

this? That is a separate issue, and (since scholars for their part have failed to perceive the invention) a sensitive one. The general issue of a given audience's knowledge of the myths in Greek tragedy is still too controversial for a decisive answer to be possible here, though the manner in which the present play's prologue allusively refers to Eurystheus (35), Ceyx (40) and Omphale (69 f.) without naming them, suggests considerable awareness. The fact that in the case of the lying tales of the *Electra* and *Philoctetes* (above p. 480) the audience is clearly told that the narrators intend a deception might be taken as implying that some warning is a prerequisite, and for reasons of dramatic technique such an explicit warning is out of the question in the *Trachiniae*.²¹ On the other hand, given that, in one scholar's words, 'Iole ist von Anfang an und stets nur der Anlass für Herakles' Tod',²² that Iole featured in Creophylus of Samos' *Oechalias Halosis*,²³ and that Iole and the sack of her city are immediately followed by Heracles' reception on Olympus as early as [Hes.] fr. 229 MW,²⁴ it does not seem impossible (even if it cannot be proved) that several of the audience would be surprised, and even suspicious, at Iole's convenient absence from Lichas' narrative.

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²¹ But Heracles' liaison with Omphale has already been hinted at (69 f.), and this *might* have led the audience to expect a like mention of his passion for Iole.

²² Burkert [sup. cit. n. 13], p. 84. According to *Σ Od.* 21. 22 (cf. Eustath. 1899. 38) Homer was unaware of Heracles' passion for Iole, an Aristarchean dogma which we are not obliged to accept (cf. Severyns, *Le Cycle Épique dans l'école d'Aristarque* [1928], p. 192).

²³ Fr. 1 of this poem is usually interpreted as an address by Heracles to Iole, and Callimachus epigr. 6 Pf. is a more explicit testimony to her importance in that epic.

²⁴ A forthcoming study of the Hesiodic *Catalogue of Women* by M. L. West confirms that the final stages of this work are the product of an *Attic* poet.

THUCYDIDES AND THE PLAGUE: A FURTHER FOOTNOTE

In their paper about the Plague of Athens¹ Dr Wylie and Mr Stubbs have made so many appreciative comments on our own article on the same subject² that it may seem ungrateful to find fault with their conclusions in any way. Since, however, silence on our part might be taken to indicate that they had fully converted us to their point of view, we feel obliged to offer the following observations.

The authors put forward two new suggestions for the identity of the Plague: leptospirosis and tularaemia. We venture to oppose the suggestion that the Plague was leptospirosis with some trepidation, having in mind that Dr Wylie has an international reputation for his excellent work on the pathogenesis of this disease.³ We feel, however, that there are serious difficulties in accepting this diagnosis.

First, there is the fact (mentioned by W. and S.) that jaundice is a prominent symptom in many cases of leptospirosis.⁴ Thucydides does not mention anything that could plausibly be construed as meaning that sufferers from the Plague were often jaundiced. The fact that death from leptospirosis is much more often due to renal than

¹ J. A. H. Wylie and H. W. Stubbs, 'The Plague of Athens 430–428 B.C.: Epidemic and Epizootic', *CQ* n.s. 33 (1983), 6–11, henceforth W. and S. We assume that the exclusion by the title of the later brief recurrence is without significance.

² 'Thucydides and the Plague of Athens', *CQ* n.s. 29 (1979), 282–300.

³ 'Relative importance of the renal and hepatic lesions in experimental leptospirosis icterohaemorrhagica', *J. Path. Bact.* 58 (1946), 351–65.

⁴ In the U.K. about half of the diagnosed leptospiral infections produce jaundice. Topley and Wilson's *Principles of Bacteriology, Virology and Immunity*, 6th edition (1975), Vol. 2, p. 2230.

to hepatic failure (an important point discovered by Wylie; see n. 3) does not seem to us to mitigate this difficulty. Regardless of whether the victim recovers or dies, a high proportion of cases do show jaundice.

Second, although many types of *Leptospira* have a wide host range none seem to be natural parasites of birds. The fact mentioned by W. and S. that hens and their eggs can be *experimentally* infected does not adequately dispose of this difficulty, since Thucydides clearly indicates that birds were affected.

Third, there is a serious problem about the mode of transmission of the Plague of Athens as compared with leptospirosis. It emerges very clearly from Thucydides' account that the Plague was transmitted from person to person. His account does not suggest that it was often, if ever, transmitted in any other way. Now at the present day leptospirosis is usually transmitted by contact with the urine of infected animals, among which the brown rat, a symptomless carrier of the infection, is particularly important. Infected human beings, like other animals, excrete *Leptospirae* in their urine, and transmission by contact with infected human urine is a theoretical possibility. No doubt, by modern civilized standards, the ancient Greeks were none too particular about the disposal of their excreta and, in the crowded conditions of Athens and its environs at the time of the Plague, sewage disposal must have been haphazard indeed. Even so, if infected human urine had been the source of infection, it is doubtful if Thucydides or his contemporaries could have concluded that person-to-person transmission was taking place.

