

V.—*Parerga Ostracologica*

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This paper consists of four critical notes on *Ostr. Mich.* 1. The basis of each note is a revised text of an ostrakon or a group of ostraca, and in each note the new text is equipped with a concise commentary. A brief summary follows: (1) No. 127 consists of four lines, of which the last three are found to be a complete misrepresentation of the writing. In its revised form No. 127 is a receipt for nomarchic taxes and invites comparison with No. 11, Meyer *Ostr.* 42, and *P.S.I.* ix.1055b. (2) Nos. 128, 129, and 679 are shown to be receipts for *anabolicum*, which is not otherwise represented in the Michigan ostraca. (3) Nos. 144, 146, and 260 now appear as receipts for payments made on behalf of *pittacia* and may be brought into relation with other Karanis ostraca pertaining to the same institution. (4) No. 279 is revised so that it becomes an acknowledgment of three naubia instead of one hundred naubia; the implication of these numbers is discussed. No. 64 is revealed as a list of mixed character; its meaning is elucidated by the interpretation of No. 337 as a record of contributions to dike work.

Between the years 1920 and 1934 the University of Michigan acquired by excavation and purchase some twelve hundred and eighty Greek ostraca from Egypt. Of these, six hundred and ninety-nine were published by Professor Leiv Amundsen in 1935.¹

¹ *Ostr. Mich.* 1 = Leiv Amundsen, *Greek Ostraca in the University of Michigan Collection*, Part I, *Texts*. (Univ. of Michigan Stud., Human. Ser. 34) Ann Arbor, 1935.

For the convenience of the reader editions of ostraca and papyri are cited with the abbreviations adopted by Liddell and Scott, *A Greek-English Lexicon*, new edition, List III (pp. xliii–xlv). For works not included in that list the following abbreviations have been used:

Ostr. Cair. Lewis = Naphtali Lewis, *Ostraca grecs du musée du Caire*. In *Études de Papyrologie* 3 (1936) 93–111.

Ostr. Fay. = P. Fay., pp. 317–332.

Ostr. Oslo. = Leiv Amundsen, *Ostraca Osloënsia. Greek Ostraca in Norwegian Collections*. (*Avhandlingar utgitt av det Norske Videnskaps-Akademi i Oslo*. II. Hist.-filos. Klasse, 1933, No. 2) Oslo, 1934.

P. Athen. = G. A. Petropoulos, *Papyri Societatis Archaeologicae Atheniensis*. (*Πραγματεῖαι τῆς Ἀκαδημίας Ἀθηνῶν*, 1) Athens, 1939.

P. bibl. univ. Giss. vi = Grete Rosenberger, *Griechische Verwaltungsurkunden von Tebtynis aus dem Anfang des dritten Jahrhunderts n. Chr.* (*Mitteilungen aus der Papyrussammlung der Giessener Universitätsbibliothek*, vi) Giessen, 1939.

P. Cair. Boak = A. E. R. Boak, *Early Byzantine Papyri from the Cairo Museum*. In *Études de Papyrologie* 2 (1934) 1–22; 3 (1936) 1–45; 5 (1939) 85–117.

P. Col. II = W. L. Westermann and C. W. Keyes, *Tax Lists and Transportation Receipts from Theadelphia*. (Columbia Papyri, Greek Series, II) New York, 1932.

P. Mich. IV = H. C. Youtie, V. B. Schuman, and O. M. Pearl, *Tax Rolls from Karanis*, Part 1, *Text*. (Univ. of Michigan Stud., Human. Ser. 42) Ann Arbor, 1936.

