Review
Reviewed Work(s): Le "Grand commentaire" de Theon d'Alexandrie aux Tables faciles de Ptolemee, Livre I: Histoire du texte, edition critique, traduction by Theon of Alexandria, Joseph Mogenet and Anne Tihon
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tour of the Diablo Canyon nuclear power plant, he happened to observe, just offshore, a California gray whale surfacing to shoot vapor through its blowhole. Winner, the author of a highly acclaimed book on the political meaning of technological change (*Autonomous Technology;* MIT Press, 1977), understood the whale's ironic comment to symbolize his own personal intellectual odyssey. Diablo Canyon, it seems, is adjacent to Winner's hometown, San Luis Obispo—a community that has been rent by technological change since the first of California's superhighways sliced through it in the 1950s. Through reflection on his epiphany Winner came to understand that his career as a scholar has been dominated by the desire, however unconscious, to discover how a community such as the one in which he was born could have allowed itself to be so radically transformed by the agents of "progress."

The ten essays that compose this book are all aimed at that goal, although some of them, in good philosophical fashion, approach it subterraneously, gnawing away at commonly held ideas that lay the foundation for political action (or inaction) rather than at the action itself. Eight of the ten essays have been published previously, and some of them (if I interpret internal clues correctly) were written before the author's epiphany. Inevitably this means that the collection lacks a clear line of argument or a central focus, but Winner compensates for this difficulty with his lucid prose and his uncanny ability (critically important for philosophers of technology) to illustrate abstract arguments through the most homely of examples.

The first section of the book is devoted to the proposition that artifacts have politics. Winner argues that technological systems create social worlds (the phrase he prefers is "forms of life") and that, consequently, they have political intentions as well as political repercussions. These, according to Winner, are frequently built right into their plumbing and their wiring, built right into the artifacts themselves, inherent characteristics—like the low bridges over certain Long Island parkways that were deliberately constructed to make certain that buses carrying poor people from the city would never be able to visit Jones Beach. Technological systems are not, in Winner's view, value neutral; they are always built to favor someone's interests over someone else's, and hence they are, inevitably, political.

Winner recognizes, however, that having identified technologies as political is only half the battle; we must also come to understand precisely which political implications individual systems carry, and—if we are to act effectively on that knowledge—we must understand this before they are in place. Engineers, who are simply bats about this topic, will crack a broad smile upon reading Winner's analysis.

The Whale and the Reactor is the philosopher's equivalent of superb public history. In its pages an analytically trained mind confronts some of the most pressing political issues of our day. Those of us who have been attending to those issues know, not only that they are a long way from being resolved, but also that we have trouble asking the right questions. Langdon Winner does not succeed in answering those questions (he is, after all, a philosopher and this is, after all, just a collection of essays), but then his achievement in this book goes beyond just asking the right questions. Perhaps because of the lucidity of his prose or the depth of his personal conviction, *The Whale and the Reactor* provides dozens of salient reasons why, as scholars and as citizens, we ought to be insisting that our questions get answered.

RUTH SCHWARTZ COWAN

■ Classical Antiquity

Theon of Alexandria. *Le "Grand commentaire" de Theon d'Alexandrie aux* Tables faciles *de Ptolémée, Livre I: Histoire du texte, edition critique, traduction.* Edited by **Joseph Mogenet.** Revised with commentary by **Anne Tihon.** (Studi e Testi, 315.) vii + 370 pp., figs., bibl., indexes. Vatican City: Biblioteca Apostolica Vaticana, 1985.

Theon of Alexandria (fl. 364) wrote two works on Ptolemy's *Handy Tables:* a *Lesser Commentary* giving instructions for the astronomical tables, and a *Greater Commentary* explaining the theory behind the tables and their relationship to the *Almagest.* Joseph Mogenet's project of editing the *Greater Commentary* for the first time has been continued since his death in 1980 by Anne Tihon, who made the final revision of the text and the French translation and supplied the entire commentary

for this first volume. Theon's often obscure text reaches us only through a corrupt manuscript tradition; he is fortunate in having found editors in full command of the philological and scientific demands his text makes.

Little is wanting in this volume. The introduction mostly concerns the classification of manuscripts and the history of the text. We learn that all known copies descend from one extant, defective archetype, the ninth-century *Vat. gr.* 190. This codex preserves, not the original "published" version of the commentary, but one that incorporates Theon's later revisions. Scholia show that the text passed through Syria in the fifth century (one hopes that all the scholia will be presented in a subsequent volume).

The edition and translation display both accuracy (a check of several pages revealed no errors in the collation of the Vatican manuscript) and judgment. As transmitted the text is quite corrupt, and one has always to distinguish between errors of the scribe and errors of the author. I dissent from the editor's decisions in few instances, and in just one of importance: the convoluted sentences on page 123 probably reflect Theon's revision, not a later interpolation. In general the notes explain Theon's book well, both for readers unfamiliar with Ptolemaic astronomy and for specialists mostly interested in what Theon adds to our knowledge, of which the following is only an outline.

The *Handy Tables,* of which no scientific edition exists, survive in many copies of the ninth and later centuries, with variations from copy to copy. A few papyri show that much more pronounced variations existed in the earlier centuries. Hence the degree to which any modern edition could approximate what Ptolemy wrote is in doubt. The early commentaries thus have much value as witnesses to the history of the text, none more so than Theon's *Greater Commentary,* giving as it does details of a recension regarded as Ptolemy's in a fairly conservative scholastic milieu less than two centuries after Ptolemy. (It is worth remarking that the modern hypothesis that Theon revised the *Handy Tables* rests on feeble evidence.)

Only three and a fraction of Theon's five books of commentary survive; they follow the order of topics of the *Almagest,* so that Book 1 is devoted to spherical astronomy and solar and lunar longitudes. In adapting the *Almagest* tables for these things, Ptolemy made smaller changes than elsewhere (e.g., the tables of parallax and planetary latitudes). Theon's first book consequently has the fairly easy task of explaining, for example, Ptolemy's methods of interpolation to reduce the intervals of tabulation of tables and the correction for the equation of time between the different epochs of the *Almagest* and the *Handy Tables.* It will be interesting to see what Theon made of Ptolemy's more radical innovations in the later books. The future editor of the *Handy Tables* may take some comfort in the general agreement between Theon's descriptions of the tables and the medieval manuscript tradition: difficulties arise only in the table of solar anomaly, where the numbers in some copies may have been deliberately altered. Again, worse trouble surely awaits in the parts to come.

This volume, then, is a major addition to the available texts of Greek astronomy after Ptolemy, although it will attain full usefulness only when the edition is complete. We may hope that the rest will follow with no more delay than the care shown in preparing this first volume will require.

ALEXANDER JONES

■ Middle Ages

André Goddu. *The Physics of William of Ockham.* (Studien und Texte zur Geistesgeschichte des Mittelalters, 16.) x + 243 pp., index. Leiden/Cologne: E. J. Brill, 1984. Dfl 84.

André Goddu's study, despite flaws and often intractable prose, is an important contribution to the literature on William of Ockham, O.F.M. (d. 1347). Although Ockham is generally considered a major influence upon the fourteenth-century physics that, since Pierre Duhem, we understand as contributing to the Scientific Revolution, no other scholar has attempted so ambitious a treatment of Ockham's physics as Goddu.

The author announces three goals: "(1) an analysis of Ockham's physics, (2) ascertainment of the intention and import of Ockham's doctrines through the application of philosophical methods and analysis, and (3) an interpretation of Ockham's philosophy of nature viewed, positively and