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**Bullion Purchases and Landholding
in the Fourth Century**

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Bullion Purchases and Landholding in the Fourth Century

IN a recent article in this journal ⁽¹⁾, John Rea makes a major contribution to the study of governmental exactions of gold and silver bullion in early fourth century Egypt. The Columbia papyrus collection contains three documents from Karanis, belonging to the archive of Aurelius Isidoros, which contain receipts for gold and silver bullion; these will appear in *Columbia Papyri* VII as *P. Col.* 138-140 ⁽²⁾. Their new evidence and a reexamination of the question lead me to the conclusion that greater certainty and precision are now possible in defining the nature of these collections and their relationship to landholding.

Before setting forth the evidence of the new papyri, it will be useful to summarize briefly the history of the question. Two principal hypotheses have been emitted with respect to these collections of gold and silver bullion (*χρυσός*, *ἄσημον*). The first, put forward by Pierre Jouguet on the basis of *P. Thead.* 33 (which contains receipts given by *epimeletai* to a *tesserarius* for gold), suggests that these collections are a form of the *aurum tironicum* attested later in the fourth century. They are in this case a tax. ⁽³⁾ This view was hesitantly and not very consistently backed by Boak and Youtie in their introductions to *P. Cair. Isid.* 127 and 69 ⁽⁴⁾. More recently, T. C. Skeat suggested in

(1) *Cd'E* 49 (1974) 164-69. I am indebted to Dr. Rea for reading an earlier version of the first part of this article. I also want to thank K. A. Worp for reading the whole of the article and offering useful criticism.

(2) I am currently preparing this volume for publication from transcriptions made by Naphtali Lewis, to whom I am indebted for the opportunity to use them.

(3) The editors of *P. Mert.* I 31 were dubious about Jouguet's hypothesis, without themselves offering any comprehensive alternative. On the *aurum tironicum* see J. LALLEMAND, *L'administration civile de l'Égypte* (Bruxelles 1964) 205 with bibliography, especially J. KARYANNOPOULOS, *Das Finanzwesen des frühbyzantinischen Staates* (München 1958) 119-23; on p. 121, Karyannopoulos concludes that the gold of *P. Thead.* 33 was for *aurum tironicum*, on the specious grounds that the collector, the *tesserarius*, is a military official, which is certainly not the case.

(4) In *P. Cair. Isid.* 127 introd. (p. 400), they discount the possibility of identifying the denunciation in that document with the petitions nos. 69 and 70 on the grounds

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Reference	Year	Julian	Month	Julian	Collector	Payer	Paid
<i>P. Mert.</i> 31.1-6	(16 = 4)	307	13 a.Kal.Ian.	20 Dec.	Aur. Sarapammon and Potammon, <i>epimeletes</i>	Heras s. of Ptolemaios	2 oz. silver
id. 7-13	same	same	9 a.Kal.Ian.	24 Dec.	same	same	6 gr. silver
id. 14-20	same	same	same	same	Aur. Isias, <i>epimeletes</i>	Taesis d. of Kopres	12 gr. silver
<i>P. Col.</i> 138.1-10	same	same	same	same	Sarapammon/Potammon	Isidoros s. of	4 oz. 6 gr.
id. 11-17	(308)		10 a.Kal.Mai.	22 Apr.	Aur. Eudaimon, <i>epimeletes</i>	Ptolemaios	silver
id. 18-25	16 = 4	308	6 a.Kal.Mai.	26 Apr.	Aur. Heron, <i>epimeletes</i>	same	6 1/2 gr. gold
id. 26-34	same	same	5 a.Kal.Mai.	27 Apr.	same	same	4 1/8 gr. gold
id. 35-43	same	same	2 a.Kal.Mai.	30 Apr.	Aur. Euporos, <i>epimeletes</i>	Heras and Taesis	4 gr. gold
<i>P. Col.</i> 139.1-12	same	same	18 a.Kal.Iun.	15 May	Aur. Achillas and Kasianos, <i>tesserarii</i>	Isidoros, Heras, Taesis, Palemon	3 7/16 gr. gold
id. 13	same	same	same	same	same	same	4 oz. silver,
id. 14-20	same	same	5 a.Kal.Mai.	27 Apr.	Aur. Apin and Asem(), <i>tesserarii</i>	Taesis	8 gr. gold
<i>P. Col.</i> 140.1-11	same	same	12 a.Kal.Iun.	21 May	Aur. Achillas and Kasianos	Ameis d. of Horion	2 oz. silver,
id. 12-17	same	same	same	same	same	Isidoros	1 5/8 gr. gold
id. 18-27	same	same	lost	lost	<i>tesserarii</i>	Isidoros?	1 oz., 3 gr. silver,
							2 1/4 gr. gold
							5/8 gr. gold,
							5/16 gr. gold
							lost

a brief note (*P. Panop. Beatty* 2.215-221n.) that these exactions are connected with imperial purchases of bullion at fixed prices and are thus not properly speaking a tax. This idea was picked up by Rea in his recent study; he regards it as « much more attractive » than the *aurum tironicum* hypothesis, but nonetheless he states that « as far as I can see there is as yet no way of absolutely proving this hypothesis ».

