of a lunar mountain was drawn for a very different purpose, while the correct diagram, printed in the *Starry Messenger* of 1610, is omitted.

It may make an interesting and socially meaningful story to present Galileo as educated by Jesuits and later as hurling unfair charges against the particular Jesuit who precipitated Galileo's trial in 1633. Such historical yarns may continue to afford the standard portrait of Galileo, blessed by publishers of good repute, as in this case, and backed by the scientific credentials of authors like Ronan. Meanwhile those Renaissance scholars concerned with the intellectual currents of Galileo's time would do better to consult the work of J. E. Drinkwater-Bethune published in 1829 than this latest effusion in the school of Brecht and Koestler.

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John Dee. *The Mathematicall Praeface to the Elements of Geometrie of Euclid of Megara* (1570), intro. Allen G. Debus. New York: Neale Watson, Science History Publications, 1975. Pp. 33. \$8.95.

This book is a photographic reproduction of a sixteenth-century preface which sometimes appeared with the first English translation of Euclid. Before September 1550 there had been at least eleven printed editions of Euclid, of which three containing the first six books had appeared in Paris. There in the summer of that year the young John Dee "did undertake to read freely and publicly Euclid's Elements Geometricall, *Mathematice, Physice, et Pythagorice*"—on his own account lecturing to standing-room crowds. Twenty years later the first English translation was sponsored by Henry Billingsley and printed by John Daye in London; this gave John Dee the opportunity to write his long preface, a chart of the sciences, and annotations to the text.

Dee's total work has rightly attracted scholars who are attempting to explain the changing minds which brought scientific studies to the fore in seventeenth-century schools, established societies for sharing scientific observations and ideas, and made inventions and theoretical constructs which revolutionized learned views of nature and the cosmos. He was a figure whose style was attractive to the great and whose brilliance encompassed a wide range of interests, so much so that E. G. R. Taylor could write fully and accurately about him as a mathematician, whereas Frances Yates could place him squarely in the midst of a renewed Hermeticism. Between these two interpretations one must tread carefully. Peter J. French's bibliographical data (1972) give further aid in seeking a fair assessment of John Dee.

But it is misleading to present *The Praeface* as part of Dee's alchemical and astrological projects. Nearly all the over-thirty sciences outlined in the *Praeface* are based directly on Arithmetic and Geometry. Notable is *Statike* with long sections of arithmetical explanation for specific problems. (This prominence would be clear had the author's annotations to Euclid's text been included here, as they were in 1570.) Despite a disclaimer that "Dee's suggestions for a new approach to the study of nature are less prominent here than they are in the *Propaedeumata Aphoristica* in respect to astrology and in the *Monas Hieroglyphica* in respect to alchemy" (p. 23), Debus devotes many pages to just those matters. He

finds great significance in a figure of Mercury used in the first work (1558), supposes that it "closely resembled" a Pythagorean construct in the second (1564), and asserts that "it was again to be displayed on the first page" of the *Praeface* (p. 6). This is historiographical alchemy in itself. The *Praeface* title-page has at the foot of a wood-cut border a tiny figure of Mercury, but above it rise figures of Arithmetica, Geometrica, Musica and Astronomia, and above them Hipparchus, Aratus, Ptolomaeus and others performing observations with instruments under a globe of earth surmounted by Time, the sun and the moon. This wood-cut occurs at least four times previously in diverse John Day editions as early as 1559; its relation to Dee's Euclid seems fortuitous. One brief paragraph names Astrology, a science to be distinguished from false and presumptuous notions of influence; influence like the moon's on the seas and the human body is to be studied by his "Mathematically furnished" method. Another paragraph names *Archemastrie* as the *Experimentall Science* which "procedeth, with the helpe of the foresayd Artes, to the performance of complete Experiences, which of no particular Art, are hable (Formally) to be challenged" (sig. A. iii). This is the (old and new) call for testing conclusions by controlled experiment: is it alchemy?

The editor, Allen Debus, Director of the Fishbein Centre for the History of Science (University of Chicago), has introduced this edition without indicating the value of the English Euclid itself for English scholars of the sixteenth century and after. He does not discuss *The Mathematicall Praeface* in its relation to the renewed geometrical science. Unfortunately Debus has also failed to mention John Dee's long "Advertisement" concerning the last proposition of *Elements* Bk. X, his demonstration (at the end of Bk. XII) of the proportionate weight of the contents of a sphere to that of a cube, and many other significant annotations. The editor reminds us that Dee's Paris lectures are still in manuscript and have not been compared with *The Mathematicall Praeface*. Nor has it been discovered whether the English printing by John Daye was merely sponsored by Henry Billingsley, or whether it was Billingsley's translation (quite an accomplishment for a Mayor of London) or that of his own St. John's College tutor Whytehead, who had retired to the haberdasher's household—as Charles Thomas-Stanford suggested in 1926. Further difficulty has been introduced by the reduction of folio pages to a quarto format: the volume is poorly printed and difficult to read.

All in all, one should begin with Euclid's work itself and with Dee's straightforward introduction of the sciences as such. He recommends mathematics and fully outlines its usefulness. He gives many practical examples for Geometria (such as land measurement) but hopes that the reader will also advance into Euclid's abstractions or *Megethologia*: pure demonstration of "Things Mathematicall." That is quite sufficient and important.

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M. L. Righini Bonelli & William R. Shea, editors. *Reason, Experiment, and Mysticism in the Scientific Revolution*. New York: Neale Watson, 1975. Pp. vi, 320. \$20.

Bonelli and Shea have presented us with a collection of essays of rare excellence. The contributions of Debus on the chemical philosophers Fludd and van Helmont, of Guglielmo