Unfortunately, he lacked photographs of as many as two hundred and eighty-six ostraca, and he labored in consequence under a severe handicap.² All the photographs are now available at the University of Michigan Library, and the critical notes which compose the present paper are an attempt with their aid to supplement Professor Amundsen's transcripts. The work, however, on which the notes rest, has been done under conditions not entirely ideal, since the ostraca published by Amundsen had been returned to the Egyptian Museum at Cairo³ before I began to concern myself with the remainder. Nevertheless, the superior advantage is mine, because the photographs are from the studio of a great master of technical photography, Mr. G. R. Swain. I have repeatedly extolled their virtues for the study of ostraca; they are a basic contribution to the material resources of papyrology at the University of Michigan.⁴

The revised texts which have resulted from the study of the photographs have been painstakingly verified by Dr. O. M. Pearl. His contribution to Inv. No. 9421 is acknowledged in its place. To Professor Leiv Amundsen I am increasingly indebted for laying the foundations on which I have tried to build.⁵

H. C. Youtie and O. M. Pearl, *Tax Rolls from Karanis*, Part 2, *Text and Indexes*. (Univ. of Michigan Stud., Human. Ser. 43) Ann Arbor, 1939.

P. Princeton III = A. C. Johnson and S. P. Goodrich, *Papyri in the Princeton University Collections*, III. (Princeton Univ. Stud. in Papyrology, No. 4) Princeton, 1942.

² *Ostr. Mich.* I, p. x; cf. footnotes 26 and 76.

³ Apart from the Askren Collection (*Ostr. Mich.* I.1-97), which belongs to the University by right of purchase (cf. footnote 12). The other ostraca (*Ostr. Mich.* I.98-699), now in the possession of the Egyptian Museum at Cairo, were all found at Karanis (Kôm Aushim) in the course of excavations conducted by the University of Michigan. Only the skilfully wrought photographs produced by Mr. Swain prevented their loss from developing into a grave threat to one phase of papyrological research in this country.

⁴ For more details regarding the modern history of the ostraca see *Ostr. Mich.* I, pp. ix-x; *TAPhA* 71 (1940) 623f., 72 (1941) 439-441.

⁵ For a bibliography of critical work on the Michigan ostraca see *TAPhA* 72 (1941) 440, footnote 7. Experienced papyrologists will understand the essential methodological relationship which binds the critical work to the edition. When an edition leaves the hands of its author, the legitimate activity of correctors begins. The endless process of editing, correcting, and correcting again involves neither loss of prestige in the editor nor animus in the corrector. For the sake of those to whom this view of the scholarly undertaking is alien or unpalatable, it is salutary to recall that the *Berichtigungsliste* devotes 85 pages to corrections of Ulrich Wilcken's *Griechische Ostraka*, which remains a celebrated monument to the eyes and the brain of the greatest of all papyrologists.

1. NOMARCHIC TAXES

Among the ostraca from Karanis the editor has included as No. 127 a text which states that in the first year of an unnamed emperor, presumably in the third century A.D.,⁶ a certain Atheis paid seven drachmas as the final instalment on the price of an unnamed object. In order to avoid complicated description, I reproduce Amundsen's transcript.

Ostr. Mich. 1.127

καὶ τῷ α' διέγρ(αψεν)
 'Αθεῖς τὰς τῆς τι-
 μῆς λοιπὰς ἐπὶ τὰ
 δραχ(μάς).

Nothing in these four lines betrays a false reading; they are grammatically coherent and employ the unadorned style characteristic of the short texts on ostraca. The photograph, however, tells another story. The π of *λοιπὰς* cannot be read, even when allowance is made for the uncertainty expressed by the dot. The word is *λόγον*, and with this as a clue the true text of the receipt has been obtained:

καὶ τῷ α' διέγρ(αψεν)
 'Αθ(ύρ) εἰς τὸν τῆς νο-
 [μ]αρχίας λόγον ἐπὶ
 λό(γου) (δραχμάς) η.

1. *καί*: I follow Amundsen in retaining the dots because the letters are very much faded. Nevertheless, the reading is hardly in doubt. The remnants offer no palaeographic obstacle, and the structure of the text makes initial *καί* an eminently satisfactory solution. This point is discussed further below. *τῷ α'*: *sc. ἔτει*. Cf. *P.S.I.* ix.1055b, which is reprinted below. 2. *'Αθ(ύρ)*: *αθ* ostr. In the left margin, toward the edge of the ostrakon, the photograph reveals a large and bold cross, much like χ, seemingly made by a second hand. This is the marginal *decussis*, which has become familiar as a check-mark from *P. Col.* II.1 Recto 6 (cf. p. 165); *P. bibl. univ. Giss.* VI.49 Verso. I. 8; *P. Tebt.* I.103, where it is followed by a heavy dot,⁷ which is also known as an accounting device (*P. Tebt.* III.845, introd.); *P. Tebt.* III.834, introd. In the tax rolls from

⁶ "Date: III cent. A.D. ?" is Amundsen's statement.

