

penetrate armour'. In this he may well be right; but if so, the distance is beyond recovery, except by intuition.

Actually Hammond does venture his own estimate; he settles upon 150 metres as 'a reasonable compromise' between Vegetius' prescription of 600 feet (= 178 metres), and Kromayer's figure of 100 metres. The former, according to Hammond, is 'the only piece of ancient evidence which concerns archery in battle'. What of the latter? Its origin is worth lingering over. Delbrück had addressed himself to the problem (*Geschichte der Kriegskunst* i³ 60 and n. 1), collecting references to sundry modern African bowshots ('far beyond 200 metres,' '120 metres,' and '150–180 paces'), to two ancient ones (Mithridates, one stade; Anaxagoras, 282 fathoms), and to two modern pronouncements ('600 feet,' '400 paces'), and commenting on the superiority of the Asiatic bow to the African wooden bow. This evidence, by some inscrutable mathematical operation, had led him to '100–150' paces as the effective range of the Persian bow. (Hammond, no doubt incredulous at such cavalier use of the evidence, converts this into 'more than 100 metres.') When Johannes Kromayer raised the same question (*Abh. d. Sächs. Akad.* [Phil.-Hist.] xxxiv 5 [1921] 10 and n. 2) he contented himself with citing Delbrück, selecting two of his *testimonia* (120 metres for the moderns, Mithridates for the ancients). By offering a substantial discount, he postulated 100 metres as the extreme effective Persian range. This is the authoritative figure which Hammond uses to dilute 'the only piece of ancient evidence.'

Professor Hammond has ample precedent for setting the Persian range at any arbitrary figure he chooses; or he is at liberty to picture Datis, like the rebel leader at Bunker Hill, commanding his troops, 'Don't shoot until you see the whites of their eyes'. But in either event, he should not treat the ancient evidence for the bowshot as if it were relevant to his discussion.

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Anaximander and Dr Dicks

I am sorry to have annoyed Dr Dicks by criticising two articles of his in one of my footnotes (D. R. Dicks, 'On Anaximander's figures', *JHS* lxxxix [1969] 120: the offending footnote is in *JHS* lxxxviii [1968] 120 n. 44, referring to Dicks, *CQ* n.s. ix [1959] 294–309, especially 299 and 301, and *JHS* lxxxvi [1966] 26–40, especially 30 and 36). I limit myself to the four specific points raised, in the hope that Dr Dicks may one day be kind enough to substantiate his more general criticisms.

Pseudo-Galen

Five separate doxographical sources attribute to Anaxagoras the statement that the sun is larger, or many times larger, than the Peloponnese. Galen, or

pseudo-Galen, notes that Anaxagoras' sun is larger than the earth. I suggested that this second formula, although it may not misrepresent the substance of Anaxagoras' theory, was 'probably in Galen simply a random error, arising from the fact that the preceding sentence, on Anaximander, twice makes a comparison of sun and earth' (*JHS* lxxxviii [1968] 124 n. 62). It is hard to know what motivates Dr Dicks to omit my reasoning and to stigmatise my conclusion as 'curious' and 'eccentric'.

Tannery

Tannery offered three pairs of figures for the distances of the inner and outer diameters of the wheels of stars, moon and sun in Anaximander's universe: 9 and 10, 18 and 19, 27 and 28 (*Science hellène*² 94–5). Of these, the figures 19, 27 and 28 are given in doxographical sources. The remaining figures, 9, 10 and 18, are conjectural. If one wishes to criticise Tannery's reconstruction, it makes little sense to isolate one half only of this series. It makes still less sense to isolate the half for which there is less evidence: 9, 18 and 27. But only by doing so is Dr Dicks able to justify the sentence which I quoted from him: 'only 27 in the series has any textual authority'.

I am sorry if the manner in which I quoted this sentence made it appear that Dr Dicks had never even heard of the other two figures which appear in the sources, 19 and 28. But Dr Dicks is wrong to criticise Tannery as though he had generated a *single* series of numbers from the *one* figure, 27, which would have been a very dubious procedure. Tannery produced a *double* series of numbers from the *three* figures, 19, 27 and 28. This is a very different argument, which has won the support of several scholars, and which has recently fallen into disfavour only as the result of a number of misunderstandings which I have tried to dispel in an article in the *Classical Quarterly* (n.s. xvii [1967] 423–32).

Simplicius

In these, and in other doxographical passages, statements are attributed to Anaximander about the sizes and distances of earth, stars, moon and sun. In Simplicius mention of *μεγέθη και ἀποστήματα* is restricted, albeit loosely, to *τὰ πλανώμενα*: that the restriction in the context is a loose one anyone may verify who cares to turn up the original passage (*de caelo* 470.29 ff = DK 12A19 in part). Because I suggest that Simplicius here may misrepresent Eudemus, whom Simplicius refers to at this point, Dr Dicks attributes to me the principle that 'Simplicius' words may be altered, excised, or transposed at will'. In fact, my interpretation of this passage in Simplicius is no different from that implied by Zeller in his great work (*Philosophie der Griechen*⁶ i 1, 298–301) and in part by Tannery (*Science hellène*² 91).

