968, 15 x 15 cm, 44 pp, ill.

Illustration (English).

R2710 Wardig, M**Die reparatur von kurzzeitmessern**

stoppuhren, additions-stoppuhren, doppel stoppuhren, chronographen und doppel chronographen in der werkstatt des uhrmachers

Berlin: Deutschen Uhrmacher-Zeitung, 1937, 21 x 15 cm, 58 pp, 50 ill.

Repair (German).

The repair of stop watches, chronographs, etc. in the watchmaker's workshop.

R2711 Warhol, Andy**The Andy Warhol collection**

New York: Sotheby, 1988, 4to, 6 volumes, ill, slip case.

Catalogue, exhibition (English).

Volume 2 is 96 pp, ill.

Auction catalogue. Volume 2 (although some sources say volume 3) covers jewelry and watches, describing some 273 pieces from Warhol's estate. It includes a preface discussing Warhol's shopping expeditions.

R2712 Warren, Sheldon D**Treatise on watch lubrication**

USA: Sheldon D. Warren, 2006 (2001), 31 pp, ill (27 pp, ill).

Repair (English).

Two editions.

R2713 Warren, Sheldon D**Watch repair****Watch repair prices, the how-to-booklet, tools for the 21st century job not the 18th**

a guide to pricing, practices, policies, procedures with helpful tips

USA: Sheldon D. Warren, 2008 (2004), 47 pp, ill, CD (26 pp, ill).

Repair (English).

Also published in 2006 (33 pp, ill).

R2714 Wartmann, EF**Notice historique sur les inventions et les perfectionnements faits a Genève**

dans le champ de l'industrie, horlogerie depuis 1755

Genève:, 1873, 8vo.

History (French).

Listed in Tardy.

Historical notice on the inventions and improvements made in Geneva.

R2715 Watch-maker**Address to the publick**

shewing the evils and pointing out the remedies of the present injurious system of apprenticing boys to the watch trade

England: J. Ashton, 1817, 8vo, 12 pp.

History (English).

Sometimes listed under the publisher's name.

R2716 Watchmaker, Jeweller & Silversmith**Special watches for special people**

a guide to complicated watches

England?: Watchmaker, Jeweller & Silversmith, ca 1960, 68 pp, ill.

Makers, price guide (English).

A guide to chronograph wrist watches with tables listing watches by brand and by use (tachometer, pulsometer, etc.). The tables include retail price ranges.

R2717 Watchmaster**The Watchmaster watch rate recorder handbook**

a brief summary of typical Watchmaster charts and analyses of watch conditions which they interpret
New York: American Time Products, 1950 (1946), 21.5 x 14.0 cm, 72 pp, 106 ill (32 pp, ill).

Repair (English).

The book has 7 sections: General description of the Watchmaster rate recorder (1 page), The record and how to read it (19 pages); Odd beat movements (9 pages); Introduction to clinical records (9 pages); Most common causes of rate variations (3 pages); General rules to observe in analysis of line qualities (1 page); and Master sheets showing typical line qualities and rate errors (28 pages).

Most of the book (the last four sections of 41 pages) is a facsimile reproduction of parts of Lewis and Lee "Better watchmaking faster!".

[revised edition 1950, mediocre] The first main part, the record and how to read it, explains the basic form of timing machine traces and then discusses wrist watch rate adjustment, out-of-poise errors, isochronism, the effects of hairspring and regulator pin problems, and mechanical faults.

After showing how odd beat trains are recorded, the remainder of the book describes the significance of different line qualities and provides sample traces and the faults which cause them.

I have discussed timing machines and their use elsewhere (see Lewis and Lee "Better watchmaking faster!" and Defossez "The interpretation of timing machine traces") and I will limit my comments to the contents of this book.

Basically the book states facts, or what the authors believe are facts. What a timing machine measures and how it does so are ignored. (There is a separate set of operating instructions for the Watchmaster but, other than stating that the volume control should be set to the maximum, it provides no information.) Most of the charts have captions which simply list the faults illustrated without any attempt to explain why the lines display these faults. In copying these traces from Lewis and Lee, the obvious errors have not been corrected. Consequently it is impossible for the reader to generalise the information and apply it successfully to other, unillustrated traces.

R2718 WatchTime**Citizen Watch Co.**

New York: Ebner, 2002, 98 pp, ill.

History, illustration (English).

Special issue of "WatchTime".

R2719 Waterbury Watch Co**Advertising booklets**

USA: Waterbury Watch Co, 1887 to 1889, 10.5 x 8.5 cm, 10 pp, col ill.

Poetry (children), prose (children) (English).

The Waterbury Watch Co. produced about 12 booklets addressed to children, all in an identical format. "Ali-Baba and the forty thieves": 1889, a tale about how Ali-Baba discovered Waterbury watches and the forty thieves tried to ruin his sales.

"Is it the lady or the tiger?": 1888.

"Round and round the wheels go round": 1887, poems relating the properties of a watch to those of good children.

"Round the world with the sun": 1887, verses about what people around the world are doing at the same moment in time; in America, Iceland, England, Africa, Turkey, India, China and Australia.

"The best time in the world": 1887, photographs of American sporting heroes, none of whom are as good as a Waterbury Watch.

[1st edition, good] Except for "Ali-Baba and the forty thieves", which I have listed separately, the booklets I have seen are good fun but rather ordinary advertising. They are notable for being directed at children who are urged to ask their fathers for a Waterbury watch.

R2720 Waterbury Watch Co**Ali-Baba and the forty thieves**

USA: Waterbury Watch Co, 1889, 10.5 x 8.5 cm, 10 pp, col ill.

Prose (children) (English).

A facsimile copy is available from www.watkinsr.id.au.

A tale about how Ali-Baba discovered Waterbury watches and the forty thieves tried to ruin his sales by stealing and selling Jurgensen gold watches.

[1st edition, excellent] It is impossible to review this sale's pamphlet; it has to be read to be appreciated. It is the most imaginative and ludicrous bit of advertising I have ever read!

R2721 Waters, I**Chepstow clock and watchmakers****A note on Chepstow clock and watch makers**

England: I Waters, 1980 (1952), (8vo), 31 pp, ill (7 pp).

Makers (English).

First published as "A note on Chepstow clock and watch makers" (England: the author, 1952, 8vo, 7 pp).

R2722 Watkins, HG**Affectionate advice to apprentices**

and other young persons engaged in trades or professions

London: William Brown (London: L.B. Seeley), 1894 (1827), 17.5 x 11.5 cm (8vo), 51 pp (56 pp).

History, miscellany (English).

1827, 3rd edn, London: L.B. Seeley, (iv), 56 pp. The 1894 edition states the book was first written in 1827, so presumably it was printed 3 times in that year.

1832, 4th edn, London: L.B. Seeley, 56 pp.

1852, 10th edn, 56 pp.

1869, 11th edn, London: William Brown, (iv), 51 pp.

1894, 14th edn, London: William Brown, (iv), 51 pp.

Essays on the moral and social responsibilities of young tradesman and apprentices, with warnings on dishonesty, smoking, drinking, idle talking, gambling, the theatre and moral dangers. A general book with nothing specifically concerning horology.

[14th edition, mediocre] Henry George Watkins was Rector of St. Swithin and died before 1869, later editions being posthumous reprints. The book was, it seems, given to apprentices when they were bound to a Master in one of the London Companies.

Being an atheist it is difficult for me to review such a frankly Christian book. But it is possible to recognise two aspects to the writing.

First, the fundamental ethics and suggestions for behaviour are valid even when totally separated from their religious context. Watkins does little more than beg his reader to lead a reasonable and industrious life for seven years and proposes guidelines that are eminently sensible. That he envelops his exhortations in a mire of Christianity is understandable and, for many people, necessary. So, other than being somewhat tedious to read the fundamental ideas are sound, and it is a pity the author was such a dull and uninspiring writer.

Second, and rather tragically, Watkins presumes an utterly unrealistic integrity and sanctity on behalf of Masters and the apprenticeship system. The ethical and moral guidelines are embedded within two dominant presumptions: we must fear God and his wrath, and Masters, being closer to God than apprentices, are beyond reproach. These two axioms mean that the whole argument is based on demanding compliance by threatening gross sanctions and eternal damnation. Such a narrow, black-and-white attitude leads to blatantly dogmatic statements which, although superficially sound, are unlikely to be swallowed by any other than the already committed Christian boy. Any lively lad with a fertile and promising intelligence would reject the excessively sober and flagellating posture required of him by Watkins.

While being so critical I must point out that I feel present day attitudes have swung too far in the opposite direction. However, in doing so I think it has become clearer that religious belief can and should be a pleasure, based on understanding rather than fear and rote regurgitation of tired prayers. And an ethical and moral stance can be a reasoned and satisfying one, rather than the blind following of irrational laws. Fortunately I suspect most copies of this book will be found to be in excellent condition as I doubt if many were actually read.

R2723 Watkins, Richard**Berthoud, Harrison and Lalande, a near myth**

USA: National Association of Watch and Clock Collectors, 2005, 4to, 11 pp, 4 ill.

History (English).

NAWCC Bulletin, No. 359, 2005, pp 733-743.

Available as a pdf file.

This article examines the suggestion that Ferdinand Berthoud copied John Harrison's watches, resulting from his visit to England in 1763.

See also Lalande "Jerome Lalande, diary of a trip to England 1763".

R2724 Watkins, Richard**Confabulations**

a humorous look at complications

USA: National Association of Watch and Clock Collectors, 2007, 4to, 10 pp, 13 ill.

Technical (English).

NAWCC Bulletin, No. 367, 2007, pp 163-172.

Available as a pdf file.

An examination of complications in modern wrist watches which points out that they are largely useless and are manufactured primarily to satisfy egos.

R2725 Watkins, Richard**Jacques David**

and a summary of "American and Swiss watchmaking in 1976" with emphasis on interchangeability in manufacturing

USA: National Association of Watch and Clock Collectors, 2004, 4to, 9 pp, 3 ill.

History (English).

NAWCC Bulletin, No. 350, 2004, pp 294-302.

Available as a pdf file.

An examination of David "American and swiss watchmaking in 1876" (which see).

R2726 Watkins, Richard**Mainspring gauges and the Dennison combined gauge**

Australia: Richard Watkins, 2009, 50 pp, 46 ill.

Technical (English).

Available as a PDF file.

A technical study of the design of mainspring gauges which examines the scales and units of measurement used by different makers (French inch, English inch and metric).

The contents are: European mainspring gauges; Mainspring heights; Montandon, Martin, Robert, Lepine, Ferret and Prenot gauges; Barrel diameters; Dennison mainspring gauge; and Dennison combined gauge.

[1st edition, review by Fortunat Mueller-Maerki] Regular readers of the NAWCC Bulletin are probably familiar with Richard Watkins, the Australian pocket watch enthusiast, for his series of recent articles on "Practical Watch Collecting for the Beginner," but they may not know that he is a prolific producer of other horological publications. He deserves credit for publishing (mostly as free Web downloads) his English language translations of French horological classics, as well as a comprehensive Bibliography of the Mechanical Watch.

Richard recently investigated the tools that pocket watch repairers for over a hundred years had used to determine the correct replacement mainspring to order. These pocket-sized gauges are designed to roughly measure the height and thickness of a spring and in some cases the size of a spring barrel.

Watkins is a most thorough researcher, who knows the horological literature well, but found only the most skimpy information on the subject in old or current publications. So he started to thoroughly investigate about a dozen gauges in his own collection and in the possession of some friends. These were made in France, Switzerland, and the United States. The results are now available in the small monograph under review.

In summary he found that:

- *The gauges by different makers use different and incompatible units of measure.*
- *The gauges provide a "Number" for mainspring height and a "Number" for mainspring thickness, but not a 'dimension' (e.g., a "Number 8" for height does not translate into twice the height for s "Number 4".*
- *Numeric analysis showed that most of the gauges, even those from continental Europe in the early twentieth century, are based on subdivisions of an 'inch' rather than metric; some gauges are based on British inches, some on French, and none indicate what they are based on.*
- *Many of the gauges contain inconsistencies in their design and their construction.*
- *All of them are highly inaccurate measuring tools.*

The new paper by Watkins adds much needed insight into a hereto under-documented corner of the study of horological tools, and the author is to be congratulated for tackling the subject in his usual thorough and thoughtful manner.

R2727 Watkins, Richard**Mechanical watches**

an annotated bibliography of publications since 1800

Australia: Richard Watkins, 2004, 11 x 8.5 inch, 2 volumes 393 pp, no ill and 623 pp, no ill.

Bibliography (English).

Produced as two pdf files.

Volume 1 has an introduction (9 pages) followed by the bibliography with 2223 items listed.

Volume 2 has: Full title index (44 pages); Title key-word index (72 pages); Author index (38 pages); Date of publication index (42 pages); Subject index (306 pages); and Price guide (113 pages).