⁷ Its presence in this text was first noted by Claire Préaux, *L'Économie royale des Lagides* (Brussels, 1939) 385, although she did not grasp its significance.

Karanis (e.g., *P. Mich.* iv.224.507, 818, 824) it is used to mark θέματα. In literary manuscripts it may mark an omission repaired in the margin or a passage for which a marginal scholion has been provided. In the Thucydides text in *P. Oxy.* xiii.1620, the *decussis* as well as other signs refer to variant readings entered in the upper margin.⁸ 2–3. νο[μ]αρχίας: ο and ας are badly faded and can scarcely be distinguished. Nevertheless, ν and χι are certain, and taken together with αρ, which can be traced with confidence just short of certainty, guarantee the correctness of the reconstruction. 4. λό(γου): possibly [λόγο]ν. Although the trace of writing is too faint and irregular to permit a decision, the phrase was certainly ἐπὶ λόγον, which occurs frequently in receipts immediately before the sum.⁹ (δραχμάς): λ ostr. The usual form of the symbol has the curves reversed, but see, e.g., *Ostr. Mich.* i.136.10, note; *Ostr. Oslo.* 10.7 (plate III b). Coarse or unskilled hands, like the 4th hand of *P. Mich.* Inv. No. 5766 (see footnote 11), are likely to treat the symbol in this way.

The revised text of No. 127 is a receipt issued to cover the payment in the month Hathyr (Oct.–Nov.) of an instalment of eight drachmas into the account of the nomarch.¹⁰ Neither the person nor the tax is named. Initial καὶ and the absence of a personal

⁸ Its occurrence in the Thucydides papyrus was called to my attention by Dr. Edgar R. Smothers, S.J. Cf. V. Gardthausen, *Griechische Palaeographie* 2 (Leipzig, 1913) 408; *P.S.I.* vii.846, introd. and note 9, and x.1175.3–4.

⁹ Friedrich Preisigke and Emil Kiessling, *Wörterbuch der griechischen Papyrusurkunden* (Berlin, 1924–1931) s.v. λόγος, Col. 36.

¹⁰ The λόγος of the nomarch is well attested for the Fayûm; see Meyer *Ostr.* 42, introd. Although the nomarch had lost much of the importance which attached to his office in the earlier period, he continued under the Romans to supervise the collection of a significant group of taxes and other charges. These were levied on objects of such character—e.g., trades, beer, bread, papyrus, fisheries, property transfers, customs, transportation—that the annual income derived from them was variable and could not be calculated in advance with precision. See Ulrich Wilcken, *Griechische Ostraka aus Aegypten und Nubien* (Leipzig and Berlin, 1899), i.597f.; Friedrich Oertel, *Die Liturgie. Studien zur Ptolemäischen und Kaiserlichen Verwaltung Ägyptens* (Leipzig, 1917) 165–168; Ludwik Piotrowicz, *Stanowisko nomarchów w administracji Egiptu w okresie grecko-rzymskim* (Société Scientifique de Poznań, Travaux de la Commission Historique, II, No. 4, 1922) esp. chap. 6 [I have profited from the kindness of Prof. Alexander Turyn, who gave me an oral translation of this chapter]; S. L. Wallace, *Taxation in Egypt from Augustus to Diocletian* (Princeton Univ. Stud. in Papyrology, ed. by A. C. Johnson, No. 2, 1938) 294, 333f. I have not seen a recent study of the nomarch by Richard Seider, *Beiträge zur Ptolemäischen Verwaltungsgeschichte. Der Nomarches. Der Dioiketes Apollonios* (Quellen und Studien zur Geschichte und Kultur des Altertums und des Mittelalters, ed. by F. Bilabel and A. Grohmann, Reihe D: Untersuchungen und Mitteilungen, Heft 8, Heidelberg, 1938); see the reviews by Claire Préaux in *Chronique d'Égypte* 29 (Jan. 1940) 174–176 and S. L. Wallace in *CW* 33 (1939–1940) 80 f.

