

participated in its creation.” (page 38). Demonstrating this is no small achievement in the history of ideas.

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Dr Steven J. Dick
21406 Clearfork Ct., Ashburn,
VA 20147, USA.
Email: stevedick1@comcast.net

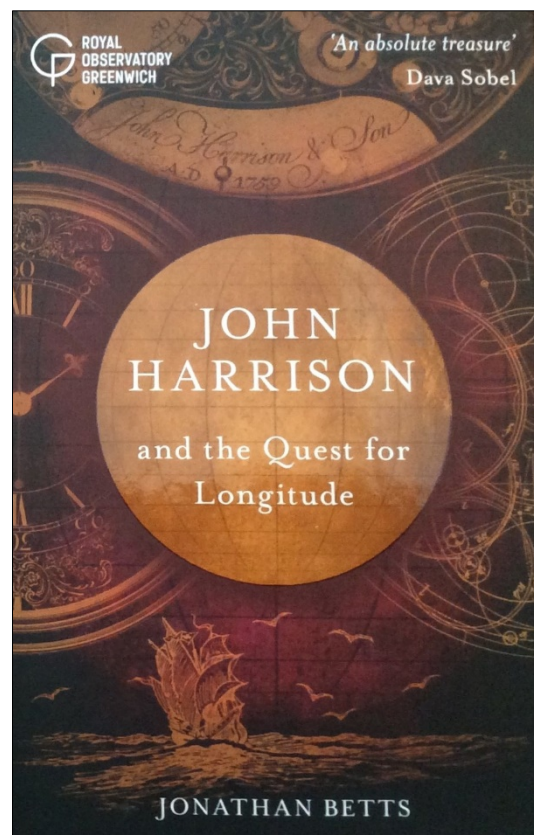
John Harrison and the Quest for Longitude by Jonathan Betts. (National Maritime Museum, Greenwich, 2020). Pp. 112. ISBN 1-906-36769-8 (hardback), 155 × 215 mm, US\$19.95.

Written by horologist and Royal Museums Greenwich Curator Emeritus, Jonathan Betts, this work provides an accessible and informative introduction to the story of John Harrison and his attempt to win the Longitude Prize. With many years of experience working with the collection and an impressive publishing record on marine chronometers, Betts has achieved the difficult task of compressing complex information into a format that is both comprehensible and entertaining to a reader new to the subject. Now in its Fifth Edition

since 1993, its lasting popularity is probably due to its accessibility – most other works are either more academic in nature or lacking in intellectual rigour.

The main narrative takes the reader on a journey through Harrison’s experience of his attempt to ‘win’ the Longitude Prize based on the timepieces he made to do so. It concludes by claiming that, regardless of the lack of formal acknowledgement as to the ‘win’, he nevertheless pioneered the marine timekeeper which enabled Britain to expand its influence overseas in the following century.

Divided into three parts plus a Conclusion, the books’ clear and helpful structure aids its



accessibility. The first two Parts can essentially be considered as an overall introduction to the main narrative and Part Three dives into the detail, providing the reader with a succinct overview of Harrison’s contributions.

Part One provides an introduction to clockwork and serves two purposes. Firstly, it provides readers with an understanding of basic horology and secondly it provides some context to Harrison’s contribution – to locate visitors in the timeline of horological development. Part Two provides an overview of the ‘Longitude Problem’, which helps readers to understand why Harrison worked for so long trying to solve it and why the Government was itself so keen to find a workable solution.

Setting the scene in Part Three in preparation for his discussion of the marine timekeepers known as H1-H5, Betts introduces Harrison's background, his early clockmaking and work on precision pendulum clocks. The image of one of Harrison's early houses brings a welcome human touch to the story. I also liked the information about the Harrison brothers experimenting (page 34), but would have liked a reference for the source of it. Betts' analysis of Harrison's thought processes enriched the description of the pendulum clocks – his usual approach was to identify an 'enemy' in the efficiency of the movement and then try to compensate for it as he did with the gridiron pendulum, having identified temperature change as the problem (page 39–41).

Betts then takes the reader on a journey through the marine timekeepers H1-H5 one by one, not only describing them, but also revealing the outcome of their tests and trials. I liked the contextual details such as H1 having been made following a visit by Harrison to the Astronomer Royal, Edmund Halley, and renowned clockmaker, George Graham. More of the human element of the story is brought to the fore in the description of H3 taking nineteen years to complete and even then Harrison realised that the design needed an overhaul (page 59) – this was a valuable acknowledgement of the mental stress that Harrison must have endured at that time. The accessibility of the narrative is noticeable when Betts describes H4 as having the appearance of a pocket watch of the era, but then explains what made it so different, for example the larger balance in the movement (page 77). Another powerful example of where contextual detail is employed artfully to provoke an emotional response comes with the description of one of the last Longitude Boards that Harrison attended. The group had hardened towards Harrison, so much time had passed since the last meeting, new methods and instruments were now being used, and Harrison's key contacts were dying out (page 82–83). Again, the reader really feels for Harrison and his perception of the shifting goalposts. Betts does balance this by pointing out that the Board were doing what they thought was right in the changed world where the lunar distance method had been shown to be a viable method and the sextant deemed a reliable instrument.

Betts finishes his presentation of the five marine timekeepers with Harrison's last-ditch attempt and appeal to King George III, who was supportive and agreed for it to be trialled in contrast with the negative response of the Board. Betts cleverly shows the passions involved in this case and, even with his factual descriptions of events, the reader cannot help

but feel as though they are on an emotional roller coaster following the story. Just when you cannot help but feel sorry for the elderly man that Harrison has become, who has dedicated a lifetime to solving the 'Longitude Problem', you then also feel the frustration of the Board when you hear of Harrison's son William's sulky behaviour at the meetings. I really liked Betts' discussion of whether Harrison effectively 'won' the Longitude Prize or not and what counts as a 'win'.

The conclusion consists of a nod to the legacy of Harrison's marine chronometers – Arnold & Earnshaw making the marine chronometer into a commercial product and their long-term home at Greenwich where the enthusiasm of Rupert Gould from the 1920s ensures that Harrison's story and contributions are always remembered.

The only areas that could be considered gaps in the overall narrative are that there could have been a little more context surrounding the lunar distance method (e.g. see de Grijs, 2020) and other work the Board were asked to consider. I would also have liked a little more about Harrison's work before he sought to 'win' the Longitude Prize. His early years are described, but I wonder if he was a busy clockmaker in the years before he moved to London. Even if we do not know, I would have liked to see this acknowledged.

I would certainly recommend this book to non-specialists and specialists new to the topic. As a Royal Museums Greenwich publication, it is also a really nice souvenir following a visit to see the Harrison timekeepers.

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Dr Jane Desborough
Curator of Scientific Instruments,
Science Museum, Exhibition Road,
London SW7 2DD, UK.
E-mail:

Jane.Desborough@sciencemuseum.ac.uk

***Harrison Decoded: Towards a Perfect Pendulum Clock*, edited by Rory McEvoy and Jonathan Betts. (Oxford, Oxford University Press, 2020). Pp. xii +183. ISBN 9780198816812 (hardback), 140 × 225 mm, US\$65.**

A collection of ten essays, this volume charts the making and testing of Burgess' Clock B, which is a reconstruction of a pendulum clock revealed in one of John Harrison's publications. In doing so, the authors share the conclusions they have subsequently formed about