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von

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CURRENCY IN THE FOURTH CENTURY AND THE DATE OF *CPR* V 26¹

In *CPR* V, the second part of the volume is occupied by a long (over a thousand lines) codex containing a number of accounts. Perhaps the most important of these is an account of the collection of an unnamed tax for a second indiction. The amounts are given in two ways; there is a collection of bronze currency, in which the figures are given in the thousands and myriads of a unit denoted by the symbol ζ , which was taken by the editor to stand for denarii; and there is a collection of solidi (*νομισμάτια*).² The commentary in *CPR* was limited to a rather brief treatment, and in the present article we take up the questions of the resolution of the symbol given above, the significance of the amounts given in the papyrus, the place of these amounts in the difficult history of currency during the fourth century of our era, and the implications of this information and other criteria for the date of the papyrus.

1. Denarii and Talents

The editor was led to resolve ζ as denarii, although it does not closely resemble the usual sign for that unit (\times), principally by the fact that such large amounts, frequently amounting to several myriads, as are here contributed by individual taxpayers, must represent denarii, which are typically reckoned in myriads in the papyri of the fourth century. In the third section of this article we will present a list of prices showing that myriads of talents are not unthinkable in the second half of the fourth century, and that this hesitation on the grounds of the height of the amounts must be set aside. At this point, we wish only to point out that the symbol used resembles one of the common ones for talents in many fourth-century documents. There are enough clear contexts where this symbol is equated to talents in unequivocal language that the equation is not in doubt.³ The normal symbol, to be sure, does not tend to pass the horizontal stroke through the vertical, but rather to begin it at the vertical stroke and go to the right (ζ). There are, however, enough examples of the symbol made with the line drawn cleanly through as in *CPR* V 26 that we need not hesitate to regard the symbol used there as standing for talents.⁴

1. J.R. Rea and P.J. Sijpesteijn, *Corpus Papyrorum Raineri* V: *Griechische Texte* II (Wien 1976). Due to problems of editorial coordination, this text, edited by Sijpesteijn, follows 25 texts edited by Rea but is referred to only by its inventory number, G 39847. The number 26 which we assign to it here will be assumed in the numbering of future texts in *CPR* to have been given to it.

2. This is the proper place to note that through a slip the editor speaks in the introduction and notes as if the myriads sign were given twice rather than once, i.e. as if ζ meant myriads of denarii. This slip in turn causes confusion in the remarks on pp. 80-81 about the date of the papyrus. These may now be considered replaced by the present article.

3. Cf. J.C. Shelton, *ZPE* 20 (1976) 228, commenting on the papyrus published by K.A. Worp, *Cd'E* 49 (1974) 346-49, with reference to examples.

4. The text published by Worp (*supra* n. 3) is a good example. There are several others in the Columbia collection, belonging to the fourth-century Karanis archives, which are now being prepared

2. The Numbers in the Account

To understand the importance of the numbers in the account, it is necessary to see what they represent. To this end, a brief analysis of the taxation account concerning the village of Skar of the Hermopolite Nome, which occupies the largest portion of the codex, will be given here. The tax in question is unspecified; the heading says εἴσπραξις κώμης Σκὰρ α μέρ(ους). The writer proceeds to enumerate payments in talents under the rubrics of the eight phylai of the first meros of this village. This seems to have been his record book as collector, since he proceeded in a systematic fashion and left blank space for later payments to be added.⁵ For each phyle the names and amounts are listed. Individuals frequently appear more than once in the list, and there are wide disparities in the amounts collected from individuals. These considerations suggest that the tax in question was based on property, presumably land, rather than on persons. That this is not simply adaeratio of grain taxes, however, is shown by the fact that the amounts are actually rather small, as will appear later.

The following table gives a summary of the collections:

Phyle	Lines	Amount Paid	Total Paid	No. Payers	Average Paid
1	1-55	464,400			
	556-7	3,800			
	564-8	148,900	617,100 ⁶	37	16,678 ⁷
2	56-96	ca. 290,000 ⁸			

for publication by Bagnall (from copies of N. Lewis) to appear as *P.Col.* VII, and they confirm clearly that we are dealing with talents; we may anticipatorily cite especially *P.Col.* 189. Some of these papyri are discussed further in section 4 below.

5. Cf. Sijpesteijn's remarks on pp. 82-83. As an example, page 1 is blank, 2 is used for phyle 1, 3 is partly used, 4 is blank, 5 is used for phyle 2, and 6 was later used for a private account.

6. The reader will also find a total of 1,006,500 T. read in line 54. We cannot tell to what this pertains, since it does not correspond to any other figures in this part of the papyrus. We may remark that the rho which is the number giving the million talents is dubiously read; under these circumstances we think it better to ignore this line as not providing solid evidence. In connection with these totals, we believe that the sign read as *a* throughout before totals (lines 46, 52, 96, 164, 181, 228, 252, 300, 346, 386, 391, 436, 450, 525, 554, 614, 621) is in fact to be taken as a fast cursive writing of the abbreviation of *δμοῦ*, the word which is, as the editor pointed out (line 46 n.), expected here. Cf. for this abbreviation H.C. Youtie, *Scriptiunculae* I (Amsterdam 1973) 409-10.

7. It has been assumed here that persons with the same name within the same phyle are the same person. Since quite a number of names are damaged, there is a certain margin of error in some phylai in the number of people attested. No attempt has been made to decide whether homonyms in different phylai are the same person. It is clear enough that some identifications should be made, cf. the editor's remark on pp. 78-79. The phylai seem to have been essentially local, so that a person might own territory in more than one of them. But a correction for this factor would be very difficult, and would probably not be very large in any case.

8. The total number preserved is under 300,000, but probably not much under, since the readable entries total 226,000 and over a quarter of the numbers are lost. We regard 290,000 as a fair estimate.