[1st edition, review by Fortunat Mueller-Maerki] For the serious scholar or researcher in any subject, including horology, bibliographies are an indispensable tool; they tell you which publications exist on your area of interest. Horology recently has not been blessed by an abundance of bibliographic effort. Up to the book under review, there were only two reasonably broad bibliographies available:

1.) Clocks & Watches, An Historical Bibliography, by G.H. Baillie. Volume I appeared in 1951 (414 pages, NAG Press, London, with a reprint in 1978 by Movements in Time, Toronto). It covers horological publications from the year 1344 to 1800. Volume 2 (to include 1801 to 1900) existed only in draft form when the author died, and the late Charles Aked worked on the draft in the 1980s, but died before it was ready; it is unlikely to ever get published. With its historic focus the existing volume is of limited use to most of today's' horologists.

2.) Bibliographie Generale de la Mesure du Temps, by Tardy (the pen name for Henri Langellé) was published in 1947 (390 pages, Tardy, Paris; 2nd edition 1980). It is in French, and although it covers the non-French horological literature as well it is relatively franco-centric, and not very current either.

There are a few specialized, more narrowly focused horological bibliographies out there, such as Campos, Bibliographia Relojera Espangola (1975, for Spanish publications) and Kahlert, Bibliographie zur Schwarzwalduhr (1984, 2 Volumes, limited to the bibliography of the black forest clock), as well as some specialized listings on sundials, electrical horology etc.

Creating a good bibliography is a time-consuming, tedious and thankless task. Australian watch enthusiast Richard Watkins resides on the island of Tasmania giving him little chance to interact face to face with fellow collectors, so he took to buying (or borrowing) and reading most books he could about mechanical watches, building over decades a substantial personal library on the subject. Through trial and error he discovered that not all books were worth buying or reading, and out of that frustration grew the desire to spare fellow horologists the dead-ends, and the resolve to create a comprehensive

bibliographic record on the subject he loves.

In the last 10 years he painstakingly recorded all the details about all publications he could find on mechanical watches into a database covering 2223 items. Fortunately he did not limit himself to the traditional bibliographic headings, but also recorded his own personal - and sometimes idiosyncratic - summaries and impressions on those books which he has seen himself (more than half of the items). He developed a massive index of subjects (26,000 entries) and keywords (7,000 entries), as well as over 13,000 data-points on the prices asked for these books.

Organizing the database into a user-friendly printable form resulted in a massive work of over 1000 pages of 8 1/2 by 11 inches, of rather small type. Economic realities dictated the path toward electronic publishing. The cost of printing and binding the work, plus shipping costs from Australia would result in a prohibitive price given the very limited global demand for such a publication. He could never break even on paper copies, so he decided to give the fruits of his labor away for free through the internet to his fellow horological enthusiasts.

As long as you have a reasonably fast internet connection it is very easy to download the 2.5 Meg data-files to your home computer. If you have basic computer skills you will have no problems unzipping the files, and viewing the resulting pdf-documents with the Adobe reader software. Printing your own paper copy will take a few ink-refills and some time unless you have a high speed printer (you may prefer to take the files to Kinko's and print them two-sided on one of their high speed printers. I myself am crazy about bibliographies so I spent some dollars to have the results bound into hardcover books, but a cheap three-ring binder will obviously do the job as well.

Getting the books printed will be a bit of an effort but the result is worth it. Two volumes, listing 2,000 plus horological books on mechanical watches (as well as some related publications, all published 1800 to 2004) including content summaries, accompanied by separate indices by full title (2740 entries), Title Key-word (6860 entries), Author (3240 entries), Date of publication (2233 entries) and Subject (26,640 entries). The subject index is a comprehensive index to the books based on their contents. Finally, the price guide has 13,500 entries giving sale prices in recent years.

I consider this new book a vital element of any comprehensive horological research library and the author deserves the heartfelt thank-you of horological scholars around the world. In a work of this magnitude there are always minor errors, but it would be petty to dwell on those. And yes, of course I disagree with the authors' characterizations and summaries of some of the books, but then reading opinions that may differ from mine is also the most stimulating part of leafing through this text.

R2728 Watkins, Richard

Practical watch collecting

a manual for the beginner

USA: National Association of Watch and Clock Collectors, 2011, 4to.

Collecting (English).

Originally published as a series of 10 articles in the NAWCC Bulletin, 2008 to 2010.

A book version is in preparation.

R2729 Watkins, Richard

The repeater

Australia: Richard Watkins (USA: National Association of Watch and Clock Collectors), 2011, 4to, 87 pp, 161 ill.

Technical, history (English).

Available as a PDF file.

A detailed, technical description of repeaters in 6 parts:

The continental quarter repeater (20 pages).

Development of the quarter repeater (10 pages).

Minute repeaters (9 pages).

The quarter repeaters of Stogden and Breguet (13 pages).

The IWC minute repeater (14 pages).

The decimal repeater (12 pages).

[1st edition] The IWC minute repeater is included because it is the first, significant new design for over 200 years.

R2730 Watkins, Richard

Watchmaking and the American system of manufacturing

Australia: Richard Watkins, 2009, 72 pp, 32 ill, 2 tables (69 pp, 23 ill, 2 tables).

History (English).

First published February 2009 and revised March 2009.

Available as a PDF file.

Four sections:

Part 1, From cottage to factory (22 pages): The origin of the species (definitions of the American system of manufacture); The holy grail (interchangeability); Has the jury considered its verdict? (Pitkin brothers watches); For eight days shalt thou labour (Boston Watch Company eight-day watches); and The road to oblivion (the failure of the Boston Watch Company).

Part 2, Making the most of time (18 pages): A roller-coaster ride (American Watch Company production rate); A spanner in the works (types of machinery); What Dennison missed (the use of unskilled labour); Three cheers for Charlie (the removal of material and tools from Waltham after the bankruptcy);

Farewell to the watchmaker (the shift from watchmakers to mechanics and unskilled labour); Lego land at last (post 1858 development of watch production).

Appendices (24 pages): Operations to make a full-plate movement; The endshake tool; Boston Watch Company production 1850-1856; and American Watch Company production 1857-1858.

References (3 pages).

R2731 Watson, HF

Grantham clock and watch making

England: Grantham Museum, 1989, 40 pp, ill.

Exhibition (English).

Catalogue of an exhibition at the Grantham Museum.

R2732 Watson, HF

Keeping time

a history of clocks, watches and barometers in a provincial town from 1700 to 1900

England: Hugh F. Watson, 2008, 323 pp, 550 ill.

History (English).

Limited edition of 500 copies.

Early clockmaking; Domestic clockmaking; The Longcase clock (the brass dial, the japanned or painted dial, period 1 painted dials 1772-1800, period 2 1800-1830, period 3 1830-1860, the movement, the clockcase, Lincolnshire cases); Wall clocks, bracket clocks, Black Forest Clocks, French clocks, American clocks, skeleton clocks, watches, watch-clocks, watch stands, barometers, sundials.

A 169 page directory of the watch and clock makers who traded in Grantham during the period.

"Using the provincial town of Grantham, Lincolnshire as the example, the book describes and illustrates the stock in trade sold by 18th and 19th century clockmakers."

There may be little about watches.

R2733 Watson, JC; Favre-Perret, E

American watches

an extract from the report on horology at the international exhibition at Philadelphia, 1876

New York: Robbins & Appleton, 2007 (1877), PDF file (40 pp, no ill).

History (English).

Available worldwide as a facsimile PDF file and as a Google Book PDF file (USA only?).

Report on American watches (28 pages) followed by three appendices: Extracts from a speech delivered by Favre-Perret in November 1876 (6 pages), Results of trials of Swiss watches (3 pages), and Report on the award to the American Watch Company (1 page).

[1st edition, good] The report begins with an introduction, including a very brief history and a short summary of manufacturing at Waltham. Watson then gives an extensive examination of the tests carried out on Waltham watches and the results obtained. He concludes with a plea to establish horological schools to improve repair standards.

The extracts from the speech given by Favre-Perret are extensive, but the full speech is available in the NAWCC Bulletin, Vol 46, No 349, 2004, pages 171-174.

Perhaps most important is that "this was the first International Exposition at which the products of our own watch manufactories were exhibited". So it was the first opportunity for the Swiss and English makers to assess American competition.

R2734 Watters, M

Clock repairer's manual

England: Crowood Press, 1996, 25.5 x 19.5 cm, 176 pp, 219 ill.

Repair (English).

A number of chapters on clock repair, but including sections on lathe use, bushing holes, balance staff turning, the lever and cylinder escapements, jewellery and wheel cutting.

See Watters "Mechanical and quartz watch repair" for my comments.

R2735 Watters, M

Mechanical and quartz watch repair

England: Crowood Press, 1999, 25.5 x 19.5 cm, 160 pp, 180 ill.

Repair (English).

There are 14 chapters: Preliminaries, Cleaning a 15 jewel lever, Alternative procedures, Part jobs, Stop watches, Chronograph overhaul, Automatic watches, Fusee watches, Basic electricity and magnetism, Quartz watch repair, Liquid crystal display, Servicing a 5 motor chronograph, and the Seiko Kinetic. There is a 2 page index but no bibliography.

[1st edition, fair] This is a "cookery book". It gives detailed, step-by-step, numbered instructions (with photographs and diagrams) for specific calibres. However, Watters is well aware of what he is doing and makes it clear that the specific examples are used to teach general principles. Saying it is a "cookery book" is in no way derogatory. The instructions are precise, clear and well thought out and, indeed, in some ways better than the more descriptive approach usually taken.

The first chapter (preliminaries), after general remarks on work environments and tools, is primarily a detailed description (with materials list) of how to make a watchmaker's bench. It also includes a description of a watch, and detailed instructions for disassembly, cleaning and assembly of Incabloc shockproof jewellery. Describing the Incabloc system before we have cleaned a watch is peculiar, and if we know how to do it the description of a watch seems unnecessary.

Chapter 2 (cleaning) is a very good example of step-by-step instruction. After some general remarks about fault finding, Watters describes the disassembly of a specific pocket watch in 38 discrete steps. Then, after precise instructions for cleaning with a machine, he explains assembly and casing in a further 79 steps. The only repair mentioned is re-luminising hands. Unfortunately there is no diagram showing the parts and their location. He does, however, include some good information about alternative designs (for dial attachment, for example). Over all it is an excellent description of the process and any beginner, perhaps with the aid of some other background reading, would find it useful; unfortunately Watters has not included "further reading" suggestions, which is a pity.

Chapter 3 describes the Swiss lever escapement and using a timing machine. It includes a nice explanation of dynamic poise but with no instructions, it being "better left to the experienced repairer". Most of the chapter is concerned with principles rather than practical techniques.

Chapter 4 discusses motion works, keyless mechanisms and calendars. It includes a practical tip for loose screws. Understanding some of the text is hampered by poor photographs of movements.

Chapter 5 looks at movement identification, mainsprings, stem and crown fitting, crystal replacement, bracelet spring bars and testing waterproof cases.

Chapters 6 to 9 describe the disassembly and assembly of stopwatches, chronographs, automatic mechanisms and fusee watches. There are no repair instructions except for making a fusee click. The photographs are often obscure and diagrams would have been better.

The remainder of the book (after the chapter on electricity principles) follows the same pattern, giving step-by-step assembly instructions for quartz watches.

At this point I felt that the book was an inadequate "cleaning" book with almost no repair information. Although this is true, it is misleading for two reasons.

First I have no doubt that the book was written for students and meant to be a practical manual for use in conjunction with supervised practical work. In which case the cookery book approach is very good, enabling students to work on movements while the teacher is helping others.

Second, the book should be read in conjunction with Watters "Clock repairer's manual" which is the text for a course to be taken before watch repair. The "Clock repairer's manual" is solely concerned with clocks but, as clocks are not much more than oversized, impractical watches, much that is learned in a clock course is applicable to watches; many general skills, principles and techniques are common to both and starting with clocks enables the student to develop dexterity before attempting to touch a watch. Most importantly, a lot of basic instruction which does not appear in the watch book has already been covered in the clock book; lathes, bushing, pivots, balances and balance staffs, jewels and wheel cutting. This clock repair book is much more useful than the watch book I am reviewing, but it is still too oriented towards mechanical following of instructions for my liking; but I expect Watters himself provided the necessary teaching.

So I think this book is good if used in the context for which it was written, but it is inadequate if read by itself away from the classroom.

R2736 Wayman, ML

The ferrous metallurgy of early clocks and watches

studies in post medieval steel

London: The British Museum, 2000, 29.5 x 21.0 cm, 215 pp, 137 ill.

History, technical (English).

British Museum Occasional Paper 136.

Six chapters: General introduction and analytical methods (12 pages, Leopold & Wayman); Development of European ferrous metallurgy (16 pages, Craddock & Wayman); Sixteenth century iron clocks (24 pages, Wayman, Lang & Leopold); Clock, watch and chronometer springs (32 pages, Wayman, Lang, Leopold & Evans); Watch components (22 pages, Wayman, Lang & Evans); and Driven by clockwork, the role of clockmaking in the development of 16th to 19th century European ferrous metallurgy (6 pages, Craddock & Wayman).

Followed by an appendix containing a complete translation of W. Blakey "L'art de faire les ressorts de montres suivi de la maniere de faire les petits ressorts de repetitions et les ressorts spiraux" (26 pages). There is a glossary of metallurgical and horological terms and a bibliography.