The other candidate put forward by W. and S. for identification as the Plague of Athens is tularaemia. The first difficulty in this diagnosis is one acknowledged by W. and S. themselves. It is that if the Plague was tularaemia, the case mortality must have changed dramatically in the intervening centuries. The disease was first recognised in ground squirrels in 1912 in Tulare County, California; hence the name. Human cases were first reported not long afterwards. By 1938, Olson⁵ was able to report on 8022 human infections diagnosed between 1924 and 1937. Among these, there were 358 deaths: less than 5 per cent. (All these cases occurred in the pre-antibiotic era and it is unlikely that the patients received any treatment that would have markedly reduced the fatality rate.) In contrast the death-rate of Thucydides' Plague seems to have been more than 25 per cent. It must, however, be admitted that diagnostic refinements available by 1938 meant that many patients tested were only mildly ill or even asymptomatic. Increasing sophistication in diagnosis often reveals much lower morbidity and mortality rates than previously supposed. It would in any case not have been possible to identify the Plague as tularaemia in its modern form any more than with measles and other possible candidates which we mentioned, the case-mortality of which has greatly diminished.

There are two other serious difficulties: these concern the host range of the infecting organism and the mode of transmission of the disease. Many species of animals (including birds) can be infected by *Francisella tularensis*, but others are practically immune and these include the dog.⁶ Thucydides (2. 50. 2) stated that animal infections were particularly clearly observed among dogs.

Furthermore, person-to-person transmission of tularaemia seldom if ever occurs. Human infections are transmitted by arthropod vectors from infected rodents or by bites and scratches from infected animals.

The fact that two new candidates are proposed for identification with the Plague

⁵ B. J. Olson, *Bull. Off. Int. Hyg.* publ. 30 (1938), 2808, quoted by G. S. Wilson and A. A. Miles in Topley & Wilson, *op. cit.* in n. 4.

⁶ G. Smith and G. Wilson in Topley & Wilson, 7th edition (1983), Vol. 2, p. 364.

presumably indicates that the authors themselves do not feel that an overwhelming case can be made for either of them. While we do not think that it is particularly likely that either leptospirosis or tularaemia is the modern equivalent of the Plague, we find these suggestions a good deal more plausible than most of those put forward in the past.

We agree with W. and S. in stressing the importance of the fact that the Plague of Athens was a disease that affected not only man but also other animals. Thucydides made it quite clear (2. 50) that this was a particular characteristic of the Plague that distinguished it from the familiar diseases. If he was wrong about a point to which he drew particular attention, then no part of his account can be trusted, and it is pointless to examine it in detail or to draw any conclusions from it. On the much more likely assumption that his account is in the main reliable, several of the diagnoses that have been widely supported in the past, such as smallpox (which affects man alone) or epidemic typhus (which affects only man and the body-louse), can be confidently ruled out. It is among the diseases known to infect not only man but also other animals that one must search for the modern equivalent of the Plague of Athens if one is determined to attach to it the name of a modern disease. But we are still inclined to think that those who wish to do so are pursuing a will-o'-the-wisp.

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A FRAGMENT OF ANAXAGORAS IN THUCYDIDES?

E. C. Kopff's suggestion that a fragment of Philistos has intruded into Thucydides 7. 42. 3 has not gone unnoticed.¹ A point at issue is frequency of interpolation in Thucydides. K. J. Dover states:² 'There are indeed interpolated passages in Thucydides'. He adduces only 3. 17 and 3. 84. There may be a third. At 2. 77. 4 in his narrative of the siege of Plataia, Thucydides writes of the Spartan attempt to burn the town:

καὶ ἐγένετο φλόξ τοσαύτη ὅσην οὐδεὶς πω ἔς γε ἐκείνον τὸν χρόνον χειροποίητον εἶδεν. ἥδη γὰρ ἐν ὄρεσιν ὕλη τριφθεῖσα ὑπ' ἀνέμων πρὸς αὐτὴν ἀπὸ ταυτομάτου πῦρ καὶ φλόγα ἀπ' αὐτοῦ ἀνῆκεν. τοῦτο δὲ μέγα τε ἦν κτλ.

I should seclude ἥδη... ἀνῆκεν. χειροποίητον makes the gloss redundant. Its sentiment too is suspect. Shilleto well observed *ad loc.*: 'The truth of this statement may be doubted'. The narrative flows untroubled after excision. τοῦτο as before (*KG* 1. 204; 2. 36) refers to πῦρ (77. 2, 3): 'This was a large fire and came very close to destroying the Plataians'. Because the statement is untrue, I conclude that [Thucydides'] source was a document, not autopsy. Commentators aptly cite Lucretius 1. 897–900:

'At saepe in magnis fit montibus' inquis 'ut altis
arboribus vicina cacumina summa terantur
inter se, validis facere id cogentibus austris,
donec flammai fulserunt flore coorto.'

No Thucydidean commentator whom I recall adds that Lucretius here summarizes Anaxagoras (Bailey on Lucret. 1. 830 cf. Anaxag. 59 T 44 D–K?). The similarity between Lucretius' Latin and [Thucydides'] Greek merits attention. Notice especially

¹ E. C. Kopff, *GRBS* 17 (1976), 23–30; M. W. Dickie, *GRBS* 17 (1976), 217–19; E. C. Kopff, *GRBS* 17 (1976), 220–21; K. J. Dover, *A Historical Commentary on Thucydides*, Vol. V, *Book VIII* (Oxford, 1981), 425 n. 1; id. *PRIA* C 8 (1981), 231–8.

² *PRIA* 81 C 8 (1981), 234.