

Douglas Bateman's "Timekeeping: a Lifetime's Interest in Horology"

A review for HSN by Tom Van Baak

I recently received a booklet written by Doug Bateman. Not quite a book, but far more than a technical article in a clock magazine, it is 60+ pages of dense writing with hundreds of color photos and diagrams, all professionally printed on high quality A4 glossy paper. It is a pleasure to page through, like slowly opening a time capsule covering 50 years of modern horology.

Like many of you I have a growing collection of horological books and although Doug is not one of those authors his contributions are well known. He provided significant commentary to the 2nd edition of the Rawlings book. He has also written numerous articles in Horological Journal (HJ) and Antiquarian Horology (AH), as well as here in the Horological Science Newsletter (HSN).

It is important to realize his booklet is not a rigorous horological textbook but more of a personal history by Doug, about Doug, for Doug's family. In a sense we are allowed to overhear as he tells all his timely stories to his family. He writes the following summary on the first page:

Precision pendulum timekeeping, or how an amateur interest grew and grew into an extensive "career" in horology

This booklet arose out of a request by the family to write a series of short essays to describe my clock and all that followed. Not only beginning with a clock, but a whole parallel 'career' of writing about the clock, subsequent refinements, and progressing into some of the understanding of the timekeeping performance of all types of clock. A lot of interest was shown in the clock by electric clock enthusiasts, with compliments about the novel impulsion. I joined the British Horological Institute and the Antiquarian Horological Society, and attended the inaugural meeting of the British Sundial Society. Following an award I became a Freeman and then a Liveryman of the Worshipful Company of Clockmakers. It is fair to say that I have gained sufficient credibility to create some controversy about the famous John Harrison.

The essays are split into topics as follows: the Precision Pendulum Clock, Time Signals, Measurements, Quality Factor and Vibration Series, Broadmoor Hospital and Bob Shapes, Big Ben, the revision of the book by Rawlings, The Science of Clocks and Watches, The Greenwich Time Ball - practical aspects, The Greenwich Time Ball - the Complete History, Other Projects - a Radio Controlled Clock and a Novelty Clock, Sundials, a Noon Dial, Overseas Lectures, the Trouble with John Harrison, Rounding off with reference to drawings and my professional career, and a list of published material.

The interest has brought me into touch with some very knowledgeable people with lively social interactions, visits to hidden corners of museums, and taken me to many interesting locations, home and abroad.

Douglas Bateman, BSc, FBHI, November 2020

I very much enjoyed reading the booklet. What attracted me to his early writings is that he has a serious technical, mathematical, scientific, experimental, tutorial slant to his interest in horology. In addition he has experience with electronics and mechanics and is conversant from sundials to atomic clocks. He is an articulate and prolific writer.

Although I have a full archive of HSN, I don't have ready access to many other horological journals so, for me, this booklet is a welcome, rich condensation of a lifetime of Doug's papers and presentations. The amount of detail in the prose and the number of quality color photographs is impressive. The booklet is divided into 16 parts.

The first few parts are about Doug's own temperature and barometric pressure compensated pendulum clock which uses electromagnetic drive, LED and phototransistor sensors, and digital circuitry for amplitude control. This was 1972. In addition, in order to measure the performance of his clock he describes the development of a radio controlled timebase and digital clock error comparator called "Radiocheckrate". Armed with live data he presents analysis and how this evolved into a life-long friendship with Philip Woodward.

I might add that 50 years later newcomers to the world of precision pendulum clocks often follow the same DIY path of mixing magnets, optics, digital control (now, with computers), radio signals (now, GPS), and finding like minded friends (now, email and internet).

The next part is about Doug's work with quality factor (Q) and vibration theory. In just 3 succinct pages, the role of resonance and quality factor in clocks is presented along with a summary graph showing a correlation between Q and accuracy; the genesis of his lifelong interest and promotion of Q.

There is a part about pendulum bob shapes. Doug tells the unusual story how 18 different bob shapes were expertly crafted, almost as works of art, and then tested using calibrated optical methods to determine what the optimal shape was. It provides a fine example of curiosity, creativity, patience, and persistence when doing pendulum science.

A part on Big Ben includes a fascinating story about how Doug was able to make measurements of the clock during the one rare day when it stopped (after a serious accident in 1976). It includes detailed photos of the clock that I had never seen before.

There is a richly illustrated part about the big red time ball at Greenwich, including technical details of the mechanism and a researched history of the ball. I learned that Doug created the modern electronic timer and controller for the ball and the booklet includes photos of his professional design and even the circuit boards.

The 12 page parts on sundials, clearly another of Doug's passions, is a good summary of the topic, nicely illustrated with both completed sundials and the design and making of sundials. Like us, our interest in pendulum clocks, and HSN, he describes how a community formed around a common interest in sundials resulting in journal articles, meetings, projects, life-long friendships, and world-wide trips.

I too have found that the ancient and often stale topic of pendulum clocks is greatly enhanced when it is co-mingled with other fresh timekeeping topics such as astronomy, electronics, physics, quartz oscillators, atomic clocks, numerical simulation, digital communication or synchronization technology, computer timekeeping, satellite orbits, GPS navigation, pulsars, gravity waves, even the rotation of the earth, UTC, and leap seconds! Of course we add sundials to the list. It's all about time; more than just a rod and bob, but the *music of the spheres*.

A part on John Harrison presents Doug's rather strong opinions on the man, his clocks, and his place in history. He mentions Clocks A and B. My worry is that his historical perspective of Harrison and his narrow view of Q did not allow Doug to enjoy the magnificent performance of Clock B as much as the rest of us. As the one who analyzed the data I can assure you the clock met the "1 second in 100 day goal". In fact, if the goal were retroactively extended to 200 or 500 days, the clock did better than 2 or 5 seconds, respectively. I should add that the amazing results changed my own naïve view of the role of Q in timekeeping.

A final part describes more of Doug's career experience. It's fun to read a book about horology and then find random paragraphs mentioning missiles, aircraft, lasers, satellites, submarines, or nuclear weapons design. Is it always the case that the older generation seems to live more interesting lives than those in the internet age? One quote resonated with me. Doug writes:

"To begin at the beginning, like many horologists, scientists, and engineers that I have known, I was interested in anything mechanical, electrical or explosive."

You now have a taste of the booklet. With enough digging I'm sure much of this information could be found in a large pile of books and previously written articles, but the beauty of a late life work like this is that the distilling and collation has been done for you. It's a delightful, engaging, colorful summary of one man's time-of-life or life-of-time and likely an inspiration to a new generation of curious kids.

Doug includes a full 5 page bibliography covering 50 years of hundreds of published papers. I'm sure the Bateman family is happy to have this well-documented history of their father / grandfather. I myself am happy that Doug is making this booklet available to the horological community.

Doug and his wife are recently in their 80's and in good health. The booklet is available to all. For more information contact Doug by email (douglas.bateman@btinternet.com) or by phone 01344 772303 (overseas +44 1344 772303).

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