[1st edition, good] See Blakey "L'art de faire les ressorts de montres ..." for my review of the appendix. The purpose of the book is spelled out in the first chapter: "The metallurgy of the components of watches and clocks has never previously been investigated in depth. It was with this in mind that the work presented here was conceived. ... The dates of many early clocks are known, and in many cases particular components can be identified with confidence as being original. This means that within the corpus of old clocks and watches there is a large sample of securely dated metallurgical specimens".

The book begins by outlining the history of steel making and then summarises the experimental techniques (based on electron microscopes) used to examine the chosen clocks and watches. The main chapters give in detail the results of tests on components, in some cases proving them to be original or replacements. The corresponding illustrations are photographs of the timepieces and the microstructures of the steels employed.

This is not bedtime reading. Wayman, the editor and main contributor, is a materials engineer and, unfortunately, he is a little too familiar with his subject to write clearly for the total novice like me. Not knowing my austenite from my martensite is a serious disadvantage because it is hard to come to grips with the terminology, let alone achieve some layman's idea of different structures of steel. And so a gentler

introduction to metallurgy would be useful for the interested horologist.

But it is clear that the book was written by metallurgists for metallurgists, even though it contains much information of direct interest to horologists (especially the very important translation of Blakey's work on spring making). The focus is on what an examination of dated clock and watch parts can tell us about the development of steel manufacture. A few minor slips make it clear that the authors are not horologists, and the book would have been better if horological methods of manufacture and the implications of buying-in rough movements had been included.

There is a very good discussion of spring making and the inclusion of the translation of Blakey "L'art de faire les ressorts de montres" is very welcome. But this comes far too late and should have been in Chapter 1, along with the metallurgical basics instead of being left until Chapter 5, to provide the very necessary understanding of this major problem faced by horologists.

R2737 Weber, J

The history of time

from the libraries of Joseph Sternfield, Mr Barny, Leon Leroy and the Time Museum, catalogue 80
USA: J Weber, 2000, 21.5 x 14.0 cm, 42 pp.

Bibliography (English).

Horological book catalogue containing 567 lots for sale. All items were obtained from the Time Museum.

[1st edition, very good] There are few books listed, but the catalogue is fascinating and valuable for the wealth of "ephemeral" items it contains. It is a rich source of information on booklets and pamphlets, many of which are very important.

R2738 Weber, J

Time and its measurement catalogue 33

USA: J Weber, 1995, 21.5 x 14.0 cm, 72 pp, 14 ill.

Bibliography, collection, catalogue (English).

Sale catalogue of 452 books from the collection of Leonard Paller, USA.

R2739 Weger, F

Tabellen und normung für das uhrmacherhandwerk

Ulm: Neue Uhrmacher-Zeitung, 1949, 21 x 15 cm, 160 pp, tables.

Technical (German).

Tables and standards for the practical horologist.

R2740 Wei, K

Making of a masterpiece

Le Locle: Ulysse Nardin SA, 2006, 240 pp, ill, DVD.

Illustration, description (English, French).

Time and fate (24 pages); Ulysse Nardin revival story (2 pages); From spark to concept (26 pages); The heart that ticks (26 pages, escapements); Making music (42 pages, how a watch is born); Ulysse Nardin's living history (4 pages); Ulysse Nardin ascends to new heights (14 pages); The mastery of sound and form (16 pages, repeaters); The tradition of functional innovation begins (20 pages, GMT and perpetuums); Watchmaking's first act of modern art (16 pages, the Freak); The perfect travel companion (12 pages, the Sonata); The beguile of blue, the rapture of radiance (6 pages, tourbillons); The anniversary 160 calibre (18 pages); and Ulysse Nardin around the world (4 pages).

Lavishly illustrated by irrelevant photographs, the text is the usual superficial aggrandizement which leaves the serious horological historian or collector wondering why he bothered.

The only chapter of interest is "The heart that ticks". This begins with a vague explanation of the lever escapement without any diagrams. But that is followed by explanations of Ulysse Nardin's own "dual direct" and "dual" escapements which were invented in 2001 and 2005. Although the descriptions are only fair, the drawings explain the escapements satisfactorily. Typically of books on individual makers, this book claims these are the first new escapements of modern times, ignoring the escapements invented by George Daniels.

R2741 Weiss, Leonard

Watch-making in England 1760-1820

London: Robert Hale, 1982, 22.5 x 14.5 cm, 240 pp, 160 plates, 20 figs.

History, tools, watch making (English).

15 chapters: Some background to the period (13 pages); Organization of the watch-making trade in London (21 pages); The Lancashire trade (22 pages); The mainspring (10 pages); The fusee (12 pages); Fusee chains (16 pages); Domestic watch escapements (18 pages); Division and dividing techniques (23 pages); Wheel-cutting engines (24 pages); Pinion-wire manufacture (5 pages); Layout and design (20 pages); Watch-cases (11 pages); Watch-glasses (7 pages); Watch dials (13 pages); The state of the English trade in 1818 (15 pages).

There are 4 appendices: Longitude (32 pages); Workshop practice in 1773 (10 pages); Patent practice in the 18th century (4 pages); Gilding (4 pages).

There is a 3 page bibliography and an index.

[1st edition, excellent] A description of watch making techniques and the conditions of work in the industry. After an overview of English watchmaking, it describes watch making step-by-step: file making, fusee and fusee chain making, division and wheel cutting, pinion wire drawing, the design of calibres, and case, glass and dial making. The book concludes with an examination of the state of the industry in 1818. Although primarily a descriptive overview, there is a wealth of information and, in many places,

enough detail to adequately explain the manufacturing techniques of the time.

In addition to his own thoughtful text, Weiss has included many substantial extracts and plates from books of the period, making available information which is otherwise hard to find. In particular, the plates and translation from Diderot (*fusee chain making*), the discussion of division (sadly omitted from the reprint of Rees *Cyclopedia*) and the manufacture of dials and crystals are very welcome, as is the explanation of fusee engines and cross feeds.

This is the most comprehensive and coherent description of early watch making I have read. It is an essential book which should be read by everyone who wants to appreciate the watches they see.

Unfortunately bibliography is incomplete and the index inadequate, but these are carping criticisms of an excellent book.

R2742 Weisske, W

Addressbuch für die deutsche Uhren- und Mech. Musikwerke-Industrie

Germany: Deutsche Gesellschaft für Chronometrie, 2006 (1904), CD ROM (458 pp).

Makers (German).

There are 10 sections:

Alphabetical company listings (110 pages) by company name of all entities listed in the book, with address and city, and "an exact statement as to description and extent of business". There are nearly 3000 businesses in Germany listed.

Index by 19 different industry sectors (40 pages): Clocks, Pocket watches, Clock & watch wholesalers and distributors, Makers of street & tower clocks, Mechanical music makers and dealers, Wholesalers of silver and gold tableware, Bronze objects, Gilt and silver-plated tableware, Makers of eyeglass-frames Makers of binoculars, Repairers of gold and silver objects, Engravers, Clock and watch repair businesses with employees, Pocket watch case makers and repairers, Clock case making businesses, Clock and watch parts and movements, Horological tools and supplies, Precious metal dealers and refiners, Suppliers of store furnishings, and Suppliers of packaging and store supplies.

Manufacturers representatives, agents and exporters (6 pages).

Specialties (30 pages): Listing of about one hundred different products from "Bieruhren" to "Wecker" (alarm clocks).

Trademarks (30 pages): Over 500 German horological trademarks, both brand names and image trademarks, including many not listed in Kochman, and a listing of common brand name abbreviations. Manufacturers and wholesalers by city (35 pages).

Independent retailers by residence and items carried (200+ pages): Listing (by town of residence) of many thousands of independent watch and clock repairers and independent retailers, with their addresses and keyed list of items sold (musical instruments, jewelry, flatware, bicycles, sewing machines and cameras).

Horological schools (2 pages): The curriculum of the three established horological schools in Germany (in Glasshuetten, Furtwangen and Schwenningen).

Associations (8 pages): Trade and professional organizations for horologists, including local and regional guilds etc.

Horological periodicals: A list of 5 horological periodicals published in Germany at that time.

[Review by Fortunat Mueller-Maerki] In the town of Simmern in Germany there is a watch and clockmaker named Wilhelm F. Birk, who happened to own a copy of a hereto unrecorded major reference book on German horology: The 1904 edition of 458 pages (plus advertising supplements) addressbook for the German horological trades. Inspired by the recent success of the Deutsche Gesellschaft für Chronometrie (DGC) in reissuing old horological periodicals as high resolution jpg-files on CD-ROM he decided to loan his rarity to the DGC so they could scan it and publish a CD. The DGC library has now produced - once more - an electronic publication containing a treasure trove of horological information. Obviously this "reprint" of a 1904 original source is a "must have" reference material for any dedicated scholar or collector of German horology. While it would have been nice to have paper reprints available economics make this impractical.

R2743 Welch, K

Time measurement, an introductory history

The history of clocks and watches

New York: Drake, England: David & Charles, 1972, 8vo, 120 pp, 33 ill.

History (English).

"The history of clocks and watches" is the title of the American edition.

"An introduction to the history of Time Measurement, suitable for the general reader. Welch describes the stages in the measurement of time that has occurred over many years, from pre-mechanical clocks, the invention of the pendulum and the balance wheel, through to the use of electricity and today's clocks accurate to one second in 300 years."

R2744 Wels, BG

How to build clocks and watches

Princeton: Auerbach Publishers, 1971, 8vo, 116 pp, ill.

Miscellany (English).

Contains instructions for "making" clocks and watches; picture clock, Einstein clock, night watch, ceiling clock, electric sundial, no hands clock, wall clock, spider and fly clock, pendulum clock, lamp clock, personalised fun clock, cube clock, sphere clock, decorator's special, cocktail clock, kit clock, propeller

clock, gourmet's kitchen clock, hi-fi stereo time control, traveler's wristwatch, typewriter watch, hippie watch, ring watch, cuff-link watch, dieter's wristwatch and wrist hourglass.

I haven't read this book, and do not have a burning desire to do so. But clearly it should be titled "how to make strange cases for quartz movements". The only thing that interests me is how on earth one can have an electric sundial?

R2745 Wenderoth, GFW

Kurze und fassliche anweisung

zu einer zweckmassigen behandlung der taschenuhren

Eisenbach:, 1804, 8vo, 1 plate.

Description (German).

Brief and clear instructions for the appropriate handling of pocket watches.

Listed in Robertson who says it provides instructions for setting a watch by the sun and includes equation tables.

R2746 Wesolowski, ZM

A concise guide to military timepieces 1880-1990

England: Crowood Press (England: Windrow & Green), 1999 (1995), 26.5 x 19.5 cm, 192 pp, over 200 ill.

Description, price guide (English).

Reprinted in 1999.

Three preliminary sections (13 pages): introduction, guide to military markings and using the price guide.

Followed by 6 chapters: Deck and pocket watches (37 pages); Wrist watches (32 pages); Observation and aviator wrist watches (34 pages); Chronographs, interval timers and stop watches (42 pages); Special forces and divers watches (14 pages); and Mantelpiece, wall and aircraft clocks (14 pages).

The chapters consist of photographs of watches with extensive captions.

There is a 1-page glossary but no index.

[1st edition reprint, good] The introduction is mainly a short history of John Harrison, tracing the origins of military timepieces to his work. Although well written and interesting, this story has been "done to death" and more information on the later development of military watches and their uses would have been better.

The useful 6 page table of military marks covers America, Austria, Canada, Chile, China, Czechoslovakia, England, France, Germany, Italy, Japan, the Netherlands, Peru, Poland, Spain and Sweden.

The body of the book is based on photographs of watches. Their captions provided a rather fragmented but very interesting history of military watches. Some of the photographs are less than wonderful and I would have liked more technical information, but this is a collectors guide and so such detail is not to be expected.

Despite the way in which it has been written it is very readable and contains many interesting pieces of information.

R2747 Wessner, O

Sammlung O Wessner St Gallen

Munich:, 1926, 31 x 23 cm, 72 pp, 16 plates.

Collection, catalogue (German).

Auction catalogue.

R2748 Weve, L

Traite pratique du trace et de la taille des engrenages

Paris, Liège: Libraire Polytechnique Beranger, 1921 (1904), 8vo, 159 pp, ill (156 pp, 71 ill).

Technical (French).

Listed in Gardner "Catalogue of the Torrens collection".

Practical treatise on drawing and cutting the teeth of gears.

May have no direct relevance to watches.

R2749 Wheeler, WH

Willard H Wheeler collection of antique watches

USA: Brooklyn, 1922, 8vo, ill.

Collection (English).

R2750 Whelpley, GF

General letter engraving

for watchmakers, jewelers and kindred trades

Chicago: Geo. Hazlitt & Co, 1892 (1890), 8vo, 111 pp, ill.

Miscellany (English).

R2751 Whisker, J

Clockmakers and watchmakers of Maryland

1660-1900

New York: Edwin Mellen Press, 1997, 300 pp, ill.

Makers (English).

Using mainly original sources (U.S. Census, tax lists, advertisements, family records, etc.) this volume details the clock and watchmakers in Maryland between 1660 and 1900.