	569-73	39,700	ca. 330,000	25	ca. 13,000
3	127-163	518,000 ⁹			
	165-181	77,800 ¹⁰			
	574-77	62,300	658,100	40	16,452
4	184-253	966,600			
	578-84	57,500	1,024,100	43	23,816
5	255-300	452,500			
	585-91	116,400	568,900	32 ¹¹	17,778
6	301-391	798,200			
	592-94	4,800	803,000	55	14,600
7	392-451	886,850	886,850	37	23,969
8	480-555	720,500 ¹²			
	596-600	8,200	728,700	58	12,564

It should be noted that except where specifically mentioned, no account has been taken of contributions which are neither preserved nor included in a preserved total. These would not add much, proportionately, to the preserved total.

A later section (lines 604-615) shows that the collector was named Aurelius Victor and that he was gnoster for the first meros of Skar. He reckons his total taxes (due) as 210 1/4 solidi, at a rate of 28,000 T. per solidus, or a total of 5,887,000 T.¹³ This total comes remarkably close to that of the sums above, which is 5,616,450. Allowing for missing payments, the match of numbers is very close.¹⁴ We compute the overall average per capita contribution, if the total was ultimately collected, at under 20,000 T.; with the solidus at 28,000 T., the average person paid about 17 carats. This is not a very large sum, in fact, but neither is it wholly insignificant. Victor proceeds to list further payments, this

9. Here as elsewhere there is an arithmetical error; the scribe undercalculated by 300 T.

10. Stated by the scribe as 77,600. Given the identification of several persons in lines 165-180 with those given as belonging to phyle 3 on the previous page, it is certain that the entries on page 9 belong to phyle 3 also. The total to the same account in line 182, although it does not correspond perfectly (it is 590,100 instead of a correct 595,800 or, as the scribe's own figures would add, 595,300), is close enough that this is surely meant to be the total of the payments for phyle 3.

11. There are several damaged names; this seems to us close to the truth.

12. In line 555 read ζηοβφ; in the preceding line, ζηδω.

13. Some additions then bring him to 5,913,000; the sum is corrected from 5,918,000; it appears in effect that the amount of 6,000 T. in line 612 was later removed from the reckoning. To the right of the total appears a sum of 261,400; we have not been able to discover to what this refers; it does not seem to be taken into account in any other figure. In the figure 5,262,000 (line 614), the diagonal stroke indicating thousands which appears before the ς should be deleted, as this numeral is part of the number of myriads, and the stroke is in fact not on the papyrus.

14. The match is good also in detail; Victor states that 5,262,000 were collected in the first collection, whereas our payments in lines 1-555 total 5,174,850 as preserved; the balance left was 651,600, of which we find 441,600 in the section (556-600) of arrears.

time actually in solidi, which come to a total of 135 3/4 clean solidi.¹⁵

3. Currency and Prices in the Fourth Century

The papyri of the fourth century present, on the face of it, a spectacle of phenomenal decline in the value of copper currency. This self-evident 'inflation', as scholars generally term it, produced in the course of time figures which appear ludicrous and in fact almost incomprehensible; they are especially difficult to understand for the papyrologist who is used to the normal level of prices in the Roman period. Whether they were quite so confusing to the people of the fourth century is uncertain. Economic historians have also been hard-pressed by the raw data. Their responses have varied. Mickwitz, for example, in a work still widely cited as standard, enumerated the items of fourth-century evidence known to him and constructed a logarithmic chart showing the course of inflation as he viewed it.¹⁶ His scheme, which in essence described a very swift and steep inflation, also included two periods of 'deflation', in which Mickwitz thought that the value of copper currency had reversed its downward course for a time. These were 314-324 and 341-345. The work on currency now most commonly cited, West and Johnson's book of 1944, also argues for two such periods of deflation, about 316 and 338. These are close to Mickwitz's, but based on somewhat different evidence.¹⁷ West and Johnson, perhaps wisely, did not offer a graph like that of Mickwitz. The more recent and less fully argued article of Rémondon shows only one period of deflation, that around 316.¹⁸

West and Johnson comment somberly that "great skepticism is necessary and justified in considering the readings of many published documents".¹⁹ They were correct in this; we must add that the reader will do well to beware of the methodology employed by all of the scholars mentioned in constructing tables, graphs and conclusions. Their deductions rest in large part on an assumption that every price quoted in a papyrus is equally useful for argument, something which is certainly not the case. It would be possible to refute in detail the arguments of all of these works, but we do not think that this would be useful, nor, perhaps, fair to the intentions of these scholars. It is, however, worthwhile to set forth a few general guidelines – which they did not observe – before we proceed.

15. We consider that the total number of people is about 300. The two major collections of gold coins, lines 623-690 and 714-782, with summary in 701-712 and Fragment 2 (991-1007), have some problems which we cannot discuss here. We think that the tax is the same as that for which the talents were collected.

Before leaving this section we may note that the codex also gives us, in lines 870-902, a certain number of prices for various items, mostly of clothing. Since we have no useful parallel material with which to compare these prices, and since we are ignorant of the purpose of these entries, not much can be said. In general the prices tend to be in the range of 2,000 to 3,000 T. per garment.

16. G. Mickwitz, *Geld und Wirtschaft im römischen Reich des vierten Jahrhunderts n. Chr.* (Soc. Scient. Fenn., Comment. Hum. Lit. 4.2, Helsingfors 1932, repr. Amsterdam 1965). His chapter 3, pp. 98-114, is the most important part for our purposes, dealing with the worth of money in Egypt.

17. L.C. West and A.C. Johnson, *Currency in Roman and Byzantine Egypt* (Princeton Univ. Studies in Pap. 5, Princeton 1944, repr. Amsterdam 1967).

18. *Cd'E* 32 (1957) 130-146.

19. *Op. cit.* (supra n. 17) 158 n. 1.

1. The price of gold relative to bronze currency can properly be assessed only when it is explicitly stated in terms of the pound or of some gold coin (such as the solidus, 1/72nd of a pound of gold). Mickwitz' table was based on various sources, in which prices of the most diverse commodities were used. Mickwitz found a price for the same item in an earlier century, found the proportion of that price to gold at that time, and applied the same proportions to the fourth century. Somewhat the same thing, but in a more sophisticated way, was done by Rémondon; the results are better than with Mickwitz, but still not satisfactory. This method is weak partly because the ratio of gold to any given commodity can vary markedly with time, and partly because what seems to be the same commodity may have at almost the same time more than one price.

