

There are a couple of typos that must be mentioned: Struve measured parallax in 1837 not 1937 (page 24); and “read is a number” should be “read in a number” (page 38).

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Phenomena: Doppelmayr's Celestial Atlas, by Giles Sparrow. (Chicago, University of Chicago Press, 2022). Pp. 256. ISBN 978-0-226-82411-6 (hardback), 270 × 375 mm, US\$65.

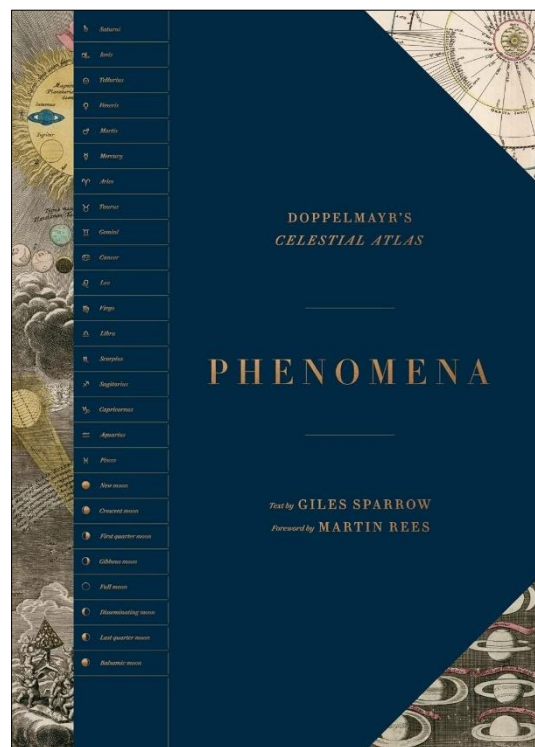
This large-format book is a re-imagining of an original star atlas from 1742. It was produced by the German astronomer and cartographer Johann Gabriel Doppelmayr (1677–1750).

It is a book largely of illustrations, and while there is much commentary by the editor, Giles Sparrow, I will concentrate here on matters—both positively and negatively—that impact the visual effect of the book. The most important point to note at the outset is the scale of the imagery: these pages, while large, are only two-thirds the size of the originals. For each plate, Sparrow rightly devotes an entire chapter. Instead of using fold-out pages, he has opted to reproduce each plate across two pages. This means the centre of each image is within the fold of the book. To solve the issue of not being able to see the plates properly, each one is then given again on the following page: the size of these images is typically 22 × 22 cm, but sometimes smaller.

Each plate in the original atlas was very busy: Doppelmayr obviously was not a fan of blank spaces. For example, a plate showing the phenomena of irregular motion, which depicts the orbits of Mercury and Venus, has six insets. Two of these plot the positions of those planets relative to the ecliptic, and act as right and left borders to the central circular diagram. Four more insets fill in the spaces around the central diagram. Sparrow reproduces each of these separately, and larger, on the two pages following the two-page spread. Each is given a caption that explains in sufficient detail what they depict.

All well and good, but the original plates also contain complex allegorical images. It is given short shrift in the description. “A central motif depicts the three planets in their respective circuits around the Sun.” (page 80).

In the case of this plate, the motif is set to the left, so that most of it is clearly visible in the two-page spread. But in many cases, it is centrally placed, and only rarely does Sparrow focus on the Classically-inspired motif by printing it separately. In some cases, it is not mentioned at all: the beautiful engraving on a plate depicting the Ephemerides of Geometric Celestial Motion (page 86) is ignored. While most classicists might be able to discern its meaning, the majority of potential readers will be left in the dark. This is most unfortunate, but it reflects the modern disdain for anything not of a strictly scientific nature. Artistic elements, such as allegorical engravings and poetry, which were obviously of



great importance in the early Modern era, are quite often dismissed. The result is an incomplete understanding of what we as historians of astronomy are supposed to be offering in the way of analysis.

