

of a deity; (b) gratitude and relief at having escaped an impending catastrophe; (c) wonder at a deity's epiphany or at a heroic exploit; (d) pride in a community's cultural advance (154). The generally rigorous investigation Garland has carried out adequately justifies his proposal of these four impulses.

Introducing New Gods is a welcome contribution full of information for understanding the subtle interplay between political motivations and theological sensibilities that underlies the religious innovations of classical Athens. While a few of Garland's claims are too speculative and weakly supported, his central theses are solidly substantiated. Readers will definitely glean many fascinating insights into the religious politics of Attic culture.

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Science and Philosophy in Classical Greece. Edited by Alan C. Bowen. New York and London: Garland, 1991. Pp. xvi + 329. \$58.00.

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The twelve papers in this volume were originally presented at a conference held at Pittsburgh in 1986 that had as its goal to bring about closer ties between the historiographies of Greek philosophy and Greek science, with particular focus on the fifth and fourth centuries BCE. Plato and Aristotle are the chief personages, as one would expect from the dominant position of their works among the extant writings on natural philosophy from this period, but the overall emphasis proves to be as much on actual scientific writings (mathematics, harmonics, astronomy, medicine, and biology) as on the philosophers' broader theories of the nature of science.

There is considerable variation in the degree to which the single papers address the contrasts that exist between modern scientific and philosophical historians' approaches. In a combative piece that opens the collection, C.H. Kahn argues energetically on behalf of the view, traditional within the history of philosophy, that the origins of Greek science are indistinguishable from the origins of Ionian philosophical speculation. Kahn singles out, unsurprisingly, the concepts of uniform, systematic nature, of mathematical proof, and of geometrical modelling in astronomy, as Ionian innovations that stamped Greek science as fundamentally distinct from either Near Eastern science or earlier Greek poetic thought. (Yet the role of these concepts in the Greek scientific traditions is easily exaggerated; for example, calendars and, later, the prediction of celestial phenomena are dominant

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topics of Greek technical astronomy right up to Ptolemy's time, as they had been of Mesopotamian astronomy.) Alexander Mourelatos surveys Plato's conception of science, highlighting Plato's belief in the unifying mathematical core of all arts and sciences and his deliberate neglect of empirical 'hard facts'. The Aristotelian division of science into theoretical, practical, and productive, and its misfit with the modern concepts of pure and applied science, are the themes of Joseph Owens' paper, while Robert Turnbull seeks to identify in both Aristotle and Plato methods of inquiry that in modern terms can be called scientific, in particular procedures for testing and correcting proposed definitions.

The remaining papers turn to specific scientific genres, beginning with mathematics. Ian Mueller argues that the varieties of mathematical 'starting points' exemplified in Euclid's *Elements* represent an identifiable process of accretion, beginning with just definitions of terms in the mathematics known to Plato, and expanding to include first the common notions or axioms of logic and quantitative reasoning (in Aristotle's time) and only later postulates specific to the subject at hand, of the sort that Euclid prefixes to (*only*) the first book of the *Elements*. D.H. Fowler sorts through a range of historically plausible and implausible reconstructions of pre-Euclidean approaches to the theory of ratio and proportion, and draws particular attention to the lack of evidence for an arithmetical concept of fractions in earlier Greek mathematics. A contrasting view of the same question is given by Wilbur Knorr in the course of a broader consideration (acknowledging a debt to E.D. Hirsch) of the possibility and utility of discussing authorial meaning in ancient mathematical texts.

Music theory has still to take its rightful place in the historiography of early science, so the inclusion of two papers on this topic here is welcome. A.C. Bowen develops an interpretation of the cryptic preface to the Euclidean *Sectionis canonis*, which vindicates the author's logical consistency (though to be sure not his expository ability) and raises doubts about his allegiance to a Pythagorean harmonic tradition that, as Bowen demonstrates, is inadequately defined by our sources. Andrew Barker exposes Aristoxenus' *Harmonica elementa* as an attempt to put into practice the kind of science prescribed in the *Posterior Analytics*, interpreting Aristotle's plan as a program of research, and not just as a scheme of exposition and teaching. This is a fresh example of how specific scientific treatises can be used to illuminate controverted aspects of ancient philosophy of science. J.L. Berggren contributes a lucid and valuable paper on the history of 'spherics', the astronomically-motivated geometry of configurations of stationary and revolving circular arcs on the surface of a sphere. G.E.R. Lloyd probes the Hippocratic texts *On the Art*, *On Regimen in Acute Diseases*, and *On Ancient Medicine* for attempts to define and defend a medical *technē*. And lastly, James Lennox finds an organizing principle and purpose for Aristotle's *Historia animalium* intermediate between the collection of data and the scientific demonstration of causes, namely, in the identification of the largest groupings of animal kinds that share certain features; this leads to the correlation of coextensive features and thence to their causal explanation.

The published papers suggest that the conference from which they derived was at least partly successful in bridging the histories of ancient philosophy and science, although the conference's focus on the fifth and fourth centuries gave some advantage to the philosophers over the scientists. The period antedates the maturity—or at least the best documented stages—of certain important scientific traditions, especially those with a mathematical component such as astronomy, geography, and optics; whereas early biology and medicine have acquired a place within the field of ancient philosophy. Of the dozen authors, just three are primarily historians of science, and their topics are all mathematical. It is interesting to imagine what the balance would be in an analogous conference devoted to the time of Ptolemy and Galen!

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Socratic Questions: New Essays on the Philosophy of Socrates and Its Significance. Edited by Barry S. Gower and Michael C. Stokes. London: Routledge, 1992. Pp. vii + 228. \$69.95.

David H. Calhoun

It is perhaps a truism that the provenance of a book, like that of an artwork, reveals a great deal about its character. This is certainly the case with *Socratic Questions*, an anthology of articles on Socratic philosophy derived from a lecture series inaugurating a Greek philosophy degree program at the University of Durham, the home institution of the collection's two editors, Barry S. Gower and Michael C. Stokes.

The revised essays are intended to reach 'the very large number of people within and outside the universities who without necessarily knowing any Greek take more than passing interest in the seminal and enigmatic figure of Socrates' (vii). Thus the target audience includes the full range of interested nonspecialists and specialists in philosophy, ancient philosophy, and even the philosophy of Socrates. To address such a diverse audience is a difficult order, which in the case of *Socratic Questions* leads to a final product that is exasperatingly ill-focused, uneven, and imbalanced. The editors foresee this objection and try to defuse it (vii), though I suspect many readers will find their demurrer unconvincing.

Gower's introduction to the volume, for example, attempts to situate Socrates