Theophrastus

Finally, Dr Dicks objects to my quotation of two

really remarkable sentences: '... it can confidently be said that the chances that the original works of the earlier Pre-Socratics were still readily available to his (sc. Aristotle's) pupils, such as Theophrastus and Eudemos... are extremely small', and 'There is, therefore, no justification whatsoever for supposing that very late commentators, such as Proclus (5th century A.D.) and Simplicius (6th century A.D.), can possibly possess more authentic information about the Pre-Socratics than the earlier epitomators and excerptors...'.¹

It was these two sentences which occasioned my footnote: for here an important principle is at stake. Dr Dicks now explains that his remarks were intended to be limited to Thales, Anaximander and Anaximenes. The reader could not have guessed that this was so: for the very paragraphs from which Dr Dicks' judgment is quoted include references to Xenophanes and (indirectly) Heraclitus, while the paragraph immediately following the second sentence which I quoted (*CQ* n.s. ix [1959] 301) lists 'Thales, Pythagoras, Heraclitus, and Empedocles' as 'these early figures'. Nonetheless, even if we restrict ourselves to Dr Dicks' chosen trio, my point remains, that there is evidence that Anaximander's work was known both to Apollodorus and to Theophrastus. (N.B. 'Known to': for, as I remarked in my note, 'I would not claim to distinguish between "available" and "readily available" in the case of Theophrastus and Eudemos'.) Dr Dicks ignores this simple refutation of both his earlier and his emended thesis.

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A Note on a Rattling Attic Black Glaze Cup in Dublin

(PLATES IV-V)

In the Classical Museum of University College, Dublin, there is a small black glaze Attic cup (inv. no. V3020; provenance unknown) belonging to the Vienna-Cup group¹ (PLATE IV, 1-4). It is 7.7 cm high and 13.8 cm in diameter (20 cm at the handles). It has been broken and repaired at some time and parts of the handles are modern, and some of the lip is restored (apparent on PLATE IV, 3 and 4). It might be as well to point out that the foot is whole and has never been broken. The cup is almost wholly black, except for the insides of the handles, the outside edge and resting surface of the foot, and the centre of the foot which are all reserved (PLATE IV, 1 and 2). It looks quite normal, but if one picks it up and tilts it, one hears a rattling, almost a ringing, sound from the foot which is not only hollow, but contains three small clay pellets, as revealed by an X-ray examination (PLATE IV, 3 and 4). There is no vent hole.

¹ H. Bloesch, *Formen attischer Schalen von Exekias bis zum Ende des strengen Stils* (Bern/Bümpliz, 1940), 139-41, pls 38-9.

The cup is to be dated to some time within the period 475-450 B.C.² I do not know of any parallels among the Vienna-Cup group, but there is another black glaze cup in Leningrad³ (Hermitage B 721; PLATE V, 1) which belongs to the Kalliades-Brygos group⁴ and which has a hollow foot and rattling pellets just like those on the Dublin cup. The Kalliades-Brygos group is generally dated to between 500 and 470 B.C.⁵ This would mean that the Leningrad cup is probably earlier than the Dublin example, but they both still belong to the first half of the fifth century. The relevance to the discussion of a fragmentary foot in Toronto⁶ (Royal Ontario Museum 923.13.11) from a cup of Cup-Type C7 painted by Skythes⁸ c. 500 B.C., is debatable. In the case of this foot there is a hollow channel around the edge as in the Dublin and Leningrad examples, but it differs from them in that there was originally a small rectangular hole in it, the left side of which is preserved (PLATE V, 2, far left). The hole was apparently never closed, so that it is unlikely that the hollow held pellets as did the others, or if it did, there might have been a temporary stopper of, say, unbaked clay. The hole is a puzzle, for it seems too big to be merely a vent hole.⁹

The cups discussed so far belong to the early fifth century B.C. and, in the cases of the Dublin and Leningrad pieces, have rattling pellets in hollow feet. Another type of rattling vase occurs a century later, but these fourth century examples have rattling pellets inside hollow *rims*. In the Kocabaş Collection in Istanbul there is a mid-fourth century Attic cup-kantharos¹⁰ (inv. no. 1911: acquired on the Istanbul market, provenance unknown) 7.5 cm high and 7.5 cm in diameter, with a moulded lip which has

² *ibid.* Zeittafel, p. 145.

³ Information from Mr Shefton who also provided the photograph reproduced in PLATE V, 1.

⁴ Bloesch, *op. cit.*, 134-6, pls 1-5.

⁵ *ibid.* Zeittafel, p. 145.

⁶ Information from Mrs Leipen and Miss Harle who also provided the photograph reproduced in PLATE V, 2. The rest of the cup is said by J. W. Graham (see n. 8) to be in the Villa Giulia Museum.

⁷ Bloesch, *op. cit.*, 111-36, pls 32-6.

⁸ J. W. Graham, 'Scythes Re-united,' *Royal Ontario Museum Bulletin* xxv (June 1957) 14-16, pl. 6 a-c. Cf. J. D. Beazley, *ARV*² 83, no. 8. The foot is now published, in profile, by J. V. Noble in 'Some Trick Greek Vases,' *Proc. Amer. Phil. Soc.* cxii (1968) 372, fig. 4.

⁹ One is not wholly persuaded by Noble's explanation of the purpose of this hole, *loc. cit.*, '... a hollow foot which could be filled with wine. A small rectangular hole in the foot which was used to fill the secret cavity was held closed by the host's thumb and when he passed it to his guest the wine would trickle over him.' Indeed, Professor Bloesch points out to me that the Dublin cup is proof that this could not be so.

¹⁰ Information from Dr Firath.