name mark No. 127 as the continuation of an ostracon which is not now in our possession.¹¹

One other ostracon in the Michigan collection exhibits the phrase *εἰς τὸν τῆς νομαρχίας λόγον*. *Ostr. Mich.* 1.11¹² is a receipt for four drachmas paid by a woman, Euporous the weaver, into the nomarch's account in the month Choiak of the seventh year of Gordian (Nov.–Dec., 243 A.D.).¹³ Although the tax in question is not specified, it is an easy inference that the four drachmas were a partial payment on the trade tax due from weavers.¹⁴ In this respect the ostracon is especially useful for comparison with *P.S.I.* ix.1055b, which is described below.

A third text, Meyer *Ostr.* 42, completes the list of ostraca which record payments *εἰς τὸν τῆς νομαρχίας λόγον*.¹⁵ This is a short receipt issued somewhere in the Fayûm in 264/265 A.D., and so very close in date to *P.S.I.* ix.1055b.

Meyer *Ostr.* 42

(ἔτους) ιβ¹¹ τοῦ κυρίου ἡμῶν
Γαλλινοῦ Σεβαστοῦ δι(έγραψεν)
Ἐρμίας Τι[μ]αρχί[δ]ου¹⁶ εἰς τὸν τῆς
νομαρχίας λόγον(ν) . . . (δραχμάς) δ.

¹¹ Other examples of initial *καί* with continuative force occur in *Ostr. Mich.* 1.8 and 16, and among the still unpublished texts in Inv. Nos. 9800 and 9870. This use of *καί* finds its explanation in papyrus rolls like *P. Mich.* Inv. No. 5766 (*Aegyptus* 13 [1933] 573–575) and *P. Strassb.* 1.6–8, where consecutive receipts are joined by *καί*.

¹² This ostracon is one of a group purchased from Dr. D. L. Askren in July, 1925. It was found presumably in the Fayûm, but its exact provenance within that district has not been established. See Amundsen's preface to *Ostr. Mich.* 1 and his list of the Askren Collection on p. 225.

¹³ No. 127, written in Hathyr (Oct.–Nov.) of a first regnal year, cannot be the continuation of No. 11, which was written in the last year of Gordian III. This emperor was murdered in February or March, 244 A.D. (*RE* I, s.v. "Antonius," 2627f.), and the first year of his successors, the Philippi, extended only to August 28, 244 A.D. (Joseph Vogt, *Die Alexandrinischen Münzen* 1 [Stuttgart, 1924] 195). The earliest occurrence of Hathyr in the reign of the Philippi belongs to their second year. For the mode of reckoning regnal years in Egypt see Wilcken, *op. cit.* (footnote 10) 1.786f., or L. Mitteis and U. Wilcken, *Grundzüge und Chrestomathie der Papyruskunde* (Leipzig-Berlin, 1912) I, pt. 1, lviii.

¹⁴ See footnote 10. Wilcken's discussion of the *χειρωνάξιον* in his *Griechische Ostraka* (footnote 10) 1.321–333, is still of basic importance. See also the more recent accounts by Wallace, *op. cit.* (footnote 10) chap. 12, and A. C. Johnson, *Roman Egypt to the Reign of Diocletian* (Economic Survey of Ancient Rome, ed. by Tenney Frank, II, Baltimore, 1936) 537–544.

¹⁵ When it was published, it was the only ostracon text of its kind. See the editor's introduction.

¹⁶ Cf. F. Preisigke and F. Bilabel, *Berichtungsliste der griechischen Papyrusurkunden aus Ägypten* II, pt. 1 (Heidelberg, 1931) 15.

