

Camille Flammarion's 1872 book *Histoire des cieux*; it was modified by Blake, who abandoned the original conversational-style French text.

The key factor linking both books is the audience for which they were written: the public, and amateur astronomers. Thus, neither can (or should be) measured against a scholarly work. While the Blake book is valuable for the perspective it offers on the nineteenth-century approach to astronomical mythology, one must expect the recent Falkner book (a second edition of his 2011 effort) to be fully up-to-date and free of any egregious errors. Sadly, that is not the case.

My reading of the Falkner title suddenly halted at the line "... Ptolemy must have travelled very near the equator at some point." (page 35). No reference is given for this astonishing assertion, which is not surprising as it has no known factual basis. Falkner is led to this 'pretty evident' claim because Ptolemy included "... Eridanus as well as the constellations of the ship Argo in his list of 48 constellations." (page 35). Ptolemy certainly worked in Alexandria, but even if he had visited Upper (southern) Egypt, that would still be 22° north of the equator. Actually, Ptolemy relied on the Roman expeditions of Flaccus and Maternus to Ethiopia for information from the far south, and likely other sources as well.

Quite troubling is the Falkner book Bibliography: nearly half its entries refer to a Wikipedia page, and most of the remaining entries are to Internet sites. Even high school students are warned against using Wikipedia as a reference in an essay! Furthermore, the Blake book is not referenced. None of the entries of genuine sources is in alphabetical order by author: it appears Springer violated its own rules for creating a bibliography.

Considering their importance in astronomical lore, allotting the Pleiades only three paragraphs to explain its associated mythological lore seems scant. By contrast, the Blake book devotes an entire 13-page chapter to the cluster. While the strength of the Falkner book is that you can quickly find the name of a particular star, asteroid, or planetary moon and read its associated astronomical and mythological information, the Blake book provides a narrative about myths that ranges widely from eclipses and comets to astrology, cosmography and cosmology. Both books do well on the origin of the constellations.

Falkner's book contains a map of each constellation, with star names and NGC

objects listed. They derive from Starry Night Education, and appear to be screen captures. The font size of the designated deep sky objects is so small (less than 6pt) in many cases as to require a magnifying glass, and the type itself is a bit fuzzy. The outline of the constellations is fine, with the star names in red, but lacking precise coordinates, so their value for actually pointing a telescope at any of the deep sky objects is zero.

Falkner devotes a third of a page to the 'mystery' of the eclipsing variable star Epsilon Aurigae. He notes that astronomers observed the eclipse "... that started in 2009 and ran until early 2011," with a "... host of orbiting observatories." (page 32). He concludes this discussion by stating "... there is no doubt that the mystery of Epsilon Aurigae will be solved during this cycle." Clearly, this passage was in the first edition of the book, but was not updated to reflect the study of this star during the intervening nine years that largely solved the mystery! This is a true disservice to the reader. That problem page 32 also has a typo: stiking instead of striking.

While the addition of mythological tales from cultures other than the Greco-Roman world is welcome in this new edition, its flaws prevent it from being the really excellent book it had the potential to be.

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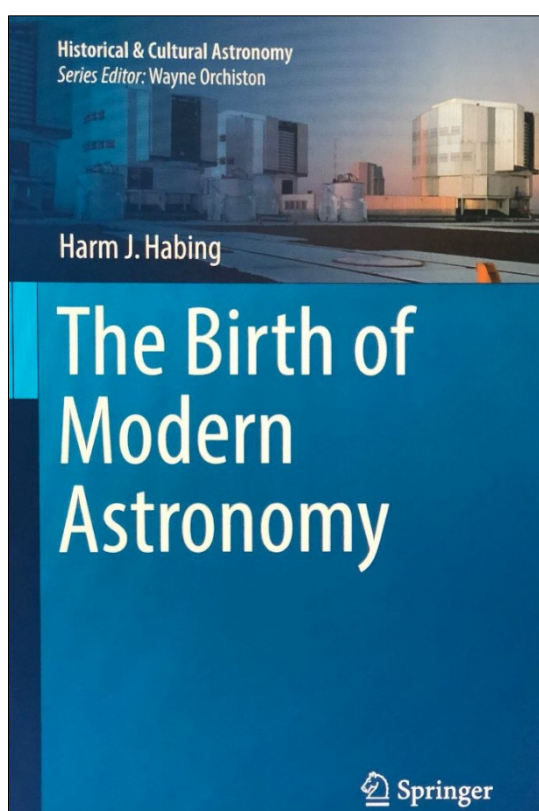
***The Birth of Modern Astronomy*, by Harm J. Habing (Cham, Springer, 2019). Pp. xlii + 565. ISBN 978-3-319-99081-1 (hardback), 156 × 234 mm, €166.39.**

