Christopher M. Graney

Setting Aside All Authority: Giovanni Battista Riccioli and the Science against Copernicus in the Age of Galileo. Notre Dame, IN: University of Notre Dame Press, 2015. Pp. xv + 270. Pb, \$29.

In *Setting Aside All Authority*, Christopher M. Graney presents readers with a careful analysis of the anti-Copernican arguments made by Jesuit astronomer Giovanni Battista Riccioli (1598–1671) in his *Almagestum novum*, or *New Almagest*, which was published in Bologna in 1651. Though Riccioli was one of the most important and widely-known astronomers in the Society of Jesus of the seventeenth century, he has received relatively little attention from historians of science. This oversight in the historiography of early modern ideas, Graney suggests, is due to Riccioli's criticisms of the Copernican model in his *New Almagest*. As historians have known for some time, there were many in the sixteenth and seventeenth centuries who were unconvinced by the conclusions drawn by Copernicus in his *De revolutionibus* (Nuremberg: Johannes Petreius, 1543), for reasons that were neither spurious nor irrational. This, in fact, hits close to the central claim of Graney's book: that Riccioli, and others like him, argued against the mobility of the Earth by presenting a preponderance of "scientific" evidence and claims in support of the "hybrid geocentrism" championed most prominently by the Danish astronomer Tycho Brahe (1546–1601). Moreover, Graney wants us to understand that those in the anti-Copernican camp had compelling reasons to question and ultimately to dismiss Copernican arguments about the motion of the Earth.

A professor of physics, Graney was inspired to write this book by the simple and ubiquitous question asked so often by the uninformed: how could people *not believe* something that we, today, accept as a simple fact? Graney's answer is that Riccioli and other anti-Copernicans were merely following the evidence they had to its logical conclusions. Ultimately, what lies behind Graney's claims is his eagerness to do away with the now-derelict assumption that this was really a story of "science vs. religion"—that a few brave, forward-looking proto-scientists embraced Copernican theories while others, lost in a haze of authoritarianism and scriptural tradition, turned their noses up at the very idea of a moving earth. According to Graney, however, this is really more about "science vs. science" or "religion vs. religion" (8). His argument seeks to answer that plaintive "But why...?" question, and yet his seeming surprise that Riccioli had "scientific" reasons to doubt the Copernican theory will come as an obvious commonplace for most historians of this period. Past peoples usually had strong, clear, and logical reasons for seeing the world as they did, reasons that may not hold water by modern standards but which aligned with what these

people already knew, believed, and observed. Such tends to be the nature of enduring beliefs: they make sense.

I do not wish to belittle what Graney has done here, nor why he did it. He is not an historian by training, and yet he starts with the ubiquitous “But why?” question and then answers it in a careful and methodical way. He shows that Brahe, who studied the heavens before the invention of the telescope, had strong criticisms of the Copernican model, criticisms not addressed by its proponents. Brahe spent a great deal of time wondering about heavy bodies that are dropped from towers or fired from cannons—why are they not displaced by the rapid spinning of the Earth?—as well as the problem of the fixed stars, which in the Copernican model would have to be ridiculously enormous in order to account for the absence of stellar parallax in Copernicus’s more expansive universe. Brahe’s doubts about Copernicanism were passed down to Riccioli, who made them the centerpiece of his own anti-Copernicanism many decades later.

Of Riccioli we learn relatively little, apart from the picture Graney paints of Riccioli as an experimentalist: there is a whole chapter dedicated to Riccioli’s experiments with falling bodies, a subject that has only tangential connections with the central argument of the book but which, according to Graney, helps us appreciate Riccioli’s methodology and rigor as an investigator of natural phenomena. His identity as a Jesuit is almost entirely absent, as is any suggestion that Riccioli’s ideas about the heavens may have had roots in the complex and shifting politics within the Catholic Church on the subject of the Earth’s motion. For Riccioli there may indeed have been compelling philosophical and experimental reasons to doubt the Copernican model, but undoubtedly there were institutional pressures and prohibitions at play here as well. Unfortunately, these go unremarked.

Nonetheless, there is much to admire here. Graney has written a book about difficult ideas, yet presents them in a way that should be accessible to almost anyone. Indeed, for those who want to introduce undergraduates to the minutiae of early modern physics and astronomy, Graney’s book offers an excellent resource. He also includes English translations of Francesco Ingoli’s (1578–1649) essay against the Copernican system and of Riccioli’s experiments on falling bodies, both useful resources in themselves. Ultimately, he has managed a rare feat: taking his own expertise and passion for physics and applying them to sources and contexts rarely encountered in the college classroom. At the same time, however, Graney’s identity as a scientist-turned-historian presents obstacles to the informed reader. He makes problematic conflation between terms like “scientific,” “rational,” “objective,” and “good,” something that raises red flags for historians of science. Some of his more general assertions

are equally problematic, as when he claims that “it is fair to say that [...] science backed geocentrism and religion backed heliocentrism” (145). It is a grossly inaccurate statement that he then walks back, but one is left wondering why he made it at all. These missteps detract from Graney’s efforts here, and I hope that he will continue to refine and strengthen his study of this important moment in early modern physics and astronomy.

Mark A. Waddell

Michigan State University

waddellm@msu.edu

DOI 10.1163/22141332-00304009-09