The illegible letters in line 4 may conceal the name of the tax,¹⁷ but allowance must be made for the possibility that the month to which the payment was credited immediately preceded the amount, or even, as in No. 127, that the amount was marked as an instalment with the phrase *ἐπὶ λόγου*, in the form *ἐπὶ λ(όγου)*, a not infrequent abbreviation. If either of these alternatives were correct, the ostrakon would provide another instance of a payment to the nomarch's account, without specific mention of the tax.¹⁸

Closely allied to these ostrakon texts is *P.S.I.* ix.1055b. Like Meyer *Ostr.* 42 it was produced in the twelfth year of Gallienus within the Fayûm, and like *Ostr. Mich.* i.127 it begins with *καὶ* and omits the word *ἔτος* in the date.¹⁹ As in both Michigan receipts, the payments recorded on the papyrus were made to the nomarch's account without designation of the tax, but since they are credited to Melanous the weaver, the sums are doubtless monthly instalments of the trade tax imposed on weavers.²⁰ In this respect *Ostr. Mich.* i.11 is a perfect parallel. To serve the reader's convenience, the text of the papyrus is repeated here with a few critical remarks.

P.S.I. ix.1055b

καὶ τῷ ιβ' τοῦ κ[υρίου]
Γαλλιηνοῦ Σεβα[στοῦ]
Φαμενώθ διαί[γραψεν]
ἰς τὸν τῆς νομ[αρχίας]
5. λόγον [ον] Μελαγ[οῦς ?]
γεργαίαινα δραχ[μάς ιβ],
(γίνονται) (δραχμαί) ιβ πλήρη[s],
καὶ Μεσορρή [
αυτῇ καὶ ἡθ. . . -[

3. διαί[γραψεν]: Δῑ Αι[Vitelli, who understands "Δι(έγραψεν) Αι- <cioè un nome di persona in dativo, per es. Αιλουρῆ sim. >," but it is useful

¹⁷ The editor has the following note: "Was vor § [i.e., (δραχμάς)] gestanden hat, ist nicht zu erkennen, wohl doch die Steuer? Die Schrift des ganzen Ostrakon ist sehr verwischt."

¹⁸ Cf. the editor's comment on p. 162. Unfortunately, palaeographic suggestions cannot be verified under present circumstances.

¹⁹ The parallel is very close because both the ostrakon and the papyrus are physically independent of the receipt or receipts which preceded them in the series. Of the papyrus Vitelli writes: "È integro il margine sopra, sotto e a sinistra, sicchè il testo è mutilo soltanto a destra."

²⁰ See footnotes 10 and 14.

to compare *διεγραψεν* (not *διεγραψε*) in *Ostr. Mich.* I.136.4, note, and *διαίγ(ραψε)* in 128.5. See the revised texts of 128 and 129 in section 2 of this paper. 4. *is*: read *εἰς*. 9. Vitelli does not comment on this line. The remnants suggest some such reconstruction as *ἡ αὐτῇ καὶ ἡ θυγ(άτηρ)* [. ²¹

2. ANABOLICUM

Ostr. Mich. I.128 and 129, were recovered at Karanis in the year 1927.²² Found together with a number of other ostraca of the late third century A.D.,²³ they were both written in Pauni (May–June), 279 A.D., and perhaps on the same day. No. 128 bears the date Pauni 7 = June 1, but in No. 129 the number of the day has been lost. The former was issued to Ptolemy, son of Julian; the latter to Ptolemy's son Nilus. This Ptolemy is known from five contemporary ostraca published by Amundsen,²⁴ and Nilus is probably identical with the agent who acts for Ptolemy in No. 378.²⁵ Both receipts record payments in money and are signed by the same official.

One question, and the most important, is not answered by the *editio princeps* of these ostraca: the purpose of the payments is not indicated. From the photographs,²⁶ however, a clear answer is obtained, and the answer is sufficiently significant to justify a new edition of the texts.

Ostr. Mich. I.128

ἐ[τους] δ
τοῦ κυρίου
ἡμῶν Πρόβου

²¹ See the second sentence in footnote 18.

²² The excavation numbers are 27-C43G¹-D and 27-C43G¹-E respectively. A key to the interpretation of the excavation labels has been provided by Amundsen in *Ostr. Mich.* I, p. xix.

²³ *Ibid.* pp. 223f.

²⁴ See *Ostr. Mich.* I, Index IV. Of the unpublished ostraca, at least four—Inv. Nos. 9632, 9649, 9788, and 9982—are transport receipts issued to him.

