

***P. Oxy. 4527* and the Antonine plague in Egypt: death or flight?**

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P. Schubert has recently published, as *P. Oxy. LXVI 4527*, a classic illustration of how even a very fragmentary document can make a significant contribution to an important historical question. It is a piece cut from a taxation account in order to be re-used for a letter on the other side (*P. Oxy. 4544*). Although the account side preserves only the ends of some lines of one column and a few traces from the next, they are of real interest for the size of the numbers. The most striking of these is the figure of just less than 814,863 artabas of wheat. The heading a few lines earlier reads Ἡρακλείδου μερίδος (the Herakleides division of the Arsinoite nome) and the figure seems to be ὑπὲρ φόρων ("for the taxes") of the 25th year of Commodus (A.D. 184/5), at some point not long after which the account was written.¹ I wish to explore the possible significance of this papyrus scrap for the question of the effects on Egypt's agricultural economy of the plague that struck Egypt and other parts of the Roman empire in the 160s and 170s.

The editor reasonably compares to the large amount of wheat mentioned here the total figure for grain taxes in the Oxyrhynchite nome in the 4th c., preserved in *SB XIV 12208* (as corrected in *ZPE 37* [1980] 263-64), namely 321,278 artabas of wheat. Given that the Herakleides division of the Arsinoite nome and the entire Oxyrhynchite nome were roughly comparable in size, this large discrepancy in tax revenues (a ratio of about 2.5 : 1) calls for an explanation. The editor offers three possibilities: (1) the Arsinoite was more intensively cultivated than the Oxyrhynchite; (2) "conditions of management could have deteriorated" in the period between Commodus and the 4th c.; (3) differences between the harvests of the years in question could account for the gap. Of these, the third may be rejected, because 4th-c. tax-rates were fixed and there is no evidence for abatements in bad years. The other two possibilities raise more complicated issues, but for neither do we have sufficient evidence to assess the hypothesis. A closer look, however, suggests a relatively straightforward explanation.

The Oxyrhynchite total figure cited above derives from the application of fairly simple tax rates to two categories of land. The 163,677 arouras of private arable land were taxed at 1 artaba per aroura, plus $\frac{1}{7}$ surcharge. The 38,857 arouras of public land were taxed at 3 artabas per aroura, plus the same $\frac{1}{7}$ surcharge. Total arable land was thus 202,534 arouras, which may be estimated at about 72% of the total land area of the nome.² For the Herakleides division, we do not have an accurate computation of the area, but Schubert cites D. Rathbone's estimate that the total area of the Arsinoite nome was about 435,420 arouras at its peak in the Ptolemaic period but probably little changed under Roman rule, and we may reasonably suppose that there had been no significant decline in the 180s.³ He further suggests that the Herakleides division amounted to about half of the Arsinoite nome, an estimate that seems to me a little on the high side but cannot be verified or disproved, as we know neither the precise boundaries nor the exact area under cultivation. If it were accurate, the Herakleides division would have an area of 217,710 arouras. In any case, it is not likely to be wrong by very much. This of course is a total figure. If the proportion of arable in the Oxyrhynchite nome, 72%, is applied to that figure, it brings us to 156,751 arouras of arable land for the Herakleides

1 Apollonios is referred to as the former *strategos* in l.4; his term of office seems to have roughly coincided with the 25th year, and l.15 refers to the taxes collected in Mesore. The date is thus probably sometime in year 26 (A.D. 185/6).

2 See Bagnall, *Egypt in late antiquity* (Princeton 1993) 335, for the calculation.

3 At *ibid.* 335 I gave a considerably lower figure (326,700 arouras) as a speculation for the 4th c.; but it should be remembered that much land had gone out of cultivation between the reigns of Commodus and Diocletian.