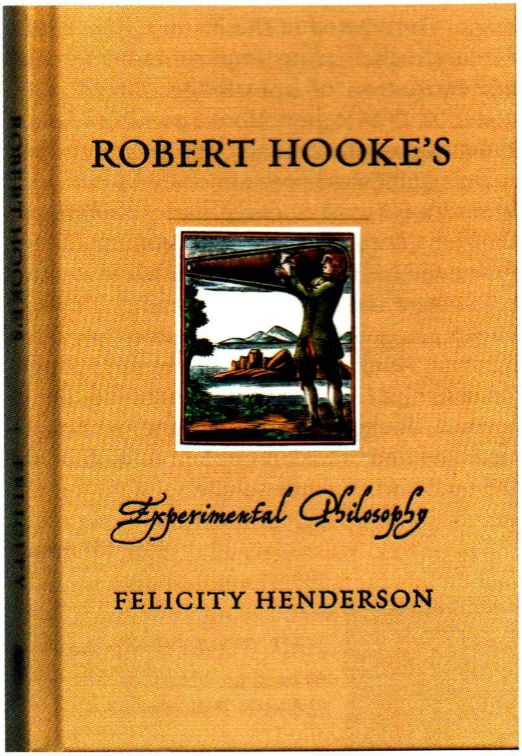
**Felicity Henderson, *Robert Hooke's Experimental Philosophy***. Reaktion Books, 2024, 192 pages, hardcover, $25.

Many AHS members still recall our shock and sadness when president Lisa Jardine (1944–2015) suddenly passed away barely a year after taking office in mid-2014. Her prominence and productivity as an eminent historian of British history is exemplified, in one instance, by her comprehensive biography of Robert Hooke (1635–1703), published in 2003 titled *The Curious Life of Robert Hooke: The Man Who Measured London*.

In a new book by Felicity Henderson, a published Hooke scholar and a senior lecturer at the University of Exeter, she thanks Jardine for 'kind and generous support for my work on Hooke', and lists Jardine's Hooke biography as among the few 'highly recommended'.

Henderson emphasizes that her book is not another biography, but instead focuses on Hooke's methodology that continues to direct and shape scientific inquiry. He was not pursuing knowledge for its own sake, but was applying new knowledge to practical applications that would change and improve our world.




She does present his life, mainly chronologically in a compressed form, and covers his necessary money-making tasks as a top-level London surveyor and architect. But she elaborates throughout its pages that Hooke, 'the first professional English scientist', insisted on creating and using instruments to enhance naked-eye observations and measurements, and asserted that all natural philosophers should be conversant with their predecessors' writings without blindly accepting their conclusions.

Taking this further, she summarizes Hooke's six cardinal rules for effective philosophizing: be well-read, be skillful in mathematics and mechanics, be competent in design and drawing, work patiently and diligently without distraction, seek assistance of others, and freely share all findings in ways easily understood. He called his problem-solving methods 'philosophical algebra', although if he ever fully defined this concept in writing, those notes now are lost.

All who have read Jardine's and other biographies know of Hooke's checkered reputation, but Henderson mainly disputes criticisms of Hooke being cantankerous, unsocial, scattered across multiple inquiries, and quick to take credit for others' work or achievements, as Flamsteed and others complained. She offers much evidence to the contrary, including his near-daily meetings of friends at local coffee houses, and his astounding creation and publication of *Micrographia* with its high-art engraved plates. As horologists will appreciate, she devotes several paragraphs to the twenty-year close working friendship of Hooke with Thomas Tompion, that included many long Sunday conversations in Hooke's Gresham College rooms.

Perhaps most familiar to historians of horology is Hooke's long and bitter battle with Christiaan Huygens and his father, Sir Constantijn, discussed in this journal more than once. This began when the Dutchman in 1675 presented his invention of the balance spring to the Royal Society. While many are convinced that Hooke had the idea first but did not bring it to fruition, fewer scholars believe that Royal Society Secretary Henry Oldenburg revealed it to Huygens who 'stole' the groundbreaking invention. Hooke was embittered by Oldenburg's and the Society's not siding with him, but scholars now agree that we principally have Huygens to thank.

Jardine's book devoted many pages to the argument, and suggested that it was 'Hooke's trusted friend' Christopher Wren who inadvertently leaked the crucial details, while also blaming Hooke himself for concealing his balance-spring mechanism for far too long. By the time that Hooke, with Tompion's help, returned to work on the invention after Huygens's announcement, and presented a prototype inscribed 'Hooke invenit 1658. Tompion fecit 1675', to the King, it was too late. However, due to the dispute, neither Hooke nor Huygens was granted the potentially lucrative London patent they sought. Much more questionable is Hooke's priority in the development of the anchor escapement.