²⁵ The words are Πτ[ο]λεμαῖος 'Ιουλιανοῦ δι(ὰ) Νείλου. A similar coördination exists between *Ostr. Mich.* I.614.5 Πεποις Πτολεμαίου and 439.2 Πτολεμαῖος Κοπρῇ δι(ὰ) Πεποι; cf. 440.2–4, and 445.2–3.

²⁶ Nos. 128 and 129 belong to that group of ostraca of which Amundsen had no photographs. After his departure from Egypt in 1929 he was forced to rely on his first reading for his edition of these texts. See *Ostr. Mich.* I, p. x; cf. footnote 76 and my remarks in *AJPh* 63 (1942) 72, footnote 3.

Σεβαστοῦ Παῖνι

5. ζ διαίγ(ραψε) Πτολαι-

μαῖος Ἰουλιανοῦ

κώμης Καρανίδος

(δραχμὰς) πη μηνι(αίου) ἀναβολ(ικοῦ).

Ἀπολιᾶς Αὐρ(ηλίου) Ἰσιδῶ-

10. ρου σεσημί(ωμαι).

1. ξ[τους] δ Amundsen, but the remnants of the letters are considerable and the interpretation is supported by 129. 2. τοῦ [κ]υρίου Amundsen. 3. Πρόβου: Πρόβου Amundsen. 5. διαίγ(ραψε): read διέγραψε; διέγρ(αψε) Amundsen. 5-6. Πτολαιμαῖος: read Πτολεμαῖος; so also Amundsen. 8. μηνι(αίου) ἀναβολ(ικοῦ): μηνιαναβολ ostr.; μηνια(ίου) Παχό(ν)(?) Amundsen, whose note lends strong support to my reading. Working without the help of the original or of a photograph,²⁷ he observes: "My Ms. has μηνιαγαπο," a reading which comes very close to mine. On the ostrakon each of the letters is damaged, but not enough to render the group illegible or doubtful. The phrase means "for the monthly instalment of *anabolum*." 9-10. Αὐρ(ηλίου) Ἰσιδῶρου: αυρισιδωροῦ ostr.; ω has suffered severely from damage to the lower right corner of the ostrakon, and the following ρ is very faint and obscured by a blot. The horizontal bar over the end of a word can be observed elsewhere also; see, e.g., *Ostr. Mich.* Inv. No. 9895.3, note;²⁸ *Ostr. Strassb.* 809.4, 12.²⁹ Amundsen has read Ἀρίστω[ν] οὐ(ετρανός), of which the proper name is unquestionably false. Significant for the correct reading of the name is his note: "Perhaps Ἀγρίστω[ν](ος)." In the present state of the ostrakon οὐ(ετρανός) cannot be excluded, and possibly my own text should be modified to read Ἀπολιᾶς Αὐρ(ηλίου) Ἰσιδῶ(ρου) οὐ(ετρανός). Nevertheless, it would remain a disturbing coincidence that οὐ should be placed on the ostrakon just where the last two letters of Ἰσιδῶρου would stand if the name were written in full. Cf. the signature of Apolias in 129.9, and note *ad loc.* On the other hand, απολιας may not be a personal name, and Αὐρ(ηλίου) Ἰσιδῶ(ρος) οὐ(ετρανός) may be the name of the collector. See footnote 42. 10. σεσημί(ωμαι): read σεσημείωμαι; σεσημίω[μαι] Amundsen.

²⁷ See footnote 26.

²⁸ *TAPhA* 71 (1940) 629.

²⁹ Originally published by Richard Reitzenstein, *Zwei religionsgeschichtliche Fragen* (Strassburg, 1901) 115 and plate II.

Ostr. Mich. 1.129

- ξτ[ου]ς
 δ [τοῦ]
 κυρί[ου ἡμῶ]ν
 Πρόβ[ου Σεβασ]τοῦ
 5. Παῦν[ι . δι]αί[γ(ραψε)]
 Νῆλος Πτολ(εμαίου)
 Καρανίδος
 (δραχμὰς) λβ μην(ιαίου). Ἀπολ(ιᾶς)
 Αὐρ(ηλίου) Ἰσιδώρ(ου)
 10. σεση(μείωμαι).

