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***Aristarchus of Samos.* By Sir T. L. Heath, K.C.B., F.R.S. pp. vi. 425. Clarendon Press, 1913. 18s.**

J. Gow

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Pausanias, as the sculptors of the pediments of the Temple of Zeus at Olympia in face of the great discrepancy between that work and what we otherwise know of these sculptors, simply because 'Paionios came from a land of painters' and paint was obviously relied upon in these pediments!

We note two misprints—Plontos on p. xiii and γανῶσις for γάνωσις on p. 181.

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Aristarchus of Samos. By Sir T. L. HEATH, K.C.B., F.R.S. pp. vi. 425. Clarendon Press, 1913. 18s.

ARISTARCHUS of Samos was an astronomer and mathematician, who may be dated approximately 310-230 B.C. The only work of his now extant is a little treatise on *the Sizes and Distances of the Sun and Moon*, which appears to have been written early in his career, for it is founded on false hypotheses, which he seems to have afterwards corrected. It consists of eighteen propositions, treated in the Euclidean manner, though a figure is not always necessary. *Prop. 9* is a fair specimen: 'The diameter (*i.e.* the real diameter) of the sun is greater than eighteen times, but less than twenty times, the diameter of the moon.' Sir Thomas Heath has edited the Greek text, translated it and furnished it with notes in the magnificent style with which his editions of Archimedes, Diophantus and other Greek mathematicians have now made us familiar. He does not, however, pretend that this treatise of Aristarchus, though interesting to the mathematician, is of any astronomical importance, since, as above stated, it is founded on two false postulates, *viz.*: that the apparent (not the real) diameters of the sun and moon are always the same with themselves and with one another, and that the apparent diameter of the moon is 2° , a very gross exaggeration. (Archimedes, at a later date, attributes to Aristarchus the discovery that the apparent diameter of the moon is only

$\frac{1}{2}^\circ$.) But though the treatise is not important, Aristarchus is, for he appears to have been the first propounder of the heliocentric theory of the universe, now attributed to Copernicus. This is the matter which chiefly interests Sir Thomas Heath, and has caused him to investigate the whole history of Greek astronomy down to Aristarchus' time. Two-thirds of the book are occupied with this history, and of these two-thirds, a very large portion is devoted to Plato (56 pp.) and Aristotle (32 pp.) Students of the *Timæus* and the *De Cælo* must not miss our author's careful and original discussion of the various theories and fancies put forward in these works, and of the explanations of them given by the commentators. On the whole, neither Plato nor Aristotle appears to have made any valuable contribution to astronomical science. The salient points in the history of astronomical theory before Hipparchus are that the Pythagoreans, or Pythagoras himself, discovered that the earth was spherical, and suggested that it revolved round a central fire (not the sun): that Heracleides Ponticus, about 350 B.C., discovered that Venus and Mercury revolved round the sun, and that the earth rotates on its axis, and that Aristarchus suggested that the earth and other planets revolved round the sun (of course in *circular* orbits). The rest of the history is a maze of guesses and isolated observations leading up to, or away from, these bits of solid knowledge. To the student of Greek literature, other than philosophical, Sir T. Heath has not much to say. The astronomy of the farmer and the sailor and the *ἱερομνήμων*, which is also the astronomy of the poet and the historian, is not his topic, and he alludes to it only incidentally. He is concerned with theories of the universe, and of these, within his period, he has given by far the fullest account that has yet appeared in any language. The book is not easy reading, but it is at least as easy as it can be made, and there is some stimulus to the energies in the thought that this is the recreation of a man who, in his working hours, is engaged in great affairs.

J. Gow.