R2752 Whisker, J

Pennsylvania clockmakers, watchmakers

and allied crafts

New York: Mellen Press (USA: Adams Brown), 1995 (1990), 9.2 x 6.4 inch, xlix, 314 pp, ill (264 pp, 171 b/w ill).

History, makers (English).

Directory of makers with history

With a Study of Pennsylvania Clocks by Steven P. Petrucelli and Introduction by Stacy B. C. Wood, Jr. "Using mainly original sources (U.S. Census, tax lists, advertisements, family records, etc.) this volume details the clock- and watchmakers in the Province of and Commonwealth of Pennsylvania between 1660 and 1900."

[1st edition, review by Eileen Doudna] It has been almost 30 years since Eckhardt's work on Pennsylvania clockmakers was first published and almost 10 years since James Gibbs' work added to and updated our information on this subject. Whisker's book can now be added to these earlier classics presenting new and additional information in a different format.

A strength of Whisker's book lies in the sources used to compile the information presented. Tax lists, census, city and county directories, military muster reports, newspaper obituaries, scholarly regional studies and recent correspondence with recognized authorities were used to compile this listing of almost 2100 entries. The list includes clockmakers, watchmakers, goldsmiths, silversmiths, and pewterers working during the eighteenth and early nineteenth centuries within the present boundaries of Pennsylvania.

The volume is divided into several main sections. A brief but thorough and enlightening introduction by Stacy Wood Jr. highlights the history of clockmaking in Pennsylvania during the period covered. Movements, dials and cases are discussed as well as cautions given to the buyer on what to look for when purchasing a clock and how best to care for the clock once obtained.

Pages 1-138 are an alphabetical listing of craftsmen. Entries here vary greatly in length and reflect the varying knowledge available on different makers. Most importantly each entry indicates the source from which the information was obtained.

Illustrations have been placed in a separate section from the alphabetical listing. While the illustration section (pages 154-239) does have a brief index it would have been much more helpful to the reader to have references within the alphabetical listing to the illustrations and vice-versa. One cannot tell when using the alphabetical listing that a piece by a maker can be found in the illustration section. This feature would have greatly enhanced the book and is really essential to a book using this format.

The majority of illustrations show tallcase clocks. Shelf clocks receive four pages of illustrations, watches only two pages and scientific instruments five pages. This reflects the proportion of tallcase clocks to shelf clocks and watches made during this period, but one wishes more illustrations of watches had been used. Between the alphabetical listing and the illustrations, 14 pages of text examine various time periods in Pennsylvania and the clocks of each of the periods. This text also supplements the caption information found with the illustrations. This text is probably that part of the book done by Steve Petrucelli, but is not indicated within the text.

A five-page bibliography concludes the book and is a welcome listing of the many references interested researchers may pursue.

In using this book for research I have found several difficulties, identified here to alert the reader so that the book can be used more effectively. Many of the problems are due to discrepancies between the alphabetical section and the illustration section. Clocks are pictured in the illustration section by makers who are not included in the alphabetical listing. Occasionally, illustrations are given and the maker appears in the alphabetical listing with a variation in the spelling of the name. Is the Joseph Wills in the illustration section the same as the Joseph Willis in the alphabetical section?

There are no instructions to the reader to "see" references in the alphabetical listing which would greatly enhance the listing. For example, someone looking for a Sallade is not directed to Solliday although both spellings were used by these makers. The same is also true for other makers. With the number of Pennsylvania makers that used various spellings of their names, this would have been most helpful. Once the reader is aware of such discrepancies, the book can be used much more effectively.

The illustrations, all black and white, show the overall clock and in many instances a close-up of the dial. Very few movements are shown, which is surprising after the introduction is read and the differentiation is clearly made between the clockmaker and the casemaker. Photos of movements would have been a great addition to the illustrations of the clocks as it is the movements which were made by the clockmaker, and it is the movements which are so often hard to find illustrated in any source.

For the book to be more useful, one also needs to be aware of the time period that is covered by this book (eighteenth and early nineteenth centuries). The more contemporary makers frequently asked about are not found here because they were not meant to be within the scope of the book. Readers would have been better served having this delineation in the title rather than in the introduction which few readers, as with most books, probably read (to their own detriment).

As with many books on horological subjects, information one would like to see is missing in this volume. But one quickly realizes that on many horological topics several sources that complement each other must be used to answer any question. This is true of this book. Its strengths lie in the sources used, the historical information and insight contained, and the many illustrations - all of which add to our previous knowledge of this topic. Since it was not intended to repeat what other authors have done but to

shed new light on the subject, it can be used to add to and complement existing sources. For the reader interested in Pennsylvania and/or early American clock and watch making, this is an essential addition to their library.

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R2753 Whisker, J**Virginia clockmakers and watchmakers**

1660-1860

New York: Mellen Press, 1999, 9 x 6.5 inch, 187 pp, ill.

Makers (English).

List of 426 makers with detailed information from original sources. "Lists those who made ore repaired clocks and watches in Virginia from the earliest days to the Civil War and shortly thereafter using US Census data, court records tax lists, newspaper ads, and county histories."

R2754 White, Allen**The chain makers**

Christchurch England: Allen White, 2000 (1967), 22.0 x 16.5 cm, 48 pp, ill (38 pp, ill).

History (English).

Some copies have a piece of fusee chain inside the front cover.

Reprinted in 2000.

A social history of fusee chain making in England in 8 sections: Watch and clock fusee chains (6 pages); Robert Harvey Cox 1755-1815 (13 pages); Henry Jenkins and Son 1823-1914 (3 pages); William Hart (6 pages); Manufacture of clock chains (4 pages with reproductions of the chain making plates from Diderot); Christchurch fusee chain makers, 1841, 1851, 1861 censuses (4 pages); Documents relating to Robert Harvey Cox (1 page); and Acknowledgements (1 page).

The 2000 reprint has a 2-page introduction about the author and a 5-page appendix with additions and revisions to the list of fusee chain workers.

There may also be an illegal reprint of the first edition.

[1st edition, fair] This book is a collection of snippets of information and mediocre photographs, and is interesting primarily for the remarks on workhouse labour, the employment of children and their pay. The author does not appear to know much about horology.

Weiss "Watch-making in England 1760-1820" provides a much better description of chain making although he does not give the social and biographical information included here, so there is still some historical value in the text.

See Newman "The Christchurch fusee chain gang" for a much better book on this topic.

[Remark] This book is a good example of the arbitrary nature of the second-hand prices of horological books. The content and binding are not worth the price it has commanded, which reflects rarity rather than quality.

R2755 White, George**The clockmakers of London**

London: Clockmakers Company, 1998, 48 pp, ill.

History (English).

Introduction to the Worshipful Company of Clockmakers and its collections of books, manuscripts, clocks and watches housed at the Guildhall Library, London.

R2756 White, I**Watch and clock makers in the city of Bath**

England: Antiquarian Horological Society, 1996, 159 pp, ill.

History, makers (English).

Limited edition of 50 copies hard cover and 250 copies soft cover.

The history of horology in Bath with a list of makers to the end of the 19th century.

R2757 Whiten, AJ**Repairing old clocks and watches**

London: NAG Press, 1996 (1979), 22.0 x 14.0 cm, 280 pp, 275 ill.

Collecting, repair (English).

Reprinted in 1982 and 1996 (and 1998?).

Twenty-five chapters: Hints for the horological amateur; Simple repair methods; Sundry tips; Turning; Making up equipment; Dismantling a watch; Cleaning; The escapement; Hairsprings; The wheels; Pivots, pillars and jewels; Power sources; The worst job; Keyless work; Oiling; Rating or timing; Not dismantled; Case repairs; The verge watch; The cylinder watch; Different types of clock; Social duties; How to collect; Dates; History.

There is a 4 page index.

[1st edition, very good?] The book begins with 3 chapters on dismantling a clock, general advice and examples of simple repairs. Then the next 2 chapters describe turning and making tools. Chapters 6 to 21 cover watch and clock repairs and the book concludes with three short chapters on social duties (dealing with friends who bring their repairs to you), notes on collecting and a brief history.

The book covers most topics, from dismantling to making verge staffs, interleaved with material related to clock repair.

If you think horology is serious then this is not be the book for you. It has been written by an "amateur"

R2758 Whitney, ME

with a sense of humour for other amateurs with senses of humour; the people who temper steel parts by putting them in the deep fryer with the chips for dinner. But unlike some other books for novices, this one is genuinely practical.

Whiten makes it clear that he is writing for collectors whose primary aim is to get their own watches working. In doing so he adopts the approach "if you don't have it or can't afford it, make it", even to the extent of making your own lathe or turns (although I doubt if it would be much use for watch work). On the whole he manages this very well, but sometimes, as in the case of hairspring truing, he does not provide enough detail for his beginner audience. Similarly, his description of making a verge staff is inadequate even though it includes some good information.

Despite these drawbacks, it is an enjoyable and stimulating book.

It is a pity some other writers don't engender as much enthusiasm.

R2758 Whitney, ME

A history of the American Watchmakers Institute, 1960-2000

USA: AWI Press, 2000, 134 pp, ill.

History (English).

R2759 Whitney, ME

Military timepieces

USA: AWI Press, 1992, 28.5 x 22.5 cm, 667 pp, ill.

Description, identification, repair, technical (English).

32 chapters giving comprehensive technical descriptions of military timepieces used in America, both local and imported, the majority of which date from around the second world war.

These include clocks, elapsed time clocks, ship's chronometers, marine clocks, comparing and instrument watches, pocket and precision watches, tank clocks, wristwatches, diver's watches, and zig-zag and course clocks.

[1st edition, very good] The book is based on reproductions of original documents with some additional material. It contains historical information, exploded views, parts lists, contract specifications and repair instructions for many of the timepieces. Also included are short notes on the history of the Naval Observatory, chronometers and time zones.

This is not a book to read. Rather it is a reference manual and an invaluable tool for the restoration and maintenance of specific timepieces.

R2760 Whitney, ME

The ship's chronometer

USA: American Watchmakers Institute, 2005 (ca 1985), 28.5 x 22.0 cm, 499 pp, 358 ill.

Repair, history (English).

Reprinted in 2005. Both the reprint and the original edition are undated.

Twenty chapters followed by appendixes and an index.

The chapters are: The birth of the ship's chronometer (14 pages); Observatories - their purpose and function (24 pages); Chronometer trials (22 pages); Transporting and handling the chronometer (8 pages); The function description of a chronometer (38 pages); Disassembling and cleaning (8 pages); Reassembly and oiling (20 pages); Testing and adjusting (10 pages); The English escapement (8 pages); General repairs (24 pages); The break circuit (survey) chronometer (6 pages); Making a detent (10 pages); The navigation (chronometer) watch (16 pages); The pocket chronometer (12 pages); Some rare and unusual chronometers (56 pages); Some innovative ideas and design changes in the Hamilton chronometer (20 pages); Navigation and the quartz chronometer (24 pages); America's foremost chronometer makers (28 pages); Other American chronometer makers (48 pages); and National Bureau of Standards (20 pages). The appendices (56 pages) are: Glossary, Bibliography, Footnotes, and Parts lists for the Hamilton marine chronometer.

There is a 25-page index.

[1st edition, excellent] I found this a difficult book to review because it is actually four books in one. The first three chapters and most of the second half of the book is a descriptive survey of chronometers. Chapters 4 to 12 are a detailed discussion of chronometer maintenance and repair. Chapter 16 and a long appendix (together with many mentions elsewhere in the text) focus on the Hamilton marine chronometer. And finally, chapters 18 and 19 contain biographical and historical information of American makers. Although the book covers makers from other countries, it is definitely centered on America and American chronometers; other makers are covered in the context of those of their chronometers which ended up in the United States.

The problem is that the quality of these sections varies quite considerably, some are excellent while others are mediocre. It is clear that Whitney is a consummate craftsman and repairer, but I get the impression that he has little understanding of technical matters and his knowledge of history is not much more than adequate. In deciding to rate this book as excellent, I am recognising the quality of the chapters on repair and American makers, and ignoring the rest. I think these parts are so good that they outweigh the poorer chapters. Indeed, after a flowery, fanciful and unnecessary foreword by Henry Fried, Whitney states that his primary objective is "to explain the principle of operation and construction ... so that the more capable watch / clockmaker can repair it".

The first 3 chapters are interesting but mediocre. Chapter one begins with a short history of the manufacture of marine chronometers in America during World War II and then gives a fairly standard biography of John Harrison. Chapter 2 gives a history of observatories in England and America, and

discusses methods for finding longitude. The history is OK, but the explanations of position finding are obscure and unintelligible in parts. Andrewes "The quest for longitude" is vastly superior. Chapter 3 discusses chronometer trials. Either Whitney does not understand trial numbers or he is incapable of explaining them, because these sections are at best obscure and inadequate. A major problem is that Whitney does not give example calculations; instead he relies on reproductions of actual testing and these tables make little sense. The chapter also includes useful information on Hamilton chronometer production.

I will group with these introductory sections the other descriptive chapters. Chapter 14 describes pocket chronometers with some remarks on the pivoted detent (largely ignored in the book); the history and technical information is uninspiring. Chapter 15 covers rare chronometers. It includes some useful biographical information, but unfortunately many photographs and descriptions are mediocre. The following information on modern navigation systems and atomic clocks, continued in the final chapter, is a satisfactory overview, but again the technical aspects are obscure.