The bulk of our texts concerning these collections are receipts given by officials; in the case of *P. Thead.* 33, by one official (nome level) to another (village level), in the other cases (*P. Mert.* I 31 and the Columbia papyri), by a collector at either level to the contributor directly. Since the Merton papyrus and the three Columbia ones all concern the same people and their contributions for the same tax year (year 16=4, A.D. 307/8) and fall within that year, it will be useful to have the material set forth in tabular form ⁽¹⁾.

The collectors in these texts are either *epimeletai*, usually councillors of the municipality, or a *tesserarius*, a village-level liturgical appointee ⁽²⁾, who, as *P. Thead.* 33 shows, ultimately turned his collections over to an *epimeletes*. The motive in these receipts is always given in a phrase something like *κατὰ θέλαν πρόσταξιν ὑπὲρ κτήσεώς σου κώμης ὀριοδικτίας Καρανίδος* or *ὑπὲρ τῆς γενομένης ἐπιβολῆς κατὰ θέλαν κέλευσιν ὑπὲρ ὀριοδικτίας Καρανίδος*. This *ἐπιβολή* is not connected with the old institution of the *epimerismos*, which was called *ἐπινέμησις* in this period ⁽³⁾, but it is clearly (as the editors of *P. Mert.* 31 already said) a type of burden (not necessarily a tax) placed on property col-

that the amounts concerned are out of line with the known basis of assessment of *aurum tironicum* in the late fourth century. But in *P. Cair. Isid.* 69 introd. they regard the identification of the assessments as much more doubtful.

(1) Since the receipts are very similar to those in *P. Mert.* 31, and since I anticipate the publication of *P. Col.* VII in 1978, it does not seem useful to give the texts in full here.

(2) On the frequent bouletic status of *epimeletai*, cf. Lallemand (*supra*, n. 3) 215. On the *tesserarius*, about whom remarkably little is known, see A. E. R. BOAK in P. R. COLEMAN-NORTON, ed., *Studies in Roman Economic and Social History in Honor of Allan Chester Johnson* (Princeton 1951) 322-35; for the spellings of the title, see *P. Got.* 6.7 n. LEWIS, *Inventory of Compulsory Services* (Am. Sud. Pap. 3, New Haven/Toronto 1968) s.v. cites 314 as the earliest attested date for this office, but *P. Col.* 139.14 now gives us a date six years earlier.

(3) See G. ΡΟΕΤΗΚΕ, *Epimerismos* (Pap. Brux. 8, Bruxelles 1969) 25-26; cf. *P. Cair. Isid.*, p. 102.

lectively and allocated to property owners individually ⁽¹⁾. This connection is also present in *P. Cair. Isid.* 69 and 70, petitions against an attempted assessment which argue from the premise that the petitioner (Isidoros) does not farm the arouras in question — indeed, that the alleged extortionist himself does: ὑπὲρ ὧν αὐτὸς αἰεὶ γεωργεῖ ἀρουρῶν. And the accused extortionist filed *P. Cair. Isid.* 127, in which he informs on Isidoros (probably the same, despite the editors' doubts), claiming that the latter cultivates four arouras of grainland at Karanis; the denunciation is addressed to an ἀπαιτητῆς χρυσοῦ καὶ ἀσήμων.

This evidence seems to me adequate demonstration that the collections in question were based on property in some way. But it is the question of whether a tax or a compulsory purchase is involved which is the problem. Here I think an important witness is *P. Cair. Isid.* 89, a loan of money with repayment in beans ⁽²⁾; of the amount lent, we find the following said (lines 11-13): ὅπερ ἀργύριον ἐχώρησεν εἰς συνωνήν χρυσίου καὶ] ἀσήμου ὑπὲρ τῆς ἐαυτοῦ κτήσεως εἰς τὴν θείαν ἐπιβολήν. We may translate, «this money has gone toward the buying-up of gold and silver bullion for the imperial assessment on his own property». Given the close resemblance of the phraseology used here to that in the now fairly abundant receipts for collections, we can hardly doubt that this document refers to the same process as the receipts. The crucial word is συνωνή. It means a purchase by the government of something at a set price (often below actual market price), if necessary with some compulsion. Its cognate verb, συνωνέω, is used in *P. Panop. Beatty* 1.245 for the activity of the government in buying up supplies out of treasury funds for an impending imperial visit ⁽³⁾. The noun recurs in *P. Oxy.* XLIII 3120 (A.D. 310), which Rea cites in his article, where a mill is given a receipt for a payment of gold: παρέσχατε εἰς τὸ δημόσιον ὑπὲρ συνωνῆς λιτρῶν καὶ χρυσ(οῦ) κατὰ κέλευσιν τοῦ διασημ(οτάτου) Ἰεροκλέως. As Rea remarks, «twenty-eight pounds of gold was presumably the assessment on the