2. No two commodity prices should be directly compared for an exact ratio. No two donkeys may be compared, in other words. That one donkey costs 5 T., and another a year later 10 T., does not mean that the price of donkeys has doubled. It may mean only that the second donkey was a much better specimen. It is possible with large numbers of prices to attain some statistical significance for average prices, and to compare these, but nowhere in the fourth century do we have the data which would support such statistics.²⁰ Produce costs vary according to the season and the quality of the goods.

3. Prices used by the government for various conversions, notably for adaeatio of taxes in kind and for payment for compulsory sales, cannot legitimately be compared to 'free market' prices to form the basis for statistics about the increase in prices. One striking example may be quoted here: *P.Oxy.* XLIV 3194 (where the introduction cites parallels) and *P.Ant.* I 39, of A.D. 323 and 324, record payments by the government for items of clothing furnished by civilians for compulsory purchase for the military. The amounts paid are roughly in line with those specified by the Edict of Diocletian nearly a quarter-century of inflation before. This caution is applicable notably in the matter of governmental purchases of gold and silver bullion, which the taxpayers had to deliver to the government at a price fixed by official decree, but quite certainly below the actual market price of the metal in question.²¹ To this may be added the caveat that since we do not know the ratio of silver to gold at a given time, we cannot even use the price of silver to determine that of gold.²²

To these general remarks we must add a comment on the limitations of this article. It is obvious

20. Mickwitz, 99, draws just such conclusions from donkeys. From prices of 5 T. in 301 and 10 T. 4,000 dr. in 311, he deduces an increase in the price of gold from about 200,000 den. per lb. to about 360,000 den., working from a comparison price of 160 dr. in the second century. This comparison is only in the broadest terms valid, and the computations are themselves worthless.

21. On these purchases, see the article of J. Rea, *Cd'E* 49 (1974) 163-74. The Columbia papyri (cf. supra, n. 4) provide some further information, which will be discussed by Bagnall in a future article. West and Johnson, as well as Mickwitz, use such prices for compulsory purchase with insufficient caution.

22. One has only to compare the calculation of Mickwitz, 99 n. 6, where he uses a 1:18 ratio in *PSI* IV 310 to get a value for gold (followed in the main by Rémondon), and that of J. Rea, *Cd'E* 49 (1974) 165, where a 1:12 or 1:12 1/2 ratio is used. The latter figures are probably closer to correct, but it makes a difference of as much as 50 per cent, and certainty is not at present attainable.

to anyone who has dealt with the material that the course of currency in fourth-century Egypt is a complex subject, and that a full-length monograph on the money of Byzantine Egypt is needed very badly. We do not undertake to provide this here; it is a large task which we cannot for the present attempt. One specific limitation of our remarks is that we do not take any account of numismatic evidence. We have restricted ourselves to the papyri for three reasons: a. we do not regard ourselves as competent to handle the numismatic problems involved; b. we are concerned primarily to illuminate the practices of writers of papyri; and c. we consider that a numismatic inquiry must proceed to a large extent independently, arrive at reliable results, and then connect these to reliable papyrological data. Mickwitz and West and Johnson tried to bring numismatic evidence to bear, but the critical reader will detect time and again signs of circular argument, as guesswork about coins supports guesswork about papyri. The matter must be reargued from the foundations, and we are attempting to do no more than provide one stone of these.

There follows a list of some prices from the fourth century. The prices before 340 are a selection which we believe representative but not complete; the reasons for this will become clear later, namely, that we are concerned principally with the second half of the century. After 340, we have included every price we found which we thought could be used meaningfully; we do not doubt that we have missed some. Only prices with a fairly secure absolute date are used, to avoid circular arguments.

- 301 Gold set at 72,000 den. per lb. = 48 T. by Edict of Prices; see R. and F. Naumann, *Der Rundbau in Aezani* (MDAI Istanbul Bh. 10, 1973) 57
- 301 ff. Capitation tax is 1,200 dr. (*P.Oxy.* XLIII 3142 with references)
- 301 Rabdouchos earns 400 dr. per diem = 2 T. per month (*PSI* IX 1037)
- 302 Camel costs 9 T. (*P.Grenf.* II 74)
- 304? Government pays 66 T. 4,000 dr. per lb. of gold (*P.Oxy.* XVII 2106)
- 305-309 Donkeys cost 5-15 T. (*P.Oxy.* XLIII 3143; *SB* I 5679; *P.Berl.Leihg.* 21)
- 309 Bath attendants receive 2,000 dr. per month (*P.Oxy.* XII 1499)
- 311 Donkey costs 10 T. 4,000 dr. (*P.Oxy.* XIV 1708)
- ca 313 Official price of gold ca 110,000 den. per lb = 73 T. 4,000 dr. (*P.Ryl.* IV 616, cf. *Cd'E* 49 [1974] 165)
- 313/4 Horse costs 70 T. (*P.Cair.Isid.* 72.10,37; 73.7)
- 313 Horse sells for 30 T. (*P.Oxy.* XLIII 3144)
- 314 Workers get 400-650 dr. per diem = 2 T. to 3 T. 1,500 dr. per month (PER E 2000²³)
Grain prices of 1 T. 2,000 dr., 1 T. 4,000 dr. and 2 T. per artaba (PER E 2000)
Wine costs 1,800 dr. per knidion (PER E 2000)
- 316 Repainting the baths of Oxyrhynchos costs 6 T. 4,000 dr. (*P.Oxy.* VI 896)
- 316-318 Gold on the open market costs Oxyrhynchos 288 T. per lb. (*P.Oxy.* XLIII 3121)
- 320 Third floor of house rents for 3,000 dr. per annum (*P.Panop.* 11)

23. Published by C. Wessely in "Ein Altersindizium im Philogelos", *Sitzb. Wien* 149.5 (1905) 13-14. The papyri in this publication were not reprinted in the *SB*. Cf. K.A. Worp, *BASP* 13 (1976) 31, and for a revised text of this papyrus, a forthcoming article of Sijpesteijn and Worp in *ZPE*, from which some of the prices for grain are quoted.