This descriptive survey of chronometry is not too bad and much of it is interesting. But the whole lot could have been left out without harming the value of the book.

When I had reached the end of Chapter 3 I was thinking the book was yet another mediocre attempt by a person who didn't actually know very much. But the following chapters changed that completely. Whitney has worked with chronometers all his life, and when he writes about his knowledge and practical experience he is professional, competent and very, very good. Chapters 4 to 12 (132 pages) provide the best discussion of chronometer maintenance I have read and I think they should be compulsory reading for anyone handling marine chronometers. They are full of valuable advice and detailed explanations of how to do tasks. They include handling, setting, transporting, escapement action, disassembly, cleaning, oiling, adjusting the detent, putting in beat, testing, rating, pitted jewels, polishing, straightening pivots, making balance staffs, replacing barrel and fusee arbors and center wheel posts, repairing fusee chains, mainspring repairs, straightening and topping escape wheel teeth, resetting impulse and unlocking jewels, and making a detent.

The third thread is the examination of Hamilton marine chronometers; in addition to which Chapter 13 is mainly a description of Hamilton navigation watches. The discussion of the history and design of Hamilton chronometers is central to the book and spread throughout it. In addition to Chapter 13, Chapter 16 provides detailed information of design changes and the appendix gives exploded diagrams and parts lists. This section of the book is reminiscent of Whitney's book "Military timepieces". That book is a factual description of timepieces based on manufacturers documents with no information on design or repair. Both "Military timepieces" and the sections on Hamilton in this book are compilations of data only relevant to people handling these particular timepieces and so of limited use.

The final part of this book consists of chapters 18 and 19 (and a few comments scattered throughout the rest). These chapters provide a valuable summary of the work of American chronometer makers with biographies of important people and short histories of companies.

For the repairer the book is essential. For the person interested in American horology there is much interesting material. But the general reader will find little of interest or use.

R2761 Whittle, E

The inventor of the marine chronometer

John Harrison of Foulby

Wakefield: Wakefield Historical Publications, 1984, 32 pp, ill.

History (English).

Early days; Boy into man; "Turn again Harrison"; Coming up No. 1; Two, three, four; Old father and William; From the sublime; Testing times; The last of the male line; and The lunar method disadvantaged.

R2762 Whyte, D

Clock and watchmakers of Aberdeen

and north east Scotland 1453-1900

Scotland: D Whyte, Family History Society, 2001, 8 x 6 inch, 53 pp.

Makers (English).

Published by the Aberdeen, Central Scotland, Highland and other Family History Societies.

List of 625 makers.

R2763 Whyte, D

Clock and watchmakers of central Scotland

1537-1900

Scotland: D Whyte, Family History Society, 2001, 8 x 6 inch, 58 pp.

Makers (English).

Published by the Aberdeen, Central Scotland, Highland and other Family History Societies.

List of 485 makers; includes Stirlingshire, Clackmannanshire, Kinross-Shire and Fife.

R2764 Whyte, D

Clock and watchmakers of Edinburgh

and the Lothians 1539-1900

Scotland: D Whyte, Family History Society, 2001, 8.5 x 6 inch, 95 pp, 11 ill.

Makers (English).

Published by the Aberdeen, Central Scotland, Highland and other Family History Societies.

List of 1379 makers from 1539 to 1900.

- R2765 Whyte, D**
Clock and watchmakers of Glasgow
 and the west of Scotland 1603-1900
 Scotland: D Whyte, Family History Society, 2001, 12 x 9 inch, 72 pp.
 Makers (English).
 Published by the Aberdeen, Central Scotland, Highland and other Family History Societies.
- R2766 Whyte, D**
Clock and watchmakers of south-west Scotland
 1576-1900
 Scotland: D Whyte, Family History Society, 2001, 8.5 x 6 inch, 40 pp, 5 ill.
 Makers (English).
 Published by the Aberdeen, Central Scotland, Highland and other Family History Societies.
 List of 276 makers.
- R2767 Whyte, D**
Clock and watchmakers of the scottish borders
 1556-1900
 Scotland: D Whyte, Family History Society, 2001, 15 pp.
 Makers (English).
 Published by the Aberdeen, Central Scotland, Highland and other Family History Societies.
- R2768 Whyte, D**
Clock and watchmakers of the scottish highlands
 and islands 1780-1900
 Scotland: D Whyte, Family History Society, 2001, 12 x 8.5 inch, 35 pp.
 Makers (English).
 Published by the Aberdeen, Central Scotland, Highland and other Family History Societies.
 List of 252 makers; includes Moray and Nairn.
- R2769 Whyte, D**
Clockmakers and watchmakers of Scotland
 England: Mayfield Books, 2005, 10 x 8 inch, 334 pp, 226 fig.
 Makers (English).
 The contents includes: Map of Scotland, Introduction, Scottish longcase clocks, Clockmakers & watchmakers of Scotland. Berwick-on-Tweed, Apprentice indenture of George Lumsden to John Smith of Pittenweem, Bibliography, Index
- R2770 Whyte, D**
Scottish clock and watchmakers 1445-1900
 Edinburgh: Scottish Genealogy Society, 1996, 84 pp, ill.
 Dating, makers (English).
 Basic list of over 5000 makers.
Said to be a revision of John Smith "A handbook and directory of old Scottish clockmakers" and "not compiled by an horologist".
- R2771 Whyte, D**
Tay Valley clock and watch makers
 1554-1900
 Scotland: D Whyte, Family History Society, 2001, 8 x 6 inch, 40 pp.
 Makers (English).
 Published by the Aberdeen, Central Scotland, Highland and other Family History Societies.
 List of 553 makers.
- R2772 Wiget, F**
Montres anciennes
 de musée d'horlogerie de la Chaux-de-Fonds
 La Chaux-de-Fonds: , 1951, 29.5 x 23 cm, 29 pp, 88 ill.
 Collection, description (French).
- R2773 Wiget, F**
Rouages et engrenages
 La Chaux-de-Fonds: Technicum Neuchâtelois, 1972 (ca 1955), 21 x 15 cm, 107 pp, 72 ill.
 Technical (French).
 3 editions.
 Calculation of trains.
- R2774 Wikipedia; Miller, FP (ed); Vandome, AF (ed); McBrewster, J (ed)**
Horology
Fusee (horology)
 : Alphascript Publishing or LLC, 2010, 9 x 6 inch, 128 pp or 764 pp.
 Description, history (English).
 Print on demand.
 Wikipedia articles on horology.
[Remark] The advent of "print on demand" books has created a nightmare. Some are simply reprints of old books and are identified by the correct author and title. But advertisements for others provide no

information at all, and the prospective buyer is totally in the dark regarding authors and content. In these cases I stick to a basic rule: don't buy a book unless you know what is in it.

In the case of this particular book or books, I found two entries which state that the content is the reprint of Wikipedia articles on horology. But the pagination and publisher are different. Because of the lack of information, it is unclear whether they are two different books or the same book incorrectly described. Anyway, why would a person with internet access pay for a book when the contents can be obtained for free from the Wikipedia web site?

R2775 Wilbourne, ASH; Ellis, R

Lincolnshire clock, watch and barometer makers

England: Hansord, Ellis and Wilbourne, 2001, 8.5 x 6 inch, 248 pp, 114 ill.

Makers (English).

Lists of watch and clock makers (about 1100 makers), barometer makers (90 entries) and clock case makers (26 listed). There are 24 pages of colour illustrations.

R2776 Wild, JM

Wheel and pinion cutting in horology

a historical and practical guide

England: Crowood Press, 2001, 25.0 x 19.5 cm, 253 pp, 555 and 11 ill.

History, repair, tools (English).

11 chapters. The first 4 chapters (58 pages) survey wheel and pinion cutting tools and chapter 5 (8 pages) summarises the theory of cycloidal gears.

Then chapters 6 (29 pages) and 7 (25 pages) give detailed instructions for wheel and pinion cutting respectively, and chapter 8 (20 pages) discusses the form of cutters and how to make them.

The last 3 chapters consider related topics: crossing out and mounting wheels (21 pages), finishing and replacing pivots (11 pages) and miscellaneous operations (45 pages on depthing, calendar wheels, racks and snails, count wheels, Geneva stop work, escape wheels, calculating missing components, and workshops).

There are 7 appendices giving Swiss and British standards, lantern pinion data, specifications of Carpano cutters, dimensions of wheel and pinion cutters, and pendulum lengths. There are also a list of suppliers, bibliography and index.

[1st edition, very good] This is a purely practical book. The first chapter provides a good but noncommittal summary of the history of wheel cutting and the next 3 chapters illustrate the development of tools by showing specific examples. The photographs of tools and some of the descriptions of them are, to my mind, not quite good enough as interesting details are hard to understand.

Chapter 5 inadequately explains the concepts of gearing and then provides the specific formulae needed to perform calculations using either the diametral pitch or module systems. Wild does not explain the theory and problems of addenda, simply specifying magic factors, but he does warn the reader of problems that can arise with old timepieces. There is nothing wrong with this approach because the only thing Wild wants to teach us is how to do it and he gives adequate references (to Camus and Davis) if we want to know more of the theory.

The rest of the book provides instructions for making wheels and pinions, and a few sections specifically concerned with watches and marine chronometers are included. It is here that Wild excels; whereas some of the general remarks and photographs are of doubtful value, the practical descriptions are clear and precise, and the illustrations and photographs are excellent.

I would put this book in my short list of excellent books, but it is almost exclusively about clocks and much of it appears to be not directly useful for watchmaking. However, it presumes the reader is competent and there is little in Wild's discussion that cannot be scaled down to smaller work. So it must be seen as a valuable work for all practicing horologists.

R2777 Wild, OG

Praktikum der edelsteinkunde

eine einföhrung in das wissen von den edelsteinen

Stuttgart: Franckische Verlagshandlung, 1936, 20 x 13.5 cm, 133 pp, ill, 9 plates, some colour with overlays.

Technical (German).

Listed in Tardy.

Practical art of jewellery.

R2778 Wilkins, C

The horizontal instrument

The measure of love

Der zeitmesser

London: Doubleday, New York: Carroll & Graff, 2000 (1999), 18.5 x 13.0 cm, 198 pp, no ill.

Novel (English, German).

"The measure of love" may be a working title; it is from an uncorrected proof of the 2000 American edition.

A novel.

[1st edition, good] I find it difficult to comment on this book because it has three distinct themes and I feel differently about each.

The centre of the novel is the description of the slow degeneration and death of Robert Garrett's wife

Elizabeth due to Alzheimer's disease. After a brief description of their meeting and marriage, we are shown the first problems of memory loss and the gradual awareness of a serious problem. Then the progress of mental destruction is graphically and compassionately described as Elizabeth becomes more and more isolated from the external world until the collapse of her brain's control over her body leads to death. The writing is compelling and almost documentary.

While watching his wife's brain fade away, Garrett attempts to understand what is happening by philosophising on the significance of memory and meaning of time; indeed, the book begins "time is memory, simple as that". In the following, interleaved chapters the concept of time and this theme are explored and related to what is happening to his wife. Although I found this thread fascinating, there were times when I felt Wilkins, through Garrett, became somewhat confused. Most importantly, the distinction between time and methods of measuring time I found unsatisfactorily blurred. Certainly the desire for some absolute, linear definition (culminating in consideration of pulsars as a better reference than an atomic clock) might be significant to scientists, but it is of little moment to life and death. Making all hours (and hence seconds) of equal length is very convenient, but in abstract it is no better or worse than a non-linear system; both define the "passing of time", whatever that means, precisely. However, my discomfort is of no importance as these two threads of the story inter-twine very nicely.

The third theme, where Garrett builds an ideal watch, I dislike. Initially he is portrayed as the perfect scientist-watchmaker, a brilliant mathematician and mechanic far above his peers. This unnecessary self-adulation fails to convince because Wilkins is not Einstein or Daniels and his writing lacks the authority and conviction needed. Wilkins has learnt enough to provide a convincing description of how Garrett made his watch and his writing is satisfying. But to suggest a perfect mechanical watch is nonsense. It might be perfect for a few days before variations from friction, barometric pressure and gradual wear take their toll, but it cannot be better than a watch that has stopped (in the context of Garrett's philosophical discussion). Perhaps more interesting is that the continual quest to define the second is a bit like the quest to numerically specify the circumference of a circle (the value of pi); we can get ever closer to it but never actually write it down.

The final chapter betrays, in my opinion, a collapse of the horological argument as catastrophic as the collapse of his wife. Here Garrett tries to reconcile different definitions of time, which are equally valid but irreconcilable because they measure different things. One, the human perception of time derived from the erratic motion of the Earth and the Sun. The other, the scientists' abstraction and search for a fundamental constant equivalent to pi or the velocity of light.

Although I have been rather negative, I enjoyed this book and found it well worth reading. Unlike many books, it is engrossing and stimulates the reader to think about the three themes which have been cleverly linked into a coherent story.