(1) For the development of the usage of ἐπιβολή, see J. Karyannopoulos (supra, n. 3) 236 ff. For examples of the relatively vague use of the word to mean 'assessment' in this period, see *P. Cair. Isid.* 102.13 and *P. Mich.* XII 636.12.

(2) The type of contract involved is generally called an advance sale; I discuss the question in some detail in *GRBS* 18 (1977) 85-96.

(3) Such activity was fairly common, on either a regular or an irregular basis. See *P. Panop. Beatty* 2.216-217 for the evident interchangeability of συνωνέω and ἀγοράζω. Karyannopoulos (supra, n. 3) 97-98, discusses *coemptio* of grain.

city of Oxyrhynchus and its nome » (1). Both *P. Oxy.* 3120 and *P. Cair. Isid.* 89 appear to refer to the same process, whereby each year the prefect transmitted the imperial order which established the amount to be purchased and the price at which the purchase was to take place ; at least the latter probably altered each year. The total was distributed by nome, then by village, then to the individual property owner. Most landholders would probably have to purchase much or all of the bullion, at a higher price than that paid them by the state ; the difference thus constituted an indirect tax. The emperors protested that they did not intend this to happen, but it clearly did anyway.

I take it as established by the evidence cited, therefore, that propertyholders were responsible each year for providing set amounts of gold and silver bullion, allocated according to their property, for purchase by the government at a price set by the latter. It is no doubt also this same process which is revealed by *P. Vindob.* Inv. No. G 27879, published above by K. A. Worp and me (pp. 319-321), in which an amount collected by an ἀποδέκτης χρυσοῦ is said to be for the συνωνή of the 17th-3rd indiction (the date is 329). This Hermopolite text is of quite a different formula and offers its own problems, but we are certainly dealing with a local application of the same process.

Can we state more precisely the basis of the assessment? A first important step was taken by Rea in his interpretation of *P. Oxy.* XIV 1653 (p. 168 of the article cited), which he takes as showing a rate of assessment in silver (in A.D. 306) of $1\frac{1}{2}$ ounces per 100 artabas of grain paid in taxes ; in other words, the principle of differentiation of private and royal land in the rates of taxation would be effectively preserved by making the bullion amount depend on the wheat taxes. (2) Rea's interpretation of *P. Oxy.* 1653 is convincing, but problems arise when the rate given there is applied to the Karanis texts. If one summarizes the payments for 307/8 in these receipts, one finds the following :

(1) *Cd'E* 49 (1974) 167.

(2) Just when this principle was abandoned we do not know ; since it was *never* applied to all taxes (in fact we know only of its application to the wheat levy), a document which does not apply it to certain taxes may prove nothing in this regard. For this reason, Déleage's argument on the subject (*La capitation du Bas-Empire* [Macon 1945] 115) is not useful. *P. Col.* VII 181, forthcoming, of A.D. 342, persists in characterizing the land sold in this contract with the Diocletianic terminology.

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<i>Taxpayer</i>	<i>Gold</i>	<i>Silver</i>
Isidoros	11 9/16 gr.	4 oz., 6 gr.
Heras and Taesis	9 1/16 gr.	3 oz., 14 gr.
Heras, Taesis, Isidoros, and Palemon	8 gr.	6 oz.
Total	1 oz., 4 5/8 gr.	13 oz., 20 gr.

Now if one examines the ratios of the amounts contributed in silver and in gold, one finds for Isidoros about 8.82:1, for Heras and Taesis 9.49:1, for the group of four, 18:1. This kind of discrepancy makes little sense, but what one remarks from the receipts is that the distinction of one taxpayer from another within the family is of little consequence; a payment can be attributed to Heras, Taesis, Isidoros and Palemon all together. If we take the sum, therefore, we find a ratio of 11.6:1. Considering that one or more payments by a member of the family may be lost in the second column of *P. Col.* 140, one is struck by the closeness of the ratio to the 12:1 found in the Edict of Diocletian between the prices given for silver and gold in denarii ⁽¹⁾. Furthermore, the payment of Ameis daughter of Horion in *P. Col.* 140.1-11 ⁽²⁾, 1 oz. 3 gr. of silver to 2 1/4 gr. gold, yields a ratio of exactly 12:1. It is difficult to avoid the conclusion that in Karanis in 307/8, at any rate, landholders had to contribute gold and silver in the ratio of 1 of gold for 12 of silver; or, in other words, amounts of equal value of each metal (at the government's official statement of the relationship between them). Such a system is simple and credible.