- 320 Cumin for future delivery costs 5,000 dr. per artaba (*SB V 7667*²⁴)
- 322 One keramion of wine is equated to 3,000 dr. (*P.Oxy. VIII 1139R*, introd.)
- 323(?) Rent of 21 T. for a parcel; annual pay for watering a vineyard of 10 T. (*P.Vindob.Sal. 8*, cf. addenda)
- 323 Rent of part-share of 3 1/4 arouras is 1,200 dr. per annum (*P.Gen. 10*)
- 325 Rabdouchos gets 2,000 dr. per diem = 10 T. per month (*P.Oxy. XIII 1626*)
- 326 Vegetable seed for future delivery is 7 T. per artaba (*P.Col. VII 177*)
- 328 Mare sold for 130 T. (*P.Thead. 4*; cf. *P.Oxy. XLIII 3144.9n.*)
- 334/5 1/6 of a heliasterion rents for 8 T. 2,000 dr. per annum (*P.Vindob.Sal. 12*)
- 337 Part of a house rents for 25 T. per annum (*P.Panop. 12*)
- 338 Prices from declarations by guilds in Oxyrhynchos:²⁵
 Wheat, 24 T. per artaba (*P.Oxy. I 85*, introd.)
 Barley, 13 T. 2,000 dr. per art. (same)
 Bronze ingots, 4 T. per lb. (same)
 Bronze, worked, 6 T. 4,000 dr. per lb. (same)
 Various oils, 5-10 T. per lb. (*P.Harr. 73*)
- 339 Part of a house rents for 25 T. per annum (*P.Panop. 13*; the house is evidently the same as in 337)
- 340 Wine is 3 T. per sextarius, 20 T. per spathion (*BGU I 21*)
- 341 Recruit seems to get 1 T. 2,400 dr. per annum for clothing allowance (*PSI VII 781*²⁶)
- 342 9 1/2 ar. of grainland in Karanis sold for 50 T. (*P.Col. VII 181*)
- 342 3+ ar. of grainland at Philadelphia sold for 2,000 T. (*BGU IV 1049*)
 6 rolls of papyrus valued for taxes at 40 T. (*P.Panop. 19 xi*)
- 344 Annual rent for a carpetmaker is 20 T. (*P.Mert. I 33*)
- 345 Clothing items run from 386 T. 4,000 dr. to 1,026 T. (*P.Abinn. 81*)
 House in Oxyrhynchos rents for 90 T. per annum (*P.Harr. 82*)

24. This is a sale for future delivery, and the nature of the prices in such contracts has been disputed. Bagnall will discuss this question elsewhere; here it suffices to indicate his conclusion, that the price given is the result after deducting interest from the true price, and that the true price is probably 50 per cent more.

25. One must use these prices only as corrected; *P.Oxy. I 85* is republished as *Sel.Pap. II 332*; the corrections in *BL III 129* come notably from Segrè, *Aegyptus 27* (1947) 229, but note that his 13 den., taken into *BL*, is a slip. West and Johnson were, unfortunately, unaware of any of these changes, even though they used Segrè's book, where the corrections are taken for granted, and other works where the correct figures were used. As a result, the discussion of 338 in their two books is a ruin, cf. n. 31 infra.

26. Line 6 of this papyrus seems to suggest an equation of one artaba of vegetable seed and 500 talents, if the reading is correct. The note so indicating is a later addition, though evidently in the same hand as the first hand of the text. There is a mistake somewhere; it is absurd to suppose that the clothing allowance for 108 recruits for a year was worth less than one artaba of vegetable seed.

- 346 Cow is worth 600 T. (*P.Abinn.* 60)
 Barley costs 30 T. per art. (*P.Abinn.* 43)
 Dates cost 15 T. per art. (*P.Abinn.* 43)
- 347 A government official advances 10,000 T. (*P.Oxy.* XLIII 3146)
 Salt is quoted at 10-14 T. (*P.Mert.* I 34)
 Anabolicum is 90 T. (*P.Mert.* I 34)
- 348 2 large palm trees sold for 124 T. (*BGU* II 456)
 1 ar. of grainland sold for 1,000 T. (*BGU* III 917)
- 349 Some minor cash taxes amount to 2 T. 2,060 dr. per aoura; a village total is over 9,500 T. (*P.Amh.* II 140²⁷)
- 350 Penalty for breaking a contract, 2,000 T. (*P.Abinn.* 62)
- 346-350 Prices from the Abinnaeus archive but not precisely dated:
 Male slave worth 1,200 T. (*P.Abinn.* 64)
 2 solidi plus 50 T. is a fair bribe (*P.Abinn.* 35)
 Wine costs 25 T. per spathion (*P.Abinn.* 75)
 A daeratio of dike work costs 800 dr. to 22 T.+ (*P.Abinn.* 74)
 Cows cost 600-800 T. (*P.Abinn.* 80)
 Horses cost 70-350 T. (*P.Abinn.* 80; the trans. reads 150, but the text says 350; see *P.Oxy.* XLIII 3144.9n)
 Rent for a house in Alexandria runs ca. 1,500 T. (per annum?) (*P.Abinn.* 22)
- 351 House in Oxyrhynchos rents for 150 T. per annum (*PSI* VI 707)
- 352 Carpet for visit of dux costs 1,500 T. (*P.Oxy.* XII 1431)
- 353 Palm grove rents for 8,000 T. per annum (*P.Oxy.* XIV 1632)
- 359 Money taxes per person (some taxes) run 2,557 T. (*SB* V 7756)
- 360 Arakos costs 1,200 T. per art. (*P.Oxy.* VII 1056)
 Meat is 96 T. per lb. (*P.Oxy.* VII 1056)
 A topos rents for 800 T. per annum (*PSI* V 467)
 Part of a house rents for 6,000 T. per annum (*P.Oxy.* XIV 1695)
- 362 Hide costs 5,000 T. (*P.Oxy.* VII 1057)
- 364 Deposit of 11,600 T. is made (*P.Ryl.* IV 662)
 Apprentice paid 200 T. per diem (*PSI* IV 287)
- 372-374 Prices for advance sales;
 Barley, 500-600 T. per art. (*P.Col.* VII 182, 184²⁸)

27. It is not clear to us just what taxes are included in this sum; we are uneasy at the conclusion that *μέταλλα* in the text really refers to mines. But the figures are perhaps of some use as an order of magnitude.