R2779 Wilkinson, TJ

Practical lessons on the lever escapement

its tests, errors, their detection and correction

Philadelphia: Technical Publishing Co, 1916, 19.5 x 14.0 cm, 241, xvi pp, 28 ill, errata sheet.

Repair (English).

The cover has the short title "The lever escapement".

The second edition has the title "The escapement and train of American watches" and is listed separately.

135 lessons (197 pages) followed by questions for research work (44 pages) and index.

The lessons cover definitions, the balance, angles, balance arc, pallets, escape wheel, lever, roller jewel, draw, drops and shakes, lift, lock, guard pin, escapement action, banking to drop, tests, rules, examination and practical problems. Some remarks on escapement drawing are included.

[1st edition, mediocre] See my review of Wilkinson "The escapement and train of American watches", part 2 of which contains all of the lessons in this book.

The "questions for research work" are just sample examination questions, presumably for self study or use in a horological school. All they do is summarise the rest of the book with added question marks.

R2780 Wilkinson, TJ

The escapement and train of american watches

no publisher (USA: Keystone), nd (1916), 24.0 x 16.0 cm (23.5 x 15.5 cm), 378 pp, ill.

Repair, watch making (English).

The modern reprint has no printing information. It is a facsimile of the "second" and only edition under this title, first printed in 1928; see Wilkinson "Practical lessons on the lever escapement" for the first edition.

In 6 parts with no table of contents.

Part 1 (2 chapters, 14 pages): elementary escapement lessons and practical testing.

Part 2 (49 chapters, 166 pages): advanced escapement lessons, the balance, angles, balance arc, pallets, escape wheel, lever, roller jewel, draw, drops and shakes, lift, lock, guard pin, escapement action, banking to drop, tests, rules, examination and practical problems. It includes some remarks on escapement drawing. This part contains all of the lessons in "Practical lessons on the lever escapement" with some alterations.

Part 3 (9 chapters, 45 pages): escapement mathematics.

Part 4 (8 chapters, 37 pages): drawing and model making.

Part 5 (12 chapters, 42 pages): wheels and trains, calculating trains, barrels and motion work.

Part 6 (17 chapters, 57 pages): dimensions of train wheels, pitch circles, addenda, rules and tables for diameters, replacing missing wheels and pinions.

The book ends with separate indexes to each part.

[2nd edition, mediocre] Part 1 is a little odd and gives the impression of some basic ideas belatedly added. It defines some terms (assuming you know quite a bit about watches and the lever escapement) and gives recipes for basic tests. This sets the scene for what is a mechanistic approach to escapement testing, which I found repetitive, somewhat simplistic and obscure. Perhaps more worrying is what seems to be a mindless application of banking to drop.

Part 2 begins with basic definitions. If you need to read them the rest of the book would be incomprehensible! Then more detailed definitions, specifications, and instructions for drawing are given, followed by detailed descriptions of tests and errors. It seems that the watchmaker is meant to look up a problem in the index, follow the tests specified and do what he is told to correct the problem. Admirable in a way, but I found this part extremely tedious and I didn't bother reading most of the text under the headings. It may well be good instruction for weak-minded jobbers, but I didn't like it. I prefer to have at least some understanding rather than blindly follow dubious rules without comprehension.

Part 3 begins with some elementary trigonometry and then gives specifications for equidistant and circular escapements; these primarily contain tables of sizes. Part 4 continues the "by example" arithmetic of escapements with some more instructions on drawing. Anyone needing to follow Part 2 step-by-step would have little understanding of and less use for this section.

Part 5 on trains gives a good example of what has irritated me; it begins by saying that, for a fast train watch, the ratio of 4th wheel teeth to 5th pinion leaves must be 10. No explanation, just a mindless formula to be mindlessly evaluated by an apparently mindless reader! Hatton wrote a vastly better book. Later equally prescriptive recipes for barrels, mainsprings and dial trains are given, but I couldn't be bothered indexing them.

Part 6 covers wheels and pinions; their size, teeth shape and so on. It is a number of tables, formulae and numerical examples.

Before you read this book, find a good book on the lever escapement and a good book on watch trains and read them (perhaps Fried's books). After which you probably won't need to read Wilkinson.

R2781 Willet Holthuysen Museum

Hoe laat was het? het nederlandse uurwerk

Amsterdam: Museum Willet Holthuysen, 1956, 4to, 24 pp, 20 plates.

Exhibition (Dutch).

Catalogue of a clock and watch exhibition.

R2782 Williams, A

The wonders of mechanical ingenuity

1918 (1910), 160 pp, ill.

Children, description (English).

It includes watches and chronometers and the dividing engine.

Archibald Williams contributed a small number of pieces to boy's magazines and wrote a number of books about engineering, manufacture and also exploration.

R2783 Williams, Lisa

Pocket watch crazy

USA: Lisa Williams, 2000, 24 pp, separate CD Rom.

Collecting (English).

A book for beginners containing sections on horological organisations, repair books, videos, computer software, internet sites, tools, equipment and sources for parts. It includes the author's experiences buying and selling watches.

The CD ROM version also has some production data for American railroad grade watches.

R2784 Williamson, GC

Catalogue of the collection of watches

the property of John Pierpont Morgan

Lausanne: Press Centrales (Paris: GC Williamson), ca 1980 (1912), 39 x 29 cm, 244 pp, 92 plates with 337 ill (2 vols 120 and 124 pp, inset photographs).

Collection, description, illustration, bibliography (English).

The original edition was limited to 45 copies and so is somewhat rare. The undated reprint is also a limited edition.

The collection was given to the Metropolitan Museum of Art, New York, in 1917.

R2785 Williamson, GC

Stories of an expert

London: Herbert Jenkins, 1925 (1912), 9.5 x 6.5 inch, 256 pp, 1 col ill, 40 b/w ill.

History, collection (English).

Includes a history of the acquisition of items in the John Pierpont Morgan collection.

Stories from the art world with the author giving his opinion on miniatures, forgeries, paintings, watches, copies and so on.

There are biographies in S. Jackson "J.P. Morgan - the rise and fall of a banker" (which includes a discussion of his collecting methods) and C Canfield "The incredible Pierpont Morgan, financier and art collector" (175 pp, ill, 1974).

R2786 Wills, PB

Conservation of clocks and watches

England: British Horological Institute, 1995, 21.5 x 15.0 cm, xvi, 83 pp, 21 col ill, 2 figs, 11 pp ads.

Repair, ethics (English).

An introduction by Peter Wills followed by six articles: Ethics (Teffrey); Dealing with customers (Gill); Record keeping (Isaacs); Principles (Burgess); Cleaning & oiling (Betts); Conservation of mechanism (Randall); and Brass dials (Still).

These are followed by 8 appendices: Painted dials (Moll and Tennant); Clock cases (Davies and Dawson); Photography (Arnfield); a specimen worksheet; the BHI code of practice; and 3 lists of English courses, museums and libraries, and suppliers.

There is a short bibliography.

[1st edition, mediocre] In 1987 the BHI set up a committee to draw up guidelines on the ethics and practices applicable to conservation work. The group failed to agree and consequently this book presents individual views rather than a consolidated proposal. However, the separate papers rarely overlap and no conflicts of opinion are apparent.

Betts gets down to practical problems, discussing cleaning solutions, stress corrosion cracking, rinsing methods and the importance of Grit-o-cobs (probably not available in Australia) before giving succinct, good advice on oiling. His chapter is clear, well-written and very useful; the only part of the book that deserved indexing. Randall also puts forward some good ideas, mainly on repivoting and bushing, but he is more general and so not as useful.

With the exception of these specific suggestions, the writers stick to vague generalities. Not that this is bad. The focus is on principles and attitudes with the purpose of making workers in the area more aware of their responsibilities and question carefully the conflicting possibilities that specific situations are bound to raise.

However, I found the book uninspiring and tedious. No-one (with the exception of Betts) seemed to have much desire to write on the topic and so produced interesting but dull reports which would have been better published in a journal than as a less than desirable book.

[Remark] Three important points need to be made.

First, Wills says the book was written "primarily for practitioners who are already well versed with the theory and practice of horology". In which case Betts' chapter and Randall's comments on screwdriver use should have been omitted; if today's well-versed practitioners do not know most of that stuff then horology is in a very sad state indeed. More importantly, no-one has considered who the practitioners are. The ethical and competent should have read widely and already agree with and understand most of what is in this book. The unethical won't read it and will happily continue to glue, solder and butcher for money. The problem is that there is an assumption that the readers are ethical as well as highly trained, a group of people who will not benefit much. Although not stated by Wills, I thought maybe the book was meant to be a student text. If so the idea is excellent but the uninspiring writing would make students want to rote learn rather than become personally involved.

Second, although it is posed several times no-one successfully tackles the question of which timepieces deserve what sort of conservation; for example, an early American dollar watch with a celluloid face requires a very different approach to a lantern clock. (Indeed, except for a passing reference to American wooden clocks, the focus is on English pieces and so primarily pre 1850.) This question does form the core of the book, but it was apparently too hard a topic and the comments merely suggest vague stances without any concrete suggestions.

Finally, the bibliography (which omits Daniels) suggests that the well-versed practitioners are definitely not well-read. It is a list of largely common-place books which all horologists, including humble jobbers, should have devoured in their novice years.

Ethics and conservation practices are extremely important. This book is a valuable contribution, not because it is a good book but because it is the only (?) book. The subject deserves a vastly better treatment.

R2787 Willsberger, J

Clocks and watches**Zauberhafte gehäuse der zeit**

600 years of the world's most beautiful timepieces

die schönsten uhren aus sechs jahrhunderten

New York: Dial Press (Dusseldorf: Econ Verlag), 1975 (1974), 28.5 x 27.5 cm, 180 pp, 130 plates.

Description, illustration (English, German).

German edition printed in 1974.

An 8 page introduction by Arnold Toynbee followed by unnumbered pages containing illustrations with captions showing museum timepieces; about half are colour. Minimal text.

R2788 Wins, A

L'horloge a travers les âges

Paris: Librairie E. Champion, 1924, 8vo, 343 pp, 162 ill.

Bibliography, collection, history (French).

The clock through the ages.

Contains a transcript of "Catalogue des effets précieux de fuse son Altesse Royale le Duc Charles de Lorraine ... 1781" which describes 118 clocks and 52 watches, including a self-winding watch.

Said to include an excellent bibliography.

R2789 Wisconsin Institute of Horology**Samples of mechanical drawings as applied in horology**

USA: Wisconsin Institute of Horology, ca 1920, 7 x 5.5 inch, 23 pp, ill.

Technical (English).

Drawings done by students of the home study course, including escapements.

See Thomas "Home study course".

R2790 WMDAA; Fried, Henry B**The official WMDAA catalog of genuine watch parts**

Washington DC: Watch Materials Distributors Association of America, 1957 (1955), 28.0 x 21.5 cm, 380 pp, ill.

Description, identification, repair (English).

A catalogue of movement identification and parts interchangeability.

[1957 edition, good] The main body of the book has 210 pp, but integral with it there are separately paginated sections for Benrus (12 pp), Bulova (38 pp), Ebauches SA (66 and 44 pp), and Longines/Wittnauer/LeCoultre (10 pp) as well as unnumbered advertisements.

Pritchard "Swiss timepiece makers 1775-1975" references this catalogue and presumably all makers are listed in her book; therefore I have not indexed them.

R2791 Wolfendale, A (ed)**Harrison in the Abbey**

published in honour of John Harrison on the occasion of the unveiling of his memorial in the Abbey on 24th March 2006

England: Roundtuit Publishing, 2006, 20.5 x 14.5 cm, 84 pp, ill.

History (English).

"This is a commemorative book to mark the unveiling of the memorial to John Harrison in Westminster Abbey. Edited by the 14th Astronomer Royal, Sir Arnold Wolfendale, it is a tribute to the man who overcame great difficulties to produce the first seagoing clock which determined longitude accurately. The articles cover the life of John Harrison, his clocks, the Worshipful Company of Clockmakers and other related topics."

Contributors are Jonathan Betts, Sir George White, Dava Sobel, John Taylor, Diana Uff, Will Andrewes, Andrew King, Joe Buxton and Anne Stevenson.

R2792 Wood, EJ**Curiosities of clocks and watches**

Detroit: Gale, London: EP Publishing (London: Richard Bentley), 1974 (1866), 21.0 x 14.0 cm, 443 pp, 2 ill.

History (English).

I presume only one reprint, published simultaneously in England and America.

Also available as a "print-to-order" reprint, spiral bound or hard cover.

Six chapters on clocks, with some brief notes on time and non-mechanical time tellers, are followed by another six chapters on watches. Each group occupies about half the text. The only illustrations are a frontispiece of the Strasbourg clock and a vignette of the Mary Queen of Scots memento mori watch.

[1st edition, good] A book must be interesting when it says in the first few pages "... the division of the day into hours was first suggested by the regular exercise of the bodily functions of a consecrated monkey". It is a somewhat incoherent but roughly chronological collection of quotations and anecdotes which has been regularly mined by other authors. Although Wood often gives the impression of providing a history, his book is primarily uncritical quotations from other works loosely bound together, and apparently written down as they occurred to him. Within there is much interesting material, although the lack of illustrations detracts. The seemingly endless lists of who owned what at the time (particularly frequent in the chapters on watches) are not inspiring unless one can relate these old collections to the present whereabouts and illustrations of the watches.