If one comes to apply the ratio given in *P. Oxy.* 1653 to these payments, however, problems arise. If one takes a figure 12 times the gold contributed by the family and divides by the 36 grams (1 1/2 oz.) per 100

(1) See M. GIACCHERO, *Edictum Diocletiani et Collegarum* (Publ. Ist. di Storia Antica, Univ. di Genova 8, Genova 1974) 114-15; cf. *ZPE* 24 (1977) 115 n. 22.

(2) The papyrus gives her name as Aurelia Ameis, thus indicating that she was a woman and not, as was supposed in *P. Cair. Isid.* (see index), a man. The name is found used for both sexes, but the contemporary Karanis ostraka concern mainly a woman of that name, cf. *O. Mich.* I 416.3, 479.4, 608.6; II 934.4, where Youtie's note points out the gender. I do not know the origin of the name. Why Ameis appears in this document, which is otherwise part of the archives of Isidoros and his family, to which she had no known connection, I cannot say; it seems to me most likely that she was the lessor of land farmed by Isidoros.

artabas given by the Oxyrhynchos papyrus, one finds the following : $(28 \frac{5}{8} \times 12) \div 36 = 954 \frac{1}{6}$ artabas. Now it is at once evident to anyone who reads the Isidoros papyri that this would be 20 per cent of the total taxes of Karanis and enormously in excess of the actual amounts paid at any time by all members of the family combined ; it would presuppose at the *absolute minimum* landholdings of some 578 arouras of royal land (for the basis of this computation, see n. 17 below : $578 \text{ ar.} \times 1.5 \text{ art.} \times 1.1 = \text{ca. } 954 \text{ art.}$). This conclusion is completely inadmissible, but it is not thereby evident what the correct conclusion is. Part of the problem comes from our imperfect knowledge of what the landholdings and taxes of Isidoros and his family were. This question was studied by Boak and Youtie in the introduction to the Isidoros volume, but it seems to me that a reinvestigation with different assumptions may aid us somewhat to narrow the range of possibility and come closer to a solution about the rates of gold and silver demanded ⁽¹⁾.

Landholdings in the Family of Aurelius Isidoros

Aurelius Isidoros was one of a numerous family, grandchildren of a *speculator* in the Roman army. The editors of his papers, A. E. R. Boak and H. C. Youtie, studied the information at our disposal for his landholdings and produced the following schema (*P. Cair. Isid.*, pp. 7-8) :

1) *P. Cair. Isid.* 4 and 5, land declarations of 299, show Isidoros as owner of $11 \frac{1}{16}$ ar. of private sown land in the village of Karanis ; of $34 \frac{3}{8}$ ar. of the same in the *horioidiktia* ; of $1 \frac{3}{8}$ ar. uninundated private land in the same district ; and of $17 \frac{31}{64}$ ar. of royal land under cultivation, also in the *horioidiktia* ; the grand total is $53 \frac{59}{64}$ ar.

2) The register of tax collections in 309, *P. Cair. Isid.* 9, shows Isidoros paying 48 artabas of wheat and 32 of barley (lines 154 and 263). These payments are, say the editor, « only ca. $3 \frac{1}{2}$ artabas more than would be necessary to cover $53 \frac{59}{64}$ arouras, while his delivery of barley falls short by about 8 artabas ».

3) In 310, Isidoros states in two petitions (*P. Cair. Isid.* 68.12f., 69.17f.) that he is registered for the taxes on 140 arouras.

(1) The reader, noting the figure of 11.6:1 above, as a ratio of silver to gold, may reasonably inquire whether the reading in *P. Oxy.* 1653 might not be $11 \frac{1}{2}$ rather than $11 \frac{1}{3}$, thus reconciling the evidence ; but the editors' reading is entirely secure, as Professor R. Bogaert informs me after kindly examining the original papyrus in Ghent.

4) In *P. Cair. Isid.* 78.12, of A.D. 324, Isidoros remarks that he is responsible for 80 arouras, to put only 7 of which into cultivation has been a great deal of work.