In the years between 1945 and 2015, astronomy was transformed in terms, among other things, of the discipline's content, the instruments astronomers used, and the relationship between astronomy and national governments. What, however, is the best approach to writing the history of modern astronomy? How much weight should an author give to intellectual factors compared to, say, economic and social considerations? In *The Birth of Modern Astronomy*, Harm J. Habing, a well-known Dutch astronomer at the University of Leiden, centres his account almost entirely on the shifting content of astronomical ideas and theories, together with the role played therein by instruments, to make sense of the remaking of astronomy in the post-World War II era. As he tells it, this story has a triumphant conclusion because "Mankind now knows its full history" (page

555).

Habing divides the book into two chief periods and thereby makes significant claims about the history of observational astronomy and the sort of research performed in each period. Part One centres on '1945–1984: Anything Goes', and Part Two deals with '1985–2015: Long Planned Exploration'. By 'Anything Goes', he means that between 1945 and 1984, astronomical research

... was a kind of 'wild west' show: scientists (always physicists, rarely astronomers) measured celestial radiation in a wavelength band that had never before been studied by astronomers and this led to totally unexpected discoveries ... (page xxi).



Habing then argues that the most spectacular objects at every wavelength had been discovered by about 1980. In the decade that followed, these objects began to be subjected to intense, systematic study and this sort of investigation predominated in the second period after the transition years of the 1980s. The nature of astronomical research, Habing therefore contends, differed substantially in the first and second periods.

Both parts of the book are devoted mainly to sections on stars and galaxies, although there are important chapters on instrumental developments and Habing gives a balanced discussion of ground and space-based observations. *The Birth of Modern Astronomy* is

profusely illustrated with photographs of astronomical objects and plots and diagrams of various kinds, many in color. Habing also employs text boxes that discuss astronomers (e.g., Jan Oort), concepts (e.g., Kelvin-Helmholtz time), instruments and telescopes (e.g., the IRAS spacecraft) and ideas (e.g., Intuition and Logic). He employs no mathematics and does not delve into any topic in great detail, but this is hardly a book for the general reader. Instead, it appears to be aimed principally at working astronomers who would like a broad overview of the development of their discipline. Nor does Habing attempt to cover all areas of astronomy as he does not discuss planets, comets or other Solar System objects. Even so, the book is about 600 pages in length.

While the book cites numerous scientific papers, the author did not draw on the growing historical literature on modern astronomy. Habing, for example, pays close attention to early radio astronomy and pioneering astronomical research with rockets. He might therefore have engaged, for instance, with two major works on these topics, by [Sullivan \(2009\)](#) and [DeVorkin \(1993\)](#).

Habing, then, has written a work that is perhaps best read as a personal view of 70 years of astronomical history. He draws on his experiences and the knowledge gained during his astronomical career, together with careful reviews of the astronomical literature, to provide a narrative of shifts in astronomical thinking and changes in instruments. In so doing, Habing has produced an absorbing book, as well as a resource for future writers seeking to provide more rounded accounts of the remarkable emergence of modern astronomy.

References

- DeVorkin, D.H., 1993. *Science with a Vengeance: How the Military Created the U.S. Space Sciences After World War II*. New York, Springer-Verlag.
- Sullivan, W.T., 2009. *Cosmic Noise: A History of Early Radio Astronomy*. Cambridge, University of Cambridge Press.

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