28. Aurelia Tetoueis documents, published by Day and Porges [Pomeroy] in *AJP* 81 (1960) 157-75 (*SB* VI 9603). They are discussed most recently by Z. Packman in *Cd'E* 50 (1975) 285-96; we do not follow her conclusions. Cf. *supra*, n. 24.

- Wine, 12,000 T. for unspecified quantity (*BGU XIII 2332*²⁹)
- 377 1 room of house rents for 2,500 T. per annum (*P.Lips.* 17)
- 381 Loan of 28,000 T. is made (*P.Oxy.* VII 1041)
- 382 House in Oxyrhynchos rents for 30,000 T. per annum (*SB IV 7445*³⁰)
- 390 6 angeia of pitch cost 12,000 T. (*P.Oxy.* XIV 1753)
- 1 lb. of meat costs 200 T. (*P.Oxy.* XIV 1753)

N.B. All prices have been converted into talents even if given in some other form, like denarii, in order to facilitate comparison of figures.

A careful reading of this list discloses that any attempt to construct a cost-of-living index is futile; too few of the prices are directly comparable. Nonetheless, one can observe that the amounts in copper currency quoted for all manner of prices increase consistently throughout the period. There is no sign at all of the deflationary periods claimed by the various writers quoted above, and in fact their claims of this sort were based on misreadings, miscalculations, and misunderstandings.³¹ Even though it is not possible to construct any precise chart of expenses, it will be evident that in the first decade of the century a talent was still a fair amount of money, and prices in drachmas were still frequently quoted. The overall upward trend of prices showed a quintupling of a rabdouchos' wage between 301 and 325, and the order of magnitude of other prices suggests that this figure is not too far out of line.

The course of prices in the early 330's is very poorly known. The rents quoted show high price

29. Cf. *supra*, n. 24. We are indebted to Dr. W. Brashear for providing us with a copy of this text in advance of publication.

30. From the published text of lines 14-15 one would suppose that the rent was 14,500 den.: $\mu\nu|\rho[\acute{\iota}]ας\ τετρακισχιλίας\ πεντακοσίας$. But Professor Ann Hanson, who kindly examined the papyrus for us in Princeton, reports that "the scribe wrote mu/upsilon at the end of line 14; at the beginning of line 15 he wrote rho. He may then have begun an alpha by mistake, but he subsequently caught himself and scratched through his stroke. What Johnson read as a sigma in $\mu\nu\rho[ί]ας$ is no doubt the beginning of the tau in $\tauετρακισχιλίας$." One would then read $\mu\nu|\rho[α](ιάδας)\ τετρακισχιλίας\ πεντακοσίας$, or 4,500 myr. den., hence the sum as given here.

31. Mickwitz (99-101) argues for a post-316 deflation on the basis of a comparison of the gold price in *P.Oxy.* XII 1430 with a hypothetical price based on the cost of donkeys and produce earlier. This is not methodologically acceptable. The deflation of post-341 is based on the price of vegetable seed in *PSI VII 781*; on the anomalous character of this figure see *supra*, n. 26. West and Johnson, in *Currency* 124-5, argue for deflation in 316 by noting that the price of barley on the free market in 314 is ten times that used as a figure for compulsory purchases by the government in 315-316. The comparison is irrelevant. The levels they quote for 338 are based on the original misreading of *P.Oxy.* I 85 and *P.Harr.* 73 (cf. *supra*, n. 25); astonishingly enough, they still did not realize that the text had been corrected when they published *Byzantine Egypt* in 1949, for there on p. 177 they cite Bell, who gave the right price, but nonetheless adhere tenaciously to the reading in the first edition. Rémondon's one deflation, of 316, is evidently based on miscalculation concerning *P.Ryl.* IV 616; cf. Rea's remarks (*supra*, n. 21).

levels, but it is not until the declarations of prices by guilds in 338 that our information becomes fuller. There is no evidence that these prices represent conformity to a government schedule, although the requirement of a declaration may have been intended to moderate prices. At any rate, wheat now stands at 24 T., more than 14 times the (rather high for then) price in 314. The relation of barley to wheat is normal.

Our prices from the early 340's do not give much comparability. The sale of land at Karanis for 50 T., probably to judge from the tenor of contemporary documents an attempt to get rid of unremunerative but taxed land, is in stark contrast to the sale of a third as much land in Philadelphia for 40 times the price in another text of the same year. Drachmas have now practically disappeared as an accounting unit. By 346, we have a price for barley at more than twice that quoted in 338; even allowing for annual fluctuations, there has been a rise in prices. Still, a thousand talents in this time is still a substantial sum, and the 10,000 T. advanced in 347 is actually a significant sum. At the end of the decade, amounts in the thousands of talents are becoming routine. It is particularly regrettable that the various accounts in the Abinnaeus archive cannot be dated precisely; still, they are basically in line with the other prices known for the period 345-350.

It is about 350 that a new wave of sharply higher prices appears. It is unfortunate that we have so few prices between 350 and 359, but house rents in 351 already seem sharply more expensive in copper money than in 337-339, and by 359 we are dealing in the thousands of talents in talking about various personal money taxes. With the 360's our information increases somewhat, and we see a considerably higher level again, with arakos at 1,200 T. per artaba and rents in the thousands of talents per year. It is hard to say if the following years reveal such a jump as before 360; if the meat prices are at all representative, we are dealing with something like a doubling over 30 years. At any rate, the prices that we have (which are few) for the period 380-390 do not seem vastly higher than those in the period 360-380. If so, a period of relative stability followed a twenty-year period in which prices rose by about a hundredfold. We do not offer an explanation for the course of events. West and Johnson repeatedly affirmed that prices did not really rise in terms of gold, but that what happened was repeated revaluation of the actual money, so that the piece that was worth 50 denarii became a 100, or 500, or 1,000 denarii piece.³² Some parts of this period show a sufficiently gradual rise of prices expressed in copper that this explanation may be difficult; it would be more attractive for the period from 345-360. But a thorough numismatic inquiry must underlie any attempt to frame such explanations.