The editors express puzzlement over these fluctuations, but they conclude that between 309 and 310 Isidoros had acquired nearly 90 arouras, perhaps partly by inheritance, while between 310 and 324 he lost about 60 arouras, perhaps when they were reclassified as unproductive land and removed from the tax rolls. As to the latter change, I have no comment and no new evidence; it does not bear on the bullion payments of 307/8 in any case. But for the earlier shift, an explanation needs to be sought. The editors suggest Isidoros' mother, Herois daughter of Chairemon, as the most likely source. This notion is not without its difficulties, since Herois does not appear in any of the tax lists from the period up to 309, and one may wonder who paid the taxes on her land. We do know from *P. Cair. Isid.* 3 that in A.D. 299 she possessed a total of 30 $15/32$ arouras of grainland in the village of Karanis, and the fact that a copy of her declaration of this property was found in the papers of Isidoros may support the notion that he inherited her property in 309 or 310. In fact, we know now that she was alive in 309, since she figures in the forthcoming *P. Col.* VII 141.82, of 4 September in that year. Even if one can escape the problem of the absence of her holdings from the tax records of the decade before 309, one can account for only a little over 30 of the increase in Isidoros' holdings by this means. There remain about 55 arouras to be accounted for. Isidoros' father was probably already dead by *ca.* 300 (1) and, as we shall see, the other children already had their holdings in their possession during the first decade of the century.

The clue to the solution, it appears to me, is the remark of Boak and Youtie that some of Isidoros' papers « create the impression that he acted as head of the family » (p. 5). This statement is true only in a limited sense, but an investigation of the details is illuminating. Ptolemaios and Herois had eight children who appear in our documents:

(1) Boak and Youtie remark (p. 3) that "nothing is heard of Ptolemaeus after 283, and he must have died before the census of 297 was taken." Their introduction was, however, written before *P. Mert.* II 88 was published in 1959, for in cols. viii and xvii of that papyrus, Ptolemaios son of Pankrates pays taxes (through his son Isidoros) on 24 October 298 and 13 September 299. This is the latest occurrence for him. One must suppose that he had already turned most of his land over to his sons by this date.

Isidoros, Pankratios, Peras, Palemon, Heron, Heras, Demetrios and Isidora. Of these, Peras appears only in 297, when Isidoros found a substitute for him in a liturgy (*P. Cair. Isid.* 81). He may thus be excluded from our deliberations. Isidora, the sister, was the owner of about 70 arouras ⁽¹⁾, but she appears only in the taxing lists and at

(1) The method by which this figure is reached should be explained at this point ; it will be used below for other persons without further explanation. *P. Cair. Isid.* 9 gives amounts paid in wheat and in barley. We know from *P. Cair. Isid.* 11 (see introd., esp. p. 104) that wheat taxes were figured at $\frac{1}{2}$ art. per aroura of private land, $1\frac{1}{2}$ art. per ar. of royal land ; in both cases the figures were augmented by 10 per cent extra charges. Barley taxes were computed uniformly on all land at the rate of $\frac{3}{4}$ art. per ar. ; an extra charge of 10 per cent was then added, then the *epikouria* of 1 art. per 18 ar., which may be reckoned to be .067 of the taxes due after inclusion of the 10 per cent. Wheat taxes were thus computed according to the following formula, where x = ar. of private land, y = ar. of public land, w = wheat, and b = barley : $w = (.5x + 1.5y)(1.1)$; barley according to $(x + y)(.75)(1.1)(1.067)$. From the second formula one easily deduces that $x + y = b \div .88$. From the first formula one may deduce as follows :

$$\begin{aligned} .5x + 1.5y &= w \div 1.1 \\ 1.5y &= (w \div 1.1) - .5x \\ 3y &= (w \div 1.1)(2) - x \\ 2y &= (w \div 1.1)(2) - x - y \\ 2y &= (w \div 1.1)(2) - (x + y) \\ y &= \frac{(w \div 1.1)(2) - (x + y)}{2} \end{aligned}$$

Since the value of $x + y$ has already been determined by the formula $x + y = b \div .88$, with the substitution of this figure in the equation one may calculate y . With y and $x + y$ known, it is simple subtraction to find x , and both components of the landholdings are known. This method is subject to imprecision, because the amounts paid may not represent the totality of the taxes owed. On the other hand, comparison of *P. Cair. Isid.* 9 and 11 shows that in general the arrears in the former text were not large, and of 59 cases where both barley and wheat figures are preserved and identifications are fairly secure, only 8 computations by the above formula failed, i.e., the wheat and barley figures are not reconcilable on any assumption of landholdings. A further check can be provided in some cases by the chaff payments and arrears recorded in *P. Cair. Isid.* 10 and 17. Boak and Youtie deduced that chaff taxes were collected at the rate of 25 lbs. (litrai) per aroura, and when we have complete figures for a taxpayer we can deduce from what he paid plus what he owed how much land he had. These figures are for 310/11 as opposed to 308/9 for wheat and barley. One final objection may be noted, that these rates of taxation applied to the village (or larger entity) but not necessarily uniformly to all taxpayers ; so I take to be the sense of W. Goffart, *Caput and Colonate: Towards a History of Late Roman Taxation* (Phoenix Suppl. 12, Toronto 1974) 127-28 n. 10. But Goffart's arguments here and elsewhere are based on a deliberate disregard of the realities of papyri in favor of the theory of

no time is seen in any relationship with other members of the family. She, too, therefore, is not relevant to an inquiry into family property relationships, though the size of her property is noteworthy.

