Drawing on from ancient and modern authors, Muñoz held a mix of cosmological views, resulting from his own reflexions and creativity but rooted in the most widely accepted ancient authorities of his time, Aristotle and Ptolemy. Nevertheless, as Brotons notes, his departure from the Aristotelian tradition shows many affinities with the Stoic tradition. For example, Muñoz disagreed with Aristotle on the existence of celestial spheres. According to Muñoz, all the universe was filled with air except for the space occupied by the Earth at its centre. This cosmic air had no sharp discontinuities but became progressively rarefied with the increasing distance from the Earth. It was in this medium that the planets moved like fish in the sea or the birds in the sky. In his view, the heavens are corruptible and the planets and stars are composed of elements and qualities of a terrestrial character but in a purer state.

Illustrations are generally well placed and useful but unfortunately the promised photograph of an astronomical radius (pp. 102–3, note 138), in fact the only known complete radius by Gualterus Arsenius, dated 1563 and preserved in the National Museum of Science and Technology, in Madrid, appears on p. 59.

Bringing together in a coherent and updated narrative the previous studies on Muñoz produced by Navarro Brotons, this book will certainly remain, for many years to come, the standard reference on this influential Spanish astronomer and humanistic scholar.

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Note

1. See the recently published paper and associated supplemental material, G.L. Recio, "A Spanish Study of the 1572 Nova: Jerónimo Muñoz and His *Book on the New Comet*," *Journal for the History of Astronomy*, 53 (2022), 3–12.

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Gauging the Herschels' star gauging programme

William Herschel, Discoverer of the Deep Sky: The Epochal Work of the Greatest Visual Observer and His Talented Sister Caroline. Wolfgang Steinicke (BoD GmbH, Norderstedt, 2021). Pp. 568. 69€. ISBN 9783754397374.

Readers of this journal will be familiar with Wolfgang Steinicke's encyclopedic contributions to the literature treating early observers' telescopic encounters with the celestial realm's menagerie of curiosities, from amorphous fuzzy smudges to complex clusters of

stars. Chief among these pioneers was William Herschel (1738–1822), who devoted nearly five decades to surveying, cataloguing, and classifying thousands of previously unobserved heavenly objects. In this effort, he was ably assisted by hired hands, family members—notably his sister Caroline Lucretia Herschel (1750–1848)—and a stable of then-unparalleled observing, timing, and measuring instruments. To commemorate the bicentennial of Herschel's death, Steinicke has compiled a detailed review and expert analysis of the great astronomer's oeuvre.

When publishers balked at printing such a specialized work, Steinicke arranged to print the volume for individuals on demand. The result is a hefty imperial octavo tome weighing in at nearly 4 kg. Because of its size and weight, the book requires some effort to keep it open! But its sturdy, spacious pages afford several important advantages. The clear, informative text is amply accompanied by instructive illustrations including modern photographs of deep sky objects displayed alongside Herschel's contemporaneous sketches and handwritten notes. Well-placed line drawings of principal instruments enable readers to appreciate Herschel's efforts to meet the practical observational challenges described in the text. Easily readable tables summarize the multitude of factual details presented in each section. Large sky maps clearly display the impressive extent of Herschel's methodical and inclusive sweeping programme. Handy tables in the data-rich appendix neatly encapsulate events in Herschel's lengthy observing career.

Do not mistake this richly illustrated volume for a coffee table book! Steinicke warns readers that his account may seem little more than "a series of facts . . . tiresome at times" (p. 1). His principal focus is enumerating and explicating the observations themselves: the instruments with which they were made; the practical methods and care employed in making them; the tireless efforts made to record, perfect and disseminate the results observed; the insightful inferences drawn from those results; and the speculative modifications to those inferences inspired not just by new discoveries, but by thoughtful reflection on old ones as well.

More than half the volume is devoted to Herschel's sweeps, his exhausting and exhaustive decades-long campaign (1783–1802) to "gauge" the number and distribution of celestial bodies (stars and deep sky objects) in order to uncover the three-dimensional structure of the heavens. Steinicke's presentation is largely chronological, with intermittent references to past and future observations as warranted to give greater context to the case at hand.

Steinicke goes beyond mere recitation of Herschel's records to discuss in detail the occasional errors and puzzles they contain. He expertly analyzes each anomaly's probable source and deduces corrections. He draws attention to Herschel's continuous re-evaluation and modification of his instruments, his methods, and his working hypotheses, those somewhat fanciful yet fruitful conceptions of the heavens' structure that always formed the very foundation of his observing programme. Finally, Steinicke underscores the indispensable support to Herschel's ambitious efforts, both during his long and active life as well as decades after his death, provided by his dedicated and talented sister, Caroline. Caroline Herschel and her contributions to astronomy have attracted scholarly attention in recent years, but without an in-depth account of the physical and mental toll William's demanding programme exacted on all those who actively participated in its execution, it has been difficult to fully appreciate either the depth of her devotion and

diligence or the value of her accomplishments. Steinicke has now supplied that account. Anyone wishing to know and understand the details of Herschel's observations will find this work both absorbing and illuminating.

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Myth and meteorology

The Land of the Solstices: Myth, Geography and Astronomy in Ancient Greece. Tomislav Bilić (BAR Publishing, Oxford, 2021). Pp. xiii + 198. £49. ISBN 9781407358628 (paper).

This is a book that anyone interested in the relationship between myth and science should read. Astrophysics and Space Sciences are today among the most important, if not the main, generators of modern metaphysics and mythology. Astronomy certainly played that role in the past. The author uses a very cultured language, sometimes difficult to read, especially for a layman in these matters. However, Bilić has truly 'left no stone unturned'.

For its proper understanding, a broad knowledge of the mythical geography of antiquity and also of the sky is necessary; and even so, the reader will be able to find unexpected surprises and a scientific courage not always present in this type of writing, which is usually very conservative in character or sometimes quite crazy.

Bilić shows how narrative structures based on an analogy with solar movements can be identified in Greek myths, despite the fact that this approach was often misused in the past, when such scholarship was often sentenced to permanent exile to the margins of what were considered serious historical studies. As a cultural astronomer, this reviewer knows well how this is and that efforts must be doubled to make comprehensive such a hermeneutic approach to the history of science.

As the author stresses, myth and science should be seen as a continuum with somewhat blurred boundaries and much overlapping rather than as monolithic edifices clearly separated from each other. I fully subscribe to those words. Therefore, he systematically uses myths as primary sources for early descriptions of geography and astronomy, a common discipline that Greeks would have christened as 'meteorology'. These non-scientific texts can, according to the author, be acknowledged as accounts of natural phenomena in terms of anthropomorphic causality. His study, originally the work he developed for his doctoral thesis, is actually an attempt to reintroduce the study of solar movements, both diurnal and annual, into the interpretation of myth.

For this scholarly exercise, Bilić follows a model in four steps. First, he acknowledges Constantine Nakassis's hypothesis that selects the phenomena of sunrise and sunset as an