It will, we think, be evident to the person who studies the list given above that it is very unlikely that a papyrus in which amounts in the thousands and tens of thousands of talents appear as tax payments, and in which the solidus appears as worth 28,000 talents, can antedate the inflation which began in the 350's. The earliest second indiction which would be conceivable is that of 358; we have too little information to be certain if this is possible, and in our view it is highly unlikely that this is

32. See *Currency* 124, 157 ff. Mickwitz had already taken a similar view. The major argument for such a position is simply that the weight of bronze implied by the thousands of talents, if the talent is unchanged in weight from earlier, would be absurdly large and worth more in itself as ingots than what it was buying.

the year meant. In the next section we will proceed to try to refine our conclusions, as they apply to *CPR V 26*, and then to use these conclusions to discuss a number of other fourth-century texts left undated by their editors or, in our opinion, incorrectly dated by their editors.

4. Dating *CPR V 26* and other Fourth-Century Papyri

We have established, therefore, that it is not possible for the second indiction in *CPR V 26* to be earlier than 358, and that 358 itself is not likely. The prime candidates, then, are 373 and 388; for the hand is very much a fourth-century hand, and we should be very surprised to find this text dated to a later century. Can we decide between 373 and 388?

One factor which cannot provide a clear answer, but which inclines us to lean toward the latter date, is the great abundance of names characteristic of an openly Christian community. Some of the names popular in the codex are, though widely used by Christians, probably not determinative; such are Dorotheos, Elias, Ioannes, and Paulos. But the assemblage also includes Abraamios, Athanasios, Daniel, David, Theodosios, Iakybis, Isakios, Iosephis, Mathias, Martha, Maria, Martyria, Petros, Samuel, Sophia and Susanna. We do not think that it would be profitable to explore the chronological range of each of these names in detail here, but most of them are rare or unknown in the papyri before the fourth century, and some were previously attested first even later. It must be pointed out that not only are these names present, many of them are common, even among patronymics. If we have taxpayers with Christian patronymics, in considerable abundance, we must suppose that their fathers were born after 330. This consideration does not exclude 373, but the four decades or so since Christianity became prominent and open in Egypt are barely enough time for such a sweeping change in the nomenclature. The contrast between the names here and those in the Hermopolite land-registers like *P.Flor. I 71*, which probably date from about 330-340, is striking: hardly a Christian name is to be found in the earlier texts.³³ In general we have the impression that the assemblage of names in the *CPR* text is characteristic of the period which begins late in the fourth century, whereas those of most texts of the first half of the century are full of names characteristic of Roman, pagan Egypt. The Karanis texts of this century also look backward rather than forward. We surely must suppose that it would take two or three decades after 330 for the younger generation to become predominantly Christian in names, and another twenty to thirty years for this generation's offspring to become the dominant factor among the taxpaying population.

The conclusions reached above, whether 373 or 388 is correct, have important implications for the dating of a considerable number of texts. One important body where progress can now be made is the extensive Karanis archives of the middle of the century, of which parts are found in several collections, most notably that of New York University, published by Naphtali Lewis, and that of Columbia University, which is currently being prepared for publication.³⁴ In *P.Col. VII* there will be a full discussion of the date of the series of grain receipts, with new evidence leading to the conclusion that these range from about 333 to 353, with the bulk falling between 339 and 347. It is obviously

33. These land-registers will be re-edited, together with an unpublished Giessen codex belonging to the same group, by P.J. Sijpesteijn and K.A. Worp, *Zwei Landlisten aus dem Hermopolites (P.Giss. 117 und P.Flor. 71)*, Stud. Amst. 7 (1977).

34. See *P.NYU*, preface, for a description of the archives. See above, n. 4, for the Columbia collection.

impossible to provide the detailed argument here; for the present we must ask the reader to accept that there will be sufficient justification given for these dates later.

The accounts of *P.NYU*, however, are more difficult to date. *P.NYU* 12, 15, 16 and 17 are, as Lewis pointed out, linked together by the appearance of a number of names of taxpayers in multiple texts. Since some of these are named also in Isidoros papyri, and since these texts mention 8th and 10th indictions, Lewis dated them to 319/320 and 321/2. An objection to this dating was raised by Dieter Hagedorn, who correctly pointed out that a tax receipt of indiction 10 found on the recto of the papyrus of which *P.NYU* 16 occupied the verso, namely *P.NYU* 3, had been dated to 336/7 by Lewis on the basis of the appearance of the sitologoi of that text in an unpublished Columbia papyrus of 340.³⁵ A coincidence of tenth indictions on the same papyrus and representing different years, Hagedorn remarked, was rather unlikely. Since the date of the receipt to 336/7 is justified, we must also place *P.NYU* 16 in that year. This virtually ensures that *P.NYU* 12, 15 and 17 also belong to this period. If we examine the cash figures given in these papyri, we find that a date in the mid 330's is eminently suitable. *P.NYU* 12.3 seems to equate 8 talents with 5 pounds of meat; this price would not be out of line in 336, just two years before wheat was 24 T. per artaba, but it would be extraordinary in 321. The amounts in general, mostly sums of a few talents with the occasional mention of some thousands of drachmas, are quite acceptable for the period of 336. The other texts of this group have payments in kind, from which nothing further can be deduced, but their close links with the other texts indicate a date at the same time. We may therefore place *P.NYU* 3, 12 and 16 in 336/7; 17 is thus of 334/5, and 15 belongs to approximately the same date. Some further texts of this group in the Columbia collection have similar amounts of money paid and belong to the same years.