Five brothers of Isidoros remain. The 'pittakion-lists' *P. Cair. Isid.* 24, 25 and 26 show that all of them (Palemon through his son Kopres) were associated with Isidoros in a *pittakion*. While the basic institution of the agricultural firm known as a *pittakion*, under a responsible pittakiarch, is reasonably well-attested, little is known of the exact relationship of its members' tax payments to the collective liability. Of the five brothers of Isidoros in the *pittakion*, three (Pankratios, Heron and Demetrios) never appear in the tax receipts preserved by Isidoros and never act for Isidoros or are represented by him in tax payments. They were, to be sure, independent landowners of moderate to comfortable means: Demetrios is known to have had about 26 arouras ⁽¹⁾, Heron about the same amount ⁽²⁾, and Pankratios about 65 arouras ⁽³⁾.

legal enactments (cf. his pp. 31-32 n. 3), and a study of the Isidoros papyri gives absolutely no basis for such a conclusion. Cf. already on Goffart's methods R. MacMullen, *CP* 71 (1976) 187-88.

For Isidora specifically, *P. Cair. Isid.* 9.98 and 207 suggest 20.2 private and 40 royal arouras, total 70.2. Chaff taxes in *P. Cair. Isid.* 10.20, 62, 111, 151, 216 and 17.52 point to 66 arouras. No useful information can be had from *P. Cair. Isid.* 6.191 and 14.46. The margin of discrepancy between wheat/barley and chaff is very small.

(1) The significant figures are *P. Cair. Isid.* 9.156 and 265, suggesting 10.2 private + 15.7 royal = 25.9 ar. If the reading of *P. Cair. Isid.* 17.57 is right, 4 5/8 sarganai of chaff = 693.75 lbs. points to 27.75 arouras. But a half after an eighth seems very odd, and if, as I suspect, 1/16 is the correct reading, the sum would be 25.125 ar., much closer to the other sum. Demetrios is assigned 18 arouras of his own in *P. Cair. Isid.* 18.15, but I find that throughout this text the amounts of arouras are lower than those computable from other sources. Since the nature of this papyrus is not indicated, however, we can only speculate on the reason. I am not convinced by the arguments of the editors in their introduction to the effect that this is a *pittakion*-list. It is possible that it includes holdings only in certain districts.

(2) His figures in *P. Cair. Isid.* 9.155 and 264 are the same as those of Demetrios; the chaff figures are incomplete. His assessments in the *pittakion*-lists *P. Cair. Isid.* 24 and 25 are also the same or nearly the same as those of Demetrios.

(3) Pankratios had 4 arouras of private land in the village (*P. Cair. Isid.* 6.6); grain payments in no. 9.113,224 indicate 37.2 private plus 27.6 royal, total 64.8 ar. In no. 10.10,55,98,145,215 he paid chaff for 42 ar., and the number for his arrears in no. 17.89 is lost. It is noteworthy that in *P. Cair. Isid.* 25.7 his assessment is related to those of Demetrios and Heras by the same proportions as his computed

With the other two brothers, Palemon and Heras, Isidoros had a relationship of a different sort. They were, like the others, members of the *pittakion* from which we have three lists; but they also, unlike the others, appear rather frequently in the tax receipts preserved among Isidoros' papers. Sometimes he pays on their account, sometimes they for themselves. Joined to them is Taesis, the wife of Heras. Occasionally, indeed, a payment on the account of one or another relative of Taesis is found; her sister Kyrillous is the commonest of these, but her uncle Chairemon also appears once (*P. Mert.* 30). We must now look at the trio of Taesis, Heras and Palemon to define more precisely their property and their links with Isidoros.

Palemon is a curious figure in some ways; alone of the brothers he is frequently and significantly represented by his son (Kopres). He declared in the census about 9 arouras in the village, ⁽¹⁾ but his grain payments in 309 point to a total of 22.4 ⁽²⁾. His son Kopres paid chaff for 18 arouras in 311 ⁽³⁾. His son also represents him in the *pittakion* lists ⁽⁴⁾. In *P. Cair. Isid.* 41, Palemon's tax payments are made indifferently by him or his son. In *P. Cair. Isid.* 51 Kopres is again the representative; in no. 52, Isidoros pays for himself and for Palemon. Isidoros also acts for Palemon in *P. Mert.* I 30 paying chaff. The forthcoming *P. Col.* VII 141 includes payments by Isidoros for various accounts: Palemon, Taesis, Herois (Isidoros' mother), and 'his brothers'.

