

REVIEWS OF BOOKS

MILLER (K.J.) **Time and Ancient Medicine: How Sundials and Water Clocks Changed Medical Science**. Oxford: Oxford University Press, 2023. Pp. xxiv + 220, illus. £83. 9780198885177.
doi:[10.1017/S0075426924000338](https://doi.org/10.1017/S0075426924000338)

In her excellent monograph *Time and Ancient Medicine: How Sundials and Water Clocks Changed Medical Science*, Kassandra Miller begins by revisiting a famous claim made by the historian and theorist of technology Lewis Mumford, who argued that the development of mechanical clocks between the fourteenth and seventeenth centuries established the social and psychological systems that primed society for the Industrial Revolution and its incessant drive towards extracting more productivity from each hour of human labour (7). As a contribution to the history of technology, Miller wants to illustrate that the seventeenth century was not the birth of ‘clock-time’ or even the first instance in western Europe of people structuring their lives around hours and minutes. Instead, this had already happened in the ancient Roman Empire, where sundials filled a role analogous to the ticking timepiece. For her book, Miller shows how, even if it did not lead to the creation of the steam engine, automation or the assembly line, the ascendancy of sundials within the Hellenistic period altered practices of medicine across the Mediterranean. Instead, these developments changed thinking about how an illness progresses over time and when to determine the best moment to intervene. Miller’s book should be lauded for bringing a productive analytic frame to the history of medicine and emphasizing the tremendous medical interest in time and timing. She illustrates the embeddedness of ancient medical practices within dynamic material cultures and, by focusing on temporal tools and practices in medicine, she highlights avenues of cultural exchange that are not as easily seen when focusing on doctrinal resemblance alone.

Miller starts in Chapter 1 with an excellent overview of timekeeping and time technologies in antiquity, providing a concise and comprehensible account of how ancient Egyptians, Assyro-Babylonians and Greeks systematized and divided time, before exploring the Roman acculturation to the sundial. Chapter 2 examines the basic medical orientations towards the duration and temporality of illness, whether it be Assyro-Babylonian healers documenting when symptoms appeared, Egyptian physicians employing four-day cycles for treatment or early Greek doctors adopting similar numerologies, while adding an additional concern for the seasonality of illness. Chapter 3 shifts to Galen of Pergamon, the crucial figure in Miller’s subsequent analyses of how time impacted medicine in the second-century CE Roman Empire.

Miller spends considerable time on *Affections and Errors of the Soul*, in which Galen establishes two popular timekeeping technologies as paradigmatic instantiations of scientific knowledge: the sundial and water clocks. For Galen, sundials and water clocks are ideal examples of science, since sundials require mathematically demonstrable proofs, but must also be tested empirically against the drip of the water clock. Both can in turn be mutually assessed against the movements of the heavens. Miller emphasizes how Galen characterizes these devices as soliciting agreement from observers, a situation that contrasts with his more typical investigative mode, which seeks to force and compel his opponents to concede their positions rather than bring them along more comfortably. Indeed, scholars tend to emphasize Galen’s tendency towards intellectual individualism, where his competitive arrogance creates almost exclusively antagonistic relationships

with his medical contemporaries, aside from a few select teachers and his largely unnamed students (see for instance, Vivian Nutton, *Galen: A Thinking Doctor in Imperial Rome* (London 2020), especially 33–37, 40–46; P.N. Singer, *Time for the Ancients: Measurement, Theory, Experience* (Berlin 2022), especially 89–91). Miller's analysis illustrates the moments when Galen paints medical science as more of a communal affair, which progresses over time through the contributions of many members.

Using a concept as capacious as 'time' could easily prove a little unwieldy, since one could spread attention across linguistic, historical, technological and social aspects. By keeping her attention trained largely sundials and Galen, Miller keeps her investigation cohesive and bounded. She shines much-needed light Galen's fever treatises, texts which are rarely dealt with in scholarship because they lack critical editions and English translations. Her analyses in Chapter 5 illustrate how Galen employs this new temporal precision to update Hippocratic ideas about the crucial turning points in febrile disease, especially in his treatise *Critical Days*. Unlike his fifth- and fourth-century BCE predecessors, Galen uses hour counts to determine when illness becomes acute and/or when therapies should be successfully applied, and he leverages this new hourly precision to explain away moments where Hippocratic numerology does not quite work. Miller makes the mathematical arguments clear, and in so doing shows how Galen balanced between precision and pedantry. In addition, she reveals how Galen was quite sympathetic to some of the astrological ideas that suffused Roman imperial culture, promoting a mathematized astrology quite like his contemporary Ptolemy.

One of the most frustrating parts of this publication is that it came out at the same time as Peter N. Singer's *Time for the Ancients* (Berlin 2022), which overlaps in almost a quarter of its material. Still, this should not take away from Miller's contributions, insightful readings and novel avenues of inquiry. Overall, time proves a rich vector of exploration, and Miller uses it deftly to open new vistas onto ancient medicine.

COLIN WEBSTER
University of California, Davis
Email: cwebster@ucdavis.edu