Another key element of the early Modern era was Latin, which is an almost insuperable barrier to nearly everybody now, historians not excepted. Doppelmayr wrote his atlas in Latin, which makes any modern rendition of his atlas even more obligated to give us a full, or nearly full, translation. Once again, this production fails to deliver. A quick glance at the plate labelled Selenographical Table (pages 104–105) shows a huge tranch of text below two maps of the Moon (one from 1647 by Hevelius, the other 1651 by Riccioli). None

of the text is translated, and little of what is in the introductory remarks by Sparrow on pages 102–103 have any relationship to what Doppelmayer wrote.

As for Doppelmayer himself, we are given a fine biography in the 10-page Introduction. While we see him in an undated but contemporary engraving on page 16, we are not treated to another engraving of him which is much more realistic (complete with several facial warts). The image in the book shows just his face with a glimpse of one hand, but an engraving by Georg Paul Nussbiegel (1713–1786) shows most of a seated Doppelmayer and both hands. His visage looks kind and wise.

One final thought on the illustrations: many of the most stunning imagery does not come from the atlas at all! Interspersed throughout the book are dual pages that show such things as the famous Tres Riches Heures du Duc de Berry manuscript. It dates from 1416, although the book does not give any specific date for it, just labelling it fifteenth century. Another example is *Astronomia* from 1478, with its shining gold leaf depictions of the planets. While beautiful, I do not believe all of these extra illustrations are properly integrated within the concepts that Sparrow is describing. In the case of *Astronomia*, most of what is shown deals with eclipses, so it does fit nicely in the chapter on that subject. But on pages 152–153, we are presented with 32 illustrations from a fifteenth century Persian book. These two pages appear in a chapter on the Southern constellations, but all the images here are for Northern constellations.

Given this flawed but nonetheless valuable publication, Mr. Sparrow (an astronomy writer and Fellow of the RAS) was fortunate to secure an Introduction by the Astronomer Royal, Martin Rees.

A publication like this reminds us of the history and romance of the heavens, which is quite absent from modern photographic star atlases.

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***Hippolyte Fizeau: Physicist of the Light*, by James Lequeux (Paris, EDP Sciences, 2020). Pp vi + 142. ISBN 978-2-7598-2045-0 (paperback), 160 × 228 mm, €29.00.**

James Lequeux is an outstanding historian of physics whose period of specialisation is the long nineteenth century. He has written definitive biographies of François Arago (1786–1853) and Urbain Le Verrier (1811–1877). James served for 15 years as Editor-in-Chief of *Astronomy and Astrophysics*. When he began research in radio astronomy in 1954, the discipline scarcely existed in France. His doctorate was awarded in 1962 for interferometric observations of discrete radio sources. He then devoted his long professional life variously at Nançay, the Observatoire de Paris, and Marseille where he served as the Observatory Director. That background has ably served as the launchpad for his exceptional contributions to the history of physics and astronomy in post-revolutionary France.

From this vivid biography of Armand Hippolyte Louis Fizeau (1819–1896) we learn that he probably attended Arago's hugely successful lectures at the Observatory on popular astronomy. At the Collège de France, Fizeau took the course on optics taught by Henri Victor Regnault (1810–1878). Arago and Regnault were important influencers of Fizeau's future in science. In 1839 Arago gave a presentation in Paris on the new field of photography and the daguerreotype process, the novelty of which attracted a worldwide following. Young Fizeau set to immediately discovering how to improve the process by fixing the image and making it more brilliant. From 1843 Fizeau and Foucault collaborated: their first project, suggested by Arago, concerned with applying the daguerreotype to photometry.

With its 130 pages of narrative this relatively short biography of "... a pillar of French physics ..." (page 122) is accessible to a wide general readership. Lequeux knows how to package outstanding scholarship to the public. The book is neatly organised into eight chapters, all cleverly arranged so that each chapter is a self-contained outline of a major investigation. Following the first chapter on the daguerreotype, we are informed of the successive stages in Fizeau's long career: interferometry and the nature of light; the Doppler–Fizeau effect; the velocity of light and electricity; and the velocity of light in air