There is another pair of accounts, *P.NYU* 13 and 14, which are records of collections of merismoi. No indiction numbers are preserved. The editor dates them, and likewise *P.NYU* 19, a list of landholders, to ca. 330-340 on the basis of the appearance of several persons named in the grain delivery receipts, which he assigned to the same period. *P.NYU* 14 and 19 are very closely linked with the forthcoming *P.Col.* VII 127, 128 and 129; the first and third of these bear dates of indiction 7. All five texts are written in the same hand, all have the same persons, listed in the same order, and the proportions indicated have a close relationship (which will be discussed in *P.Col.* VII). All of these must therefore be dated to an indiction 7. The amounts paid are consistently in the thousands and myriads of talents, with a family total of some 60,000 to 100,000 talents in each case where money is collected. We know that these people were of modest means, and these sums must therefore follow the great change in the value of money which we have indicated for 350 and following. It appears, therefore, that 348/9, which would be the most congenial year considering the grain delivery texts, is not possible, and that 363/4 must be the year meant. In all likelihood, *P.NYU* 13 belongs to about the same period. Again, further texts in *P.Col.* VII belong to the same period. Furthermore, the 7th indiction mentioned in *P.NYU* 4.9, where Aion pays 3,000 T. for the *adaeratio* of the *vestis militaris*, is probably also 363/4 (assuming the reading of the numeral is right). Since no amount is fully preserved in the two receipts of this papyrus which date to indiction 12, we cannot say for

35. *ZPE* 2 (1968) 70-71.

certain when they must be dated. The receipt for clothing was probably added after the other two, however, and indiction 12 is thus probably 353.³⁶ One further text which joins this group is *P.Mich.* XII 651, a record of tax payments made through Aion son of Sarapion, totalling 225,300 T.; on the verso a balance unpaid of 106,300 T. is mentioned. The editor dated the text on the analogy of the NYU papyri to ca. 330-340, and remarked, "the magnitude of the amounts involved perhaps implies commutation of the land tax." If this papyrus belongs to the period two decades later, however, no such conclusion is required. We suggest a date around 360 for this text.

It must be admitted that the similarity of the amounts in these Karanis texts and those in *CPR* V 26 would point to 373 as the more likely date for the latter text, in contrast to the other evidence cited. It is our judgment that the prices of 388 would be better related to the value of the solidus given in the codex, but the data are not sufficient to justify a detailed argument on this point.³⁷

We turn now to an area where we venture at last with some trepidation, the relative and absolute dates of some other fourth-century texts where a price of gold in copper money is indicated but where an absolute date is not preserved in the text. We list these texts, giving the value of a pound of gold in copper as indicated in these texts, in order of increasing size of the amounts.

<i>Text</i>	<i>Amount</i>
PER 37	7,200 T.
<i>SPP</i> XX 96	8,640 T.
<i>SPP</i> XX 81	13,200 T.
<i>P.Oxy.</i> IX 1223	969,580 T.
<i>P.Oslo</i> III 88	1,080,000 T.
<i>PSI</i> VIII 959-960	1,800,000 - 2,160,000 T.

CPR V 26 fits into this group between *P.Oxy.* 1223 and *PSI* 959-960, as it gives a figure of 2,016,000 T., actually falling in the middle of the range attested by the *PSI* texts, which give three different and contemporaneous values over a range of about 20 per cent. It will be seen, therefore, that the *PSI* texts must be about contemporaneous with *CPR* V 26, i.e. probably around 388. This would fit well with the editors' remarks, that the collector in the *PSI* texts is known from a horoscope to have been born in 338; the horoscope mentions dates as late as 385. *P.Oxy.* 1223 and *P.Oslo* 88, on the other hand, would probably fall a decade or 15 years earlier, around the start of the 370's or a bit earlier.

36. The amount paid for one month's pay of an assistant to a liturgical official in *P.NYU* 4.15 is ἐξ[, which the editor remarked in a note should be restored probably as ἐξ[ακισχιλίας]. If the date of 353 is correct, this may be right. But one wonders if 600 might not be more likely. It is even worth pointing out *SPP* XX 81.20, where a boethos of a liturgical official is paid 60 T. per month. This text is unfortunately undated; cf. below for an approximate date.

37. A solidus of 28,000 T. ought to purchase 8-12 artabas of wheat at somewhere from 2,300 T. to 3,500 T. per artaba; barley, 15-20 artabas at about 1,400 T. to 2,000 T. per artaba. The price for advance delivery in 372-374 for the latter item was 500-600, and even if we assume that 1,000 was more nearly the market price at the time, a doubling in about a decade and a half is more likely than contemporaneous prices one twice the other. But such reasoning, based on such scanty evidence, is not entirely compelling, as we have had occasion to remark.

With the other three texts, it can be seen at a glance that we are dealing with a considerably earlier period. We would judge that *SPP* XX 81 might belong in the early 340's, the other two texts sometime in the previous decade, perhaps in the early to mid 330's. The reader will be conscious by now of the approximate nature of such datings, but it is doubtful that leeway of more than about 5 years on either side of these ranges is possible.

We hope that the argument above provides the beginnings of a means of dating the rise in prices expressed in copper in the fourth century. We are conscious, however, of the pressing need for a thorough reexamination of the subject with a still fuller collection of evidence and, finally, an attempt to relate these prices to the actual coins with which they were paid.

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herausgegeben

von

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COMMODITY PRICES IN P.STRAS. 595

This papyrus, broken at the left but elsewhere complete, constitutes an accounting given through an epimeletes to a superior official for some disbursements of wine, meat and wheat, along with cash payments of wages to sailors. The papyrus is dated by references to indictions (11, 14 and 15, according to the editor), but the editor sought to find a more precise date by comparison of the prices attested in this text with those known from elsewhere; to this end, she provides a table of prices in other documents.¹⁾ From these she concludes, "on doit pouvoir dater notre papyrus entre 360 et 390 p.C.", and goes on to suppose that the date of the 15th indiction mentioned is 371/2, rather than 386/7. The prices on which this conclusion is based are the following: wheat, 200,000 denarii per artaba; meat, 250,000 den. per lb.; and wine, 500,000 den. per sextarius.²⁾

Despite the array of numbers in the editor's table, these figures are disquieting. An artaba of wheat, we see, costs less than a pound of meat, and only 40 per cent of what a sextarius of wine costs. This situation is wholly abnormal; for example, the price of wheat in A.D. 338 was eight times that of a sextarius of wine in 340,³⁾ and while usable prices for meat are rather scarce, one papyrus gives 1 solidus as the price for 120 lbs. of meat,⁴⁾ whereas a solidus would normally buy about 8-12 artabas of wheat.⁵⁾ These relationships

1) It should be pointed out that a typographical error has placed the price of wheat in P. Stras. 595 in the wine column, and that for wine under wheat; the editor's commentary makes it clear that this is not her intention.