Heras and Taesis are difficult to distinguish so far as property is concerned. In *P. Cair. Isid.* 6.244, the declaration is made by Heras but for Taesis; in the tax list no. 9, on the other hand, the payments are simply listed as Heras'; they point to 29.7 arouras ⁽⁵⁾. Similarly in *P. Cair. Isid.* 17 it is Heras who owes enough chaff for 33 arouras, but in no. 18.18, he is credited with 22 arouras with Taesis (it must be remembered that this text habitually gives less than what we know to be landholdings from other evidence). His assessment in *P. Cair. Isid.* 24.2,14 is the same as that of Demetrios and Heron. We know that Taesis had inherited property, over which there was extensive

landholding is to theirs; this is another indication that the basic level of the figures computed is accurate.

(1) *P. Cair. Isid.* 6.229.

(2) *P. Cair. Isid.* 9.136,244: 5 private and 17.4 royal arouras.

(3) *P. Cair. Isid.* 10.12,58,153.

(4) *P. Cair. Isid.* 24.8,13; 25.5; these are small amounts.

(5) *P. Cair. Isid.* 9.157,266; 9.3 private + 20.4 royal.

dispute ⁽¹⁾; our only figure for it is her holdings of a lost number of arouras in the village only (*P. Cair. Isid.* 6.244).

Heras and Taesis figure frequently in Isidoros' tax receipts, whether paying individually, one for the other, or through Isidoros. *P. Mert.* 88, *P. Cair. Isid.* 59, and *P. Col.* 137 and 141 all provide examples. They thus form part of the group described by 'his brothers'. Kyrillous is a more difficult problem; she enters into the tax documents only in *P. Cair. Isid.* 53, 55 and 59, all from the period 313-318. From her payments in no. 9.162,276 we can conclude that she had a total of about 11.4 arouras (4.3 public, 7.1 private). The chaff figures are lost. It seems prudent to exclude her from consideration in studying landholdings of Isidoros' intimate circle in the period before 310.

Aside from the persons already mentioned, Isidoros made tax payments, so far as we know, only for the account of persons who were probably his lessors; these texts are mainly numerous in the early years of the fourth century, and they do not affect our subject, since no such lessors appear in the bullion receipts, unless Ameis is one such ⁽²⁾. A significant indication that the distinction drawn here between the inner group and the remainder of the siblings was real and important is the phrase of *P. Col.* 141, 'and his brothers'; the receipt thus provided no way of distinguishing among amounts to be credited to Isidoros, Heras, Taesis and Palemon. The same phenomenon is noticeable in the bullion receipts. It does not seem unreasonable, given the facts adduced, to conclude that these four persons operated their property in large part as one entity, there being no significance in the identity of the person actually making the payment or delivery. It will be remembered that the varying ratios of gold amounts to silver ones also pointed in this direction.

Further confirmation comes from an examination of the amounts paid by these four in grain and chaff taxes in those years for which all or a large part of the receipts are preserved. This happens only occasionally, and the numerous lacunae in the texts make absolute

(1) The petitions *P. Cair. Isid.* 62, 63 and 64 are the main evidence, coupled with the two property divisions *P. Cair. Isid.* 104 and 105; Taesis is closely linked with Kyrillous in these matters.

(2) In *P. Mert.* 88, Sarapion son of Onnophris is a lessor; cf. *P. Cair. Isid.* 34 introd.; so is Serenilla, cf. *P. Cair. Isid.* 112. *P. Cair. Isid.* 34-39 and 45 also include deliveries on behalf of lessors; these persons have no personal connection to the family of Isidoros so far as we can tell.

certainty impossible. But some of these documents are nonetheless instructive. There is a concentration of receipts for the wheat taxes of 298/9, 299/300, and 300/1 in *P. Mert.* 88, *P. Cair. Isid.* 41, and *P. Col.* 137. From these one may extract the following table :

	Year(s) for which paid				
	298/9	299/300	300/1	297/8, 298/9, 299/300	298/9, 299/300
Isidoros	45 art. (<i>P. Mert.</i> 88 x)	44 1/4 (<i>P. Mert.</i> 88 xiii)	116 1/4 (<i>P. Col.</i> 137.71- 79,104-111)		
Palemon			4 Tal. (= ? wheat) (<i>P. Cair. Isid.</i> 41.37-39)		
Taesis			48 1/2 (<i>P. Cair.</i> <i>Isid.</i> 41. 28-38 ; <i>P. Col.</i> 137.82-95)	12 3/4 (<i>P. Col.</i> 137.42-52)	2 1/2 (<i>P. Col.</i> 137.20-27)
Heras	21 1/4 (<i>P. Mert.</i> 88 xiii)	22 5/6 (<i>P. Mert.</i> 88 xiii)	23 (<i>P. Col.</i> 137.80-81)		