Another book, *Robert Hooke: New Studies* edited by Michael Hunter and Simon Schaffer, published in 1989, devoted an entire chapter by Michael Wright to 'Robert Hooke's Longitude Timekeeper'. This close study of original Hooke material, that also involved replacing a pendulum with a balance spring, explored in great technical detail the intensive thought Hooke gave to the subject, although he was too-long dead to argue priority with John Harrison. Jardine also wrote of this in her Hooke biography:

> The reason why Hooke failed to advance the perfection of the marine timekeeper (a project dear to his own heart) was probably that, on top of the projects he had been explicitly instructed by Brouncker and the Council of the Royal Society to continue pursuing during the enforced recess, he was already seriously over-committed to extended programmes of experimentation in his capacity as operator employed by each one of his now scattered clients and patrons.

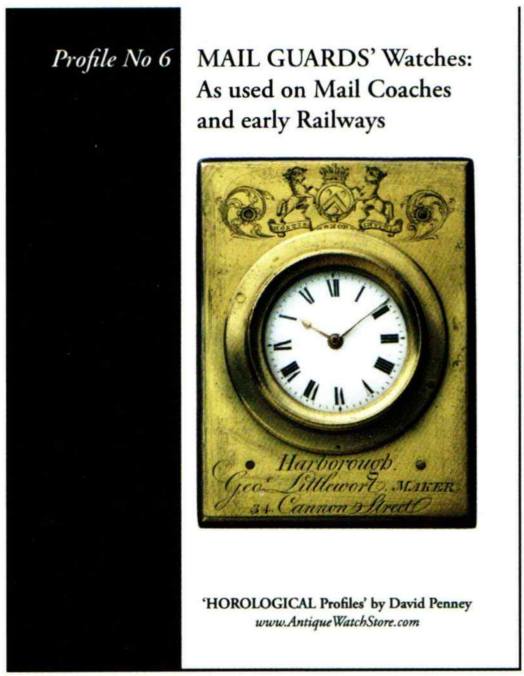
Henderson offers many illustrations. Perhaps the most intriguing, also in Jardine's biography, is a technical drawing of Hooke's equatorial quadrant, per Jardine 'the most spectacular of Hooke's complex scientific instruments'. Along with a novel universal joint, its unique clockwork drive allowed the machine to automatically track celestial objects. It employed not a simple Huygens-style pendulum but instead a conical pendulum that moved the quadrant smoothly and silently.

In an email to me, Felicity Henderson hoped that the paucity of horology in her book would not prove disappointing. She does twice remind us of Hooke's boyhood crafting of a working wooden clock, and quotes Hooke's equating an aging man to 'an old decayed and foul piece of Clock-work'. She thoughtfully added:

> But the theme of time and the marking of time runs through his work, suggesting that making an accurate timepiece wasn't just a competition for priority, or a mechanical puzzle to be solved (although obviously it did contain elements of both those things). Hooke's theory of how the human memory works, for example, argues that the 'organ' of memory is a biological clock – the brain produces memories (which Hooke sees as material particles) in a steady stream, and the soul measures the stream of memories to gauge the passing of time….. I think that when Hooke was experimenting with watch mechanisms he was always thinking about a bigger picture in which the whole universe runs mechanically.

Less than half the page count of the Jardine book, Henderson's study may appeal mostly to readers interested in the history of scientific research, theorizing, experimentation, and dissemination of knowledge. There is no question that Robert Hooke pioneered such Enlightenment advances. Hooke's notes and papers, published posthumously by admirers including Royal Society member William Derham (*The Artificial Clock-Maker*), further promoted his contributions. Had he focused solely and deeply on fundamental laws of nature, as did his sometime adversary Isaac Newton, Hooke probably would be less well-known, and less important to the history of science. Hooke's methods, and the 'mechanics' often scorned by his upper-class colleagues, are the book's worthwhile subjects.

Bob Frishman




**David Penney, Horological Profiles No 6: Mail Guards' Watches: As used on Mail Coaches and early Railways.** 24 pages, 170mm by 220mm, self-published. £ 15.00. Available from the author.

This series of booklets, all prepared and published by David Penney, examine particular aspects of horology usually being overlooked by more general works.

This booklet draws on a paper the author