2) The figure for meat is actually an approximation of the true figure, 253,333, while wheat actually works out to 234,483. The editor's note to line 5 seems to indicate that she arrived at her approximation, then tried to make the numbers fit it.

3) P. Oxy. I 85, introd., compared to BGU I 21. For the context of these prices and a list of known prices from the fourth century, see ZPE 24 (1977) 116-119. The conclusion on p. 123 of that article, that PSI VIII 959-960 belong to the later 380's (and that this is also the date of CPR V 26) seems to us confirmed by the close relationship of these accounts to the horoscopes, which date as late as 385; see for a good presentation, O. Neugebauer and H.B. Van Hoesen, *Greek Horoscopes* (Philadelphia 1959) p. 66.

4) P. Oxy. XVI 1920; see A.C. Johnson and L.C. West, *Byzantine Egypt, Economic Studies* (Princeton 1949) 185 for a list of documents with meat prices. Most of these, however, are undated and give prices in copper currency.

5) See ZPE 24 (1977) 123 n. 37.

suggest that some of the readings in P. Stras. 595 need examination. Thanks to a photograph kindly provided by Professor J. Schwartz, we have been able to find readings which suit normal price relationships better than those of the editio princeps. As we have a number of other new readings to suggest, we print a revised text.

- 1] Νεωτέρῳ πρυτάνι δι(ἀ) Λεοντίου ἐπιμ(ελητοῦ)
 2 [[c]είτου ... α ...] καὶ μισθοῦ ναυτῶν· [[ἀξιῶ διασταλῆ<ναι>]] ἄνῳν δέ' γνοῦς
 {δε} τὴν τούτων διαστολήν,
 3] .. [.] c. ἔστι δέ· ὑπ(έρ) κρέως ιδS/ λι(τραι) ρν (δηναρίων) Ἄ'Aw, ὑπ(έρ)
 οἴνου ιεS/ ξ(έεται) ρμς (δην.) Ἄ'[ψ
 4] [[..... κ'] τῆς αὐτῆς ἰνδ(ικτιονος) α'' νο(μισμάτια) ε ι'' κ'' χωρήσαντα
 Cευηριανῶ πρεσβε()
 5] .. ασπδ
 6 cί]του ιδS/ (ἀρτάβαι) νη (δην.) Ἄ/Zτξ, μισθοῦ ναυτῶν νο(μισμάτια) ε ζ''
 7] ..

1 Λεοντίου: τιου corrected 3 ρμς: ζ corrected fr. S (= 1/2); ιεS/: ιε corrected from ~~ξ~~ (= ξέεται) 5 This line was certainly added as a supralinear note to line 6, perhaps by a second hand.

"[To ...] Neoteris, prytanis, through Leontios the epimeletes, [from ...] of wheat ... and wages for sailors. But now, having come to know their report, [...] They are as follows: For meat of the 14th ind., 150 lbs., 1,800 myriads of denarii; for wine of the 15th ind., 146 sextarii, X,700 myriads of den.; [...] for the same ind. 1, 5-1/12 1/24 solidi paid to Severinus the presbe () [...] wheat of the 14th ind., 58 art., 7,360 myriads of den.; wages for sailors, 5 1/6 solidi..."

1. There is blank space before Neoteris' name; perhaps in the lacuna to the left another name (Flavius?) stood. The editor's commentary (p.138) indicates that she considered that the text of line 1 would have continued after the blank space in which νῳν δέ was later written as a correction to line 2. This conclusion seems to us completely without foundation. We cannot estimate the loss at the left, but it was probably considerable.

2. Probably the identity of the author of the document is lost in the lacuna, along with part of his title; what stands at the beginning of this line may perhaps be the ending of this title.

4. We consider that $\epsilon\kappa$ are written here for $\epsilon\beta\kappa$.

7. The editor does not indicate the existence of any text in this line, but the abbreviated end of a word is probably present, possibly [σε]λη(μετωμα).

The reader has seen that we do not consider that the thousands' digit in the price for wine is readable; in fact, all but the curve to mark the number as the thousands' digit is lost in a hole. The psi, rejected by the editor, is clear. For the remaining two prices, we arrive at a price of 120,000 den., or 80 talents, for a pound of meat, and 1,268,966 den., or ca. 846 talents, for an artaba of wheat. The relationship between artaba of wheat and pound of meat is thus established at about 10.5:1, which is very much in keeping with what we would expect. As to the price of wine, we are in ignorance of the quality of the wine. But it is worth noting that in P.Lond. III 984 (p.237) sextarii of wine and pounds of meat are added together as though equivalent and then calculated at a common rate. Other evidence suggests also that the ratio between wheat and wine was similar to that between wheat and meat.⁶⁾ If this were the case in P. Stras. 595, one would arrive at a total cost for wine of 1,752 myriads of denarii. It is thus extremely likely that we should restore an alpha in the thousands' place in this price.

The question of an absolute date remains. The two meat prices which are helpful are the prices of 96 T. in A.D. 360 (P.Oxy. VII 1056) and 200 T. in 390 (P.Oxy. XIV 1753). With our new figures, it can be seen that P. Stras. 595 must come from a period near, but probably somewhat before, 360. It is hard to say if this suits so precisely the wheat price, since the last previous wheat price known is from 338, quoted above. But arakos is quoted at 1,200 T. per artaba in the same papyrus of 360 which furnishes the price for meat; it is hard to give an exact relationship between arakos and wheat because of the almost total absence of useful documentation, but we think that they probably did not differ very much in price. Barley cost 600 T. per artaba on 'advance sale' in 374, which probably indicates a true market price of more like 900 T.; on the historical 3:2 relationship of wheat to barley, a wheat price of ca. 1,350 T. at that time would be indicated.⁷⁾ It need hardly be said

6) The prices of 338 and 340 quoted above show an 8:1 ratio; some allowance must then be made for two years' worth of inflation.

7) A discussion by Bagnall of the significance of price in this kind of document will appear in GRBS 18 (1977) 85-96.

that this is only a very rough approximation. It seems to us rather more likely, therefore, that the date of P. Stras. 595 (indiction 1) is 357/8 than that it is 372/3.

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