In addition, Palemon paid 108 3/4 art. for 300/1 and 301/2 together (*P. Cair. Isid.* 41.28-36). This habit of identifying a payment in a receipt as covering more than one year, without specifying how much goes for a given year, impedes our investigation. Isidoros paid a total of 205.5 art. for the three years, when one would put his quota at only 144. Heras and Taesis together pay 130 5/6 ; they would have owed 116.25. Palemon, on the other hand, paid 108.75 for the last year of the three we have taken plus the one following. He is not attested as paying any wheat before. He would have owed 94.5 art. for the three years. Isidoros, Heras and Taesis all together paid 336 1/3, almost enough to cover the 351 which I compute as the dues *including* Palemon for the three years. Only a small part of Palemon's payment in 302, then, need have been credited to 300/1.

The ultimate details are uncertain and untraceable. But it is clear enough that the amounts paid, in one year or over several, by one of these individuals, bears little resemblance to what he actually owed according to official records of his dues and landholdings. When the

group is taken as a whole, on the other hand, the discrepancies are very small. Note also that for year 20=12 (303/4) Palemon paid 72 artabas, much more than his dues for that year (*P. Cair. Isid.* 41.72-73). Some of this was probably to cover the dues of another member of the group.

Some measure of confirmation comes from chaff receipts preserved in *P. Col.* 141. There, Isidoros pays enough for 90 arouras in 308/9; he pays arrears for 114 arouras for 305/6; he and his brothers are credited with a further payment for 100.5 ar., the year to which it was credited (308/9? a past year?) not being given. These figures seem explicable only on the basis of the assumption that Isidoros formed a unit with Taesis, Heras and Palemon for purposes of paying taxes. No doubt they were distinguished on the official registers, but the receipts are less precise.

The implications of this statement are significant: by comparing the total wheat taxes of Isidoros and this group to their payments of gold and silver bullion, we can arrive at some notion of the rates levied. It goes without saying that loss of material could cause some inaccuracy in the figures, but the nature of the results arrived at suggest to me that such error is not material. The following summary table will serve as point of departure (the wheat taxes are those given in *P. Cair. Isid.* 9; for the computation see above, especially n. 17): (1)

	<i>Wheat taxes paid</i>	<i>Arouras held</i>
Isidoros	48	53.9
Heras-Taesis	38.75	29.7
Palemon	31.5	22.4
	<hr/> 118.25	<hr/> 106

(1) By the side, it may be pointed out that the addition of the ca. 30 ar. belonging to Herois to the previous total for this ménage would make the total figure very close to the 140 for which Isidoros claims to pay taxes in 310 (*P. Cair. Isid.* 68.12f., 69.17f.). The mechanism of joint taxpaying which we have seen, under the leadership of Isidoros, makes his claim reasonable, even if slightly misleading as to the view which would be taken by the official records. It may be interesting to state the sum of the landholdings which I have ascribed to Pankrates, Heron, Demetrios and Isidora: it is 187 ar. Added to the 140 for the group of Isidoros claimed in A.D. 310, which I take to include his mother's 30+, the children of Ptolemaios held 327 arouras, about 7.75 per cent of the registered land in and around Karanis and its *horiodiktia* at this time. Even allowing for the many problems of agriculture in Karanis in this time, the family was comfortably off.

If one applied the principle discussed above, that bullion exactions were computed on the basis of wheat taxes, it takes only a moment's reflection to see that a rate of 1 oz. of gold per 100 artabas would yield a charge of 28.38 gr. for the group, compared to the 28.63 actually recorded — a discrepancy of .0088. For silver, at a rate of 12:1, 12 oz. per 100 art., they would have to pay 14.19 oz. ; we have the records of 13.83 oz. actually paid — a discrepancy of .025. It will be admitted that this does not constitute formal proof, but an argument that all this is coincidence is not compelling.

I conclude, then, that in Karanis in the first decade of the fourth century propertyholders were required to provide gold and silver bullion in amounts of equal value, according to the official ratio of 12:1 for purchase by the government ; and that the rate at which this was exacted from them was based on the amount of taxes in wheat paid by them. In 307/8 in Karanis, this rate was very probably the very simple one of 1 oz. gold and 12 oz. silver per 100 art. of wheat paid. Nothing in our texts establishes what rate was paid by the government in purchasing this gold ; it was of no concern to anyone to record this fact.

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