However, parts are very readable and interesting, and it is a good source of anecdotal material.

R2793 Wood, SBC**Clockmakers and watchmakers of Lancaster County Pennsylvania**

Lancaster: Lancaster County Historical Society., 1995, 11 x 8.5 inch, 75 pp, b/w ill.

Makers (English).

"Including makers, product, dial, cases, makers directory, and appendices of expunged clock and watchmakers, clock and watchmaker locations, and suggested reading.

R2794 Wood, WA**The days of John Wood watchmaker (1793-1872)**

Canada: Wood Family Archives, 1986, 22.0 x 15.5 cm, 275 pp, ill, 3 plates, 1 fld plate.

History (English).

The family history of a Clerkenwell watchmaker, who emigrated to Montreal in Canada, and his children.

[1st edition, good] The majority of the book consists of letters written to and from his son, the Rev John Wood, and hence focus on religious and social comment; the remarks relating to medicine and transport I found particularly interesting.

It is not a horological book and there is very little concerning the watch industry. So it is enjoyable but largely irrelevant.

R2795 Woodbury, RS

R2795 Woodbury, RS

History of the gear cutting machine

a historical study in geometry and machines

Massachusetts: MIT Press, 1964 (1958), 8vo, 130 pp, 56 ill.

History (English).

R2796 Woodbury, RS

History of the lathe to 1850

a study in the growth of a technical element of an industrial economy

Ohio: Society for the History of Technology, 1961, 8vo, 124 pp, ill.

Tools, history (English).

R2797 Woodward, P

Spiral hairspring**Study of the spiral hairspring**

with a new evaluation of its elastic properties;

England: British Horological Institute, 1996, 8vo, 56 pp, ill.

Technical (English).

R2798 Woog, Paul

Etude sur la stabilisation des huiles pour l'horlogerie

Besançon: Millot Freres, 1931, 35 pp, ill.

Technical, repair (French).

R2799 Wright, TD

Technical horology

USA: (USA: American Horologist & Jeweler) (London), ca 1940 (ca 1926), 23.0 x 15.5 cm, 114 pp, 39 ill (79 pp).

Technical (English).

The American edition was printed from articles in the American Horologist & Jeweler 1917 and is undated; the date is variously given as circa 1900 and circa 1940 with the later date more likely. It may have been reprinted.

It is said to have been reprinted by the Horological Journal in 1926.

The illustrations are not numbered correctly.

An introductory section on the astronomical definition of time followed by information on pendulums, metals, gears, trains, mainsprings, gauges, balances and balance springs. There are no clear divisions in the text.

[American edition, fair] A strange collection. Much of the material concerns mathematical definitions and formulae (including a theoretical study of forces and inertia and their application to pendulums), although there are also more descriptive parts. Most of the writing concerns clocks, but the watch specific sections are interesting, if of limited value; the comments on pivot friction are probably the most useful. The "reprint" is difficult to read because of mediocre printing.

R2800 Wuhr, H

Alte uhren

Darmstadt: Schneekluth, 1955, 21 x 13 cm, 52 pp, 34 ill (34 pp, 32 ill).

(German).

There appear to be two "issues", "Alte uhren" and "Alte uhren band 2" (32 or 52 pp, 34 ill, undated but 1955).

With a separate English sheet.

R2801 Wuilleumier, C

L'horlogerie

notes sur son développement a la Chaux-de-Fonds de 1794-1894

La Chaux-de-Fonds, 1894, 8vo, 35 pp.

History (French).

Horology, notes on its development at La Chaux-de-Fonds 1794-1894.

R2802 Wyke, JA; Smith, Alan

A catalogue of tools for watch and clock makers

Virginia: University Press, 1978 (ca 1760), 23.0 x 30.5 cm, 153 pp, 31 ill, 54 plates (1 fld).

Catalogue, history, tools (English).

The book begins with an 18 page introduction written by Alan Smith. This provides a history of the Lancashire watch and tool trade, biographies of Wyke and Green, and an examination of the development and dating of Wyke's catalogues.

This is followed by the plates of the catalogue, each with a technical commentary (also by Alan Smith) on the facing pages.

Finally there is a 7 page appendix defining watch and clock terminology with explanatory photographs.

[Facsimile, good] The earliest known catalogue of horological tools, produced between 1760 and 1790. The introduction provides an excellent and well researched background to the catalogue. The catalogue itself provides a very good description of late 18th century tools with Smith's notes explaining the function and use of the more complex tools.

Plates from three of the four extant copies are reproduced in Crom "Horological shop tools 1700 to 1900".

It is interesting to note that the two copies in the Torrens collection were sold at prices some 5 times that of other rare books of the period.

R2803 Yamaguchi, R**Japanese clocks and watches**

Tokyo: Nippon Hyoron-Sha, 1950 (1942), 395 pp, ill, slip case?
Description (English?, Japanese?).

R2804 Yamaguchi, R**Timekeepers**

Tokyo: Iwanami Shoten, 1956, 6.75 x 4.0 inch, 226 pp, ill.
Description, history (Japanese).
Only a few illustrations.

R2805 Young & Co**Catalogue of watches**

illustrated and priced
USA: (Illinois: Young & Co), nd (1901), 12 x 9 inch, 110 pp, ill.
Catalogue, price guide (English).
The modern reprint is of the 1911 catalogue.
Trade catalogues, with various titles, illustrating watches.

R2806 Young, E**Labor in Europe and America**

Montreal: Dawson Brothers (Washington: US Government Printing Office), 1879 (1875), 8vo, 864 pp.
History (English).

Three editions in 1875, 1876 and 1879.

“A special report on the rates of wages, the cost of subsistence, and the condition of the working classes in Great Britain, Germany, France, Belgium, and other countries of Europe; also in the United States and British America”.

Referenced in Landes.

R2807 Young, J**Wiltshire watch and clockmakers**

England: Sedgheill Publishing, 2004 to 2006, 8vo, 2 vols of 193 pp, ill and 324 pp, ill.
Makers (English).

The first 2 of a series of 3 volumes on Wiltshire (vol 3 not yet published).

Volume 1 (2004) covers the north of the county and includes Chippenham, Marlborough and Swindon.
Volume 2 (2006) covers central Wiltshire including Devizes, Trowbridge, Warminster, Westbury, Bradford-on-Avon, Melksham and Pewsey.

R2808 Zagoory, J; Chan, H**A time to watch**

the wristwatch as art, classic, rare, extraordinary
New York: ChiuZac Limited, 1985, 30 x 22 cm, 199 pp, 220 plates.
Description, illustration (English).

The wrist watch as an art form. “A color photo treatise/chronology of the various styles, shapes and forms of the wristwatch and their art, creativity and need for self-expression. Includes sections on watch manufacturers, watch bands, parts, movements and a glossary of terms.”

“Displays the century’s rarest and most unusual watches, all dramatically photographed and described. Watch-shaped bookmark included.”

[Review by William Muir] “A Time to Watch” is about the wrist watch. Jac Zagoory and Hilda Chan, its authors, inform us that their book looks at these timepieces as art - classical, rare, and extraordinary. It should be further noted that this book’s subject matter is seemingly limited to mechanical wristwatches of Swiss and American origins. These are presented in color and black and white photographs pretty much in the style of elegant jewelry advertising.

The need for books on the subject of the wristwatch is certainly evident. Even though the collecting of these watches has become increasingly popular in recent years, library shelves are as yet almost empty of works in this field. One measure of the effects of this lack of information is the large number of fakes that seem to be about these days. On the other hand, this void is quite understandable since the wristwatch appeared only 80 years ago and the mechanical version already seems to be on its way to extinction.

Unfortunately, the development of the mechanical wristwatch took place just after the birth of the electronic age. Its developers never imagined that in less than a century all of the old machines and materials would be either dead or dying. Most of what they knew and accepted as commonplace would face replacement in a few short decades.

How could they imagine that silicon, common sand, with its then unknown ability to measure, store and communicate, would become king? Watches that carried out functions beyond simple timekeeping were horribly complex and extremely expensive. The silicon chip, an incredibly beautiful object despite design complexity beyond imagination, can handle at low cost function upon function. No longer a mere timekeeper, the modern watch has become a calculator, radio, television, computer, and game room. The future possibilities are mind-boggling and the promoters will undoubtedly dream up a few needs we never knew we had.

Alas, the electronic watch, while horologically superb, has not lent itself well to the body adornment

function that some consumers find so necessary. Of course, whether or not an objet d'art ought to be purely functional or, on the other hand, decorative, is a matter that has caused no end of argument among artists and critics. Still, the button-studded, blinking, beeping electronic watch is not entirely unloved or untrusted. A certain Japanese calculator version seems to be very popular in the art community these days. Recently I had a model accidentally drop mine from the modeling stand twice in one evening with no apparent damage. A watch that can survive a 6' fall onto concrete deserves respect!

Despite its manufacturer's claims, the mechanical wristwatch was seldom quite so sturdy, yet it certainly was often an object of beauty. The nature of the technology that produced it left little doubt as to the involvement of true craftsmen. Although the modern watch is the product of much more advanced technology, it is just a little too perfect to be anything more than a trifle dehumanizing. As Ms. Chan and Mr. Zagoory are attempting to point out, the classical watch was an extension of its wearer. The modern watch can at times become the rival of its possessor. Their popularity in artistic circles can only be explained by the fact that these people often have iron egos.

While the style of photography in "A Time to Watch" occasionally becomes impossibly arty, one can hardly fault the choices of watches. Doubtlessly there are many other wristwatches that ought to be called classic, but no book could cover them all and still sell at a price the market could bear. As it is, the price tag may well frighten away the very collectors who will find it most interesting - that is, the beginning and intermediate group. However, whether one should want this book for his library depends on a few simple facts. First, it is an overview, not a definitive work. Second, its text is well written but extremely brief. Third, the pictures vary in quality from ho-hum to excellent. All of this notwithstanding, books on the wristwatch are few and far between, so any reasonable effort ought to be encouraged.

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[Remark] The review raises an interesting question: Will the ordinary, cheap watch cease to exist one day? The widespread use of mobile phones and the development of smart phones have made the wearing of a watch unnecessary; I don't bother wearing one any more because my phone tells me the time.

R2809 Zagorodnaya, IA

Treasures of the Kremlin

masterpieces of horology from the state historical-cultural museum preserve Moscow-Kremlin

Geneva: Antiquorum, 1997, 28 x 20 cm, 72 pp, 21 plates.

Description (English, Russian).

Parallel Russian/English text.

Description of 20 watches.

R2810 Zale Jewelers

Historical watches

USA: Zale Jewelers, ca 1975, 8 x 5.5 inch, 36 pp, 50 b/w plates.

Illustration (English).

Undated, but thought to be circa 1975.

35 illustrated watches from the Zale collection.

See also Fried "The cavalcade of time: a visual history of watches".

R2811 Zantke, H

Louis-Benjamin Audemars, his life and work

Louis-Benjamin Audemars, sein leben und werk

Stuttgart: Socialkartei Verlag, 2003, 31.5 x 25.5 cm, 507 pp, 6 pp ads, 169 b/w ill, 434 col ill, slip case.

History, biography (German, English).

German and English text.

A history and biographies of the Audemars family from the 18th century to 1885, and the successor companies to 2001. The second half of the book is a photographic essay of watches by Audemars with descriptions. The book includes sections on technical developments and serial numbers.

[Review by Kathleen H. Pritchard] This enormous book in English and German, subtitled "The Rise and Fall of a Watchmaking Dynasty," is a history of the lives and works of the Audemars family from the eighteenth century to 1885. It also considers the successor companies, still operated by family members in 2001. The foreword is by Paul Audemars, a fifth-generation descendant of Louis-Benjamin Audemars who lived from 1782 to 1833. The author, in his preface, considers that Louis-Benjamin Audemars and his sons were, next to Breguet, the most prolific inventors of new watchmaking techniques in the nineteenth century.

An initial chapter covers the history of Swiss watchmaking. The remaining text is devoted to the works of the Audemars, and a follow-up on the successor companies. Interspersed in the text are handsome color and black-and-white illustrations of the Audemars watches; the last half of the book is composed of plates and detailed descriptions of the Audemars watches.

In 1558 the first of the Swiss Audemars, Andre Hodemart, came to Geneva from France, a religious refugee. He soon moved to the Vallee de Joux. The name evolved from Hodemart to Audemard to Audemars. The descendant, Louis-Benjamin, was attracted to watchmaking and apprenticed with Philippe Samuel Meylan, one of the most celebrated watchmakers of that time. He then worked for about two years for Breguet. He and his brother set up a workshop in 1805 in Cret-Meylan. Eight of his sons later joined him and worked for decades in their father's business. When Philippe-Samuel Meylan and Isaac Piguet left for Geneva in 1811 to found Piguet & Meylan, the Meylan business in the Vallee de Joux was turned

over to Louis-Benjamin Audemars. The year 1811 is considered the founding date of the "Maison Louis Audemars." In 1828 the company consisted of Louis-Benjamin and his eight sons. From that year it was Louis Audemars & Fils. Zantke's book describes the business transactions, the watchmaking firms supplied, and the types of watches produced. One son went to London to boost sales, then founded a firm there that eventually went bankrupt. Another son founded a subsidiary in Geneva. The father died in 1833. The sons carried on until 1885, when the firm was divided in three parts.

The text of the book tends to jump back and forth among events in the family and the firm. However, the chapters on the systems that were developed are straightforward. Hector Audemars' stem-winding system, Charles-Henri Audemars' perpetual calendar, and the minute repeater developed by Louis-Elisee Piguet working in the Audemars firm, are all discussed in detail. A section is devoted to the technical developments after 1867. Another chapter is devoted to the successes of the firm at International Exhibitions. Collectors will be pleased to know that the serial number records and the trademarks, brand names and signatures, are reproduced. Finally the histories of the successor firms are included. The appendix includes a family tree of Louis-Benjamin Audemars and his descendants.

This book is a magnificent undertaking.

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R2812 Zapata, J; D'Ambrosio, AT

Jewels of time

watches from the Munson-Williams-Proctor arts institute

Utica, NY: Munson-Williams-Proctor Arts Institute, 2001, 4to, 116 pp, ill, 80 col ill.

Catalogue (English).

Catalogue of an exhibition held at the Munson-Williams-Proctor Art Institute from Sept. 26 to Oct. 7, 2001.

An annotated and illustrated catalogue of 80 pieces accompanied by two essays: "The Art and Science of the Watch" and "Thomas R. and Frederick T. Proctor, Watch Collectors". There is an appendix of small b/w photos of the complete Proctor timepiece collection.

R2813 Zegarki, Z

Praktyczny podrecznik fachowy

Russia., 1956, 766 pp, ill.

Repair (Russian).

Some doubt about the author's name and title which have appeared variously in catalogues; the author may be Zegarki or Szosta.

R2814 Zei, Dino

The Panerai in Florence

La Panerai di Firenze 150 anni di storia

Italy: CLD Libri, 2003, 33.0 x 25.0 cm, 2 vols 278 pp, ill and 186 pp, 1 ill; slip case with limited edition certificate and 16 data sheets (all held in an outer slip case).

History (English, Italian).

Limited edition of 500 copies.

2 volumes, one in English and one in Italian:

Part 1: History of Panerai to 1972 (12 pages) followed by 3 appendices (deliveries to the Italian Royal Navy, patents, and main products).

Part 2: History of Panerai to about 1999; Engineering activities; Promotion; The crisis of the 1990s; The watch division passes to Cartier; Panerai passes to Calzoni.

Appendices (patents, products, code and serial numbers for Officine Panerai watches, and curious facts). Separate set of technical data sheets for the first 15 watches made by Panerai.

[1st edition, mediocre] Panerai manufactured equipment for the Italian Navy; indeed the Italian Navy was the sole customer before 1972. Watches were a very small component, so the vast majority of this set has nothing to do with horology.

Part 1 is a very brief history of the company prior to 1972. Watches are largely ignored, with the exception of some remarks on luminous paints, summaries of patents for cases and bracelets, and about a page on the watches which used movements made by Rolex and Angelus. Zei states that there was very little information available from this period, in part because much of what Panerai did was covered by official secrets acts.

Part 2 has more detail because Zei was the head of the company and so is able tell us more. Again watches are a minor part of the history, there being only one mention before two and a half pages which describe the early 1990s manufacture of a retrospective collection of divers' watches for sale to civilians. It seems that only about 3,000 watches and cases were made by unnamed Swiss companies (not Rolex), and some were later modified. Also it is noted that watches "were subsequently produced without authorisation. I do not know who made them and how many pieces were produced". Later Zei spends a bit more than a page explaining why the watch venture was unsuccessful, and he then details how the brand name Officine Panerai and technical information were purchased by Cartier, who presumably still manufacture watches under that name. Finally, there are four pages describing the retrospective collection and 6 pages of their serial numbers and codes.

In addition, there are 15 data sheets, each of which has a photograph and specifications of a watch, and a 16th sheet illustrating leather straps. Of the five models made before the 1990s retrospective series, two

were never put into production.

It seems the company existed out of duty to the country and the Italian Navy. It was never profitable and continually struggled to stay afloat. Indeed, there is an undercurrent of bitterness, or at least disappointment, in Zei's writing. Other than the original watches made for the navy, Panerai watches were never successful and the retrospective series were a financial failure.

Overall, the books and data sheets are of only marginal interest to watch collectors, except those who have Panerai watches. There is very little useful information, the photographs are only adequate, and the cost of the set far exceeds its value. But the person interested in military hardware and aircraft landing systems may find much worth reading.

[Remark] Considering that this is an opulent, expensive set of books, and that only 500 copies were produced, I was amazed to find that the publisher omitted all illustrations from the English volume, requiring readers to continually reference the Italian volume to see them.

Even more surprising is that, in my copy, one block of pages is missing from the Italian volume and another block is duplicated, and there is a torn page. Consequently, although I will never read the Italian text, a number of illustrations are missing. This is simply gross negligence on the part of the publisher. Given the cost and limited number, surely CLD Libri could have got the basics right.

R2815 Zerella y Ycoaga, Don Manuel

Tratado general y matematico de relojería

que comprende el módo de hacer relojes de todas clases, y el de saberlos componer y arreglar por dificiles que sean. Acompanado de los elementos necesarios para élla, como son aritmética.

Valencia, Spain: Artes Graficas Soler (Madrid: En Imprenta Real), 1986 (1789), 9.5 x 7 inch (folio), xiv, 408 pp, 22 fld plates.

Repair, technical (Spanish).

Originally published in 1789 and reprinted in 1791. There is a modern facsimile reprint.

The 1789 printing is available as a Google Book PDF file. As with many Google books, the plates were scanned folded and so are useless.

A general and mathematical treatise on how to make clocks and watches and how to repair and regulate them.

The first part describes how to make pocket watches, house clocks, carriage clocks, clocks to use at night and calendar clocks with pendulums. There are details of working parts and instructions for common repairs. The plates corresponding to this section show gear trains and various clock faces (showing seconds, minutes, hours, months, phases of the moon, etc). The second part (beginning on page 191) contains the mathematical, geometrical, geographical and mechanical theory necessary for clock-makers. At the end (pages 386-393) is a short chapter on constructing music boxes, illustrated by the final plate.

[Review by Charles Aked] This book - "A General Treatise and the Mathematics of Horology" - is one of the most famous of Spanish treatises on watch and clockwork for the practising craftsman. It first appeared in 1789 and consists of 408 pages and 22 plates. The sub-title to the book states: "An easy and, clear method for adjusting pocket watches without the need, for a watchmaker: accompanied, by the necessary elements by which Arithmetic, Algebra, Geometry, Gnomonics, Astronomy, Geography, Physics, Machinery, and Music may be understood". In short, a manual with which someone unacquainted with the principles of horology, and having no tutor, could teach himself all that was required - on the lines of, but a rather better work than, "The Artificial Clockmaker" by William Derham, published 1696. Its author was the Inspector to the Royal School of Watchmaking in 1776 and 1783, having extended his own knowledge by periods of working in Geneva and later Paris. He was nominated as Watchmaker to the Royal Chamber in 1799 but died shortly afterwards on 9 September 1799.

The work has recently been published as a facsimile reprint in homage to the author and (if the reviewer's translation is correct) to celebrate the termination of publishing in the "Tempus Fugit" series. This was started some years ago to reprint some of the rare Spanish works on horology, and the results have been well worthwhile, since the originals are exceedingly difficult to find and consult.

Few original copies of Zerella's work survive, in fact less than the number of his surviving watches. Only 250 numbered copies of the facsimile have been printed. The work is, of course, in the Spanish language (and old-fashioned at that), so it will be difficult to understand for most English readers. Those who are really interested can tease out the meaning with the help of a Spanish dictionary and G. Berner's "Dictionnaire Professionnel Illustré de l'Horlogerie which has a full Spanish index. Most of those writing such works used quite simple terms, and indeed some of the material will be quite clear without understanding a single word of Spanish.

There are twenty-two pull-out plates with excellent diagrams. The reviewer particularly likes Figure 62, which shows a turret clock of the "field-gate" construction which is supposedly peculiar to England. The hard bound book has a very nice red cover. The body of the work is somewhat marred by the thickness of the included plates which spoil the inner contour. (It is difficult to see how this could have been avoided.) The keen-eyed reader will also spot the omission of pages 114 and 115 in the work. The original work suffered from printer's and proof-reader's errors and the pages were in error from page 113 onwards. There is no loss of text.

Of course the work has no real significance today apart from an historical aspect. Yet for those aficionados of horological works, it is one of the classical works which must find an honored place on the shelves. The likelihood of finding an original copy is so remote that it may be discounted. The reviewer has never

seen an original copy himself, therefore he recommends that anyone with the slightest interest secure a facsimile copy before it is too late to do so.

If this is the end of the "Tempus Fugit" series, it marks the end of a sequence of publications which were almost impossible to consult, let alone possess. The world of horology has benefited greatly from the published programme by making it possible for the dedicated horologist to enlarge his reference sources. Perhaps a few words of appreciation to those who have made it all possible will not be out of place here. (Reprinted by permission. NAWCC Bulletin No. 251, ©1987 by the National Association of Watch and Clock Collectors, Inc.)

[Remark] Robertson says "the book is inaccurate", but I could say that about many of the books I have read. In contrast, Baillie says it is original and has beautiful drawings, but half of it is elementary arithmetic, algebra, geometry and mechanics. Baillie doesn't seem to like mathematics (see my review of Hatton).

The only other book that I think may be part of the "Tempus Fugit" series is Manuel Del Rio "Arte de relojes de ruedas".

R2816 Zhang Pu; Guo Fuxiang

The stories of horology in China

L'art de l'horlogerie occidentale et la Chine

China: Intercontinental Press, 2007, 26 x 18.5 cm.

History (English).

"When Osvaldo Pateizzi, the President of Antiquorum, first entered the Horology House of the Palace Museum in Beijing, he commented with much emotion: "Who can imagine talking about the best clocks and watches in the world without mentioning the famous horology collection in Beijing Forbidden City?" Yes, since an Italian missionary from Roman Catholic Church presented two chime clocks with advanced technology and pioneer art had won popularity among China's royal families and nobles, and gradually spread to common people. This book melts the horology art in China into the history of communication between China and foreign countries."

R2817 Ziebell

Serial list New York Watch Company

from the original inventory of 1872 thru 1875

Massachusetts: Old Post Office Clock Shop, 1972, 24 pp.

Makers (English).

The correct title is "Serial list from the original inventory of 1872 thru 1875, New York Watch Company".

R2818 Zigliotto, E

Montres d'excellence

sélection des plus remarquables créations horlogers de l'année

Paris: Du May, 1995 (1993), 134 pp, 110 ill.

Description (French).

Watches of excellence, a remarkable selection of horological creations of the year.

Wrist watches with descriptions and technical information on facing pages.

R2819 Zigliotto, E

The wrist watch year book

London: Hallmark, 1995 (nd), 12 x 8.5 inch, ill.

Description (English).

The best wrist watches of 1995 with prices and information on movement manufacturers.

An early edition of Braun & Fernandes "Wristwatch annual"? Presumably the English edition of "Montres d'excellence".

R2820 Zimmermann, J; Jacobs

Mechanische armbanduhren mit komplikationen

sonderformen, chronographen

Austria: O.R.A., 1990 (1988), 30 x 21 cm, 140 pp, 400 ill.

Description (German).

Mechanical wristwatches with complications.

About 1200 examples of complicated wrist watches.

R2821 Zimmermann, J; Jacobs; Haider

Mechanische armbandstoppuhren

chronographen katalog

Wien: O.R.A., 1988, 4to, 300 ill, 292 ill.

Description (German).

Unpaginated.

Mechanical stop watches and chronographs. With 292 b/w photographs of stop watches and chronographs, and a number of advertisements.

R2822 Zinner, E

Aus der fruherzeit der raderuhr

von der gewichtsuhr zur federzugsuhr

Munich: Oldenbourg, 1954, 21 x 15 cm, 64 pp, 26 ill.

Description (German).

On early mechanical timepieces from the weight clock to the mainspring watch.
Illustrations of early German clocks and watches.

R2823 Zumbaugh, G

A buyers guide to pre-owned Rolex watches

Pre-owned Rolex watches, the professional handbook

USA: Zimbal's (USA: G Zumbaugh), 2005 (2000), 6 x 9 inch, 72 pp, ill, 10 pp (65 pp, ill).

Price guide, identification (English).

The 2000 edition has eight sections including examining bracelets, examining oyster cases and movements, examining diamond dials and bezels, examples of counterfeits, determination of value and care. Followed by model and serial number charts.

“It is the intent of this book to provide the reader with the information to form an opinion as to a watch’s authenticity and value. If the watch you are examining does not meet the standards set forth in this book, the watch would be highly suspect as counterfeit, aftermarket, altered or repaired.”

Regarded by one reviewer as very useful.

[Remark] I must have found this book listed under the name Lumbaugh a while ago, because it has been moving about my bibliography ever since. However, it is now firmly established as the last entry.