4. Πρόβ[ου]: Πρόβ[ου] Amundsen, who observes “π corrected (perhaps from αυ).” The letter is obscured by a large blot, but its identity is not in doubt. 5. δι]αί[γ(ραψε)]: read διέγραψε; διέ]γγρ(αψε) Amundsen, who marks]γγρ as the reading of the ostrakon. After the writing there is space for one letter, but the spot is badly rubbed. Cf. the same word in 128.5. 8. μην(ιαίου) Ἀπολ(ιᾶς): μηνῆπολ ostr.; μῶνας Ὁλ Amundsen, who equates μῶνας with μόνas and suggests (Index IV) that Hol may be identical with Apolias (128.9). With μην(ιαίου) understand ἀναβολικοῦ, as in 128.8. 9. αυρσιδωρ ostr., but at the end of the line there is space sufficient for ου, which may have been rubbed away. Cf. the signature in 128.9–10, and note *ad loc.*

With the help of Nos. 128 and 129 it becomes possible to restore an almost illegible text written by the same hand. As Amundsen remarks, it is “almost completely faded,” and the only clue to its character is his reading of the last line:]ην ἀναβα-. The new text is given here by way of a supplement to the preceding. No reference is made in the critical apparatus to the *editio princeps*, in which only the ends of five lines are transcribed.

Ostr. Mich. 1.679

- ἔτους δ τοῦ
 κυρίου ἡμῶν
 Πρόβου Σεβαστοῦ
 Παῦνι η διαίγγραψε
 5. ρε
 κώμης Καρα-
 [νίδος (δραχμὰς) .] μην(ιαίου) ἀναβολ(ικοῦ).
 [Ἀπολιᾶς Αὐρ]ηλίου
 [Ἰσιδώρου σεση(μείωμαι).]

4. Παῦνι η: if the numeral is correctly read, 679 was issued one day later than 128. διαίγραψε: for the spelling see 128.5 and 129.5. 5-6. The name of the person to whom the payment was credited is lost; only the father's name is partly preserved. The two letters before ρε look like θε. 6. κώμης: very doubtful. This word precedes the name of the village in 128 but is omitted in 129. 7. (δραχμάς): the restoration is confirmed by the identity of the formula throughout with that of 128 and 129. 8. Nothing remains of this line except the upper tips of letters at the end. The ostrakon is broken away below.

Nos. 128, 129, and 679 are now seen to be acknowledgements of monthly instalments to the account of the *anabolicum*,³⁰ and as such they are without parallel in the Michigan collection. Unfortunately, the object on which the sums were levied is not specified, but from Vopiscus's life of Aurelian³¹ we know that the *anabolicum* was a charge laid on a group of products regularly exported from Egypt,³² especially glass, papyrus, flax, and hemp. These were the chief *anabolicae species*, and the same author states that they were assigned by Aurelian to the city of Rome in perpetuity.³³

Documents which mention the *anabolicum* are few; at the same

³⁰ M. I. Rostowzew, "Anabolicum," *MDAI(R)* 11 (1896) 317-321; idem, *Wochenschrift für klassische Philologie* 17 (1900) 115; idem, *Storia economica e sociale dell' Impero Romano* (Florence, 1933) 199 (note 31), 503 (note 57), 536 (note 39); Naphtali Lewis, *L'Industrie du papyrus dans l'Égypte gréco-romaine* (Paris, 1934) 140-144; Wallace, *op. cit.* (footnote 10) 214-219, and for further bibliography 444, note 2.

³¹ S. H. A. *Aurelianus* 45: vectigal ex Aegypto urbi Romae Aurelianus vitri chartae lini stuppae atque anabolicas species aeternas constituit.

³² Apart from grains, of which the collection and transport were administered separately. The *ratio anabolica* must be distinguished from the *ratio annonae*. Cf. Rostowzew, *Wochens.* (footnote 30) 115; A. W. Persson, *Staat und Manufaktur im römischen Reiche* (Skrifter utgivna av Vetenskaps-Societeten i Lund, No. 3, 1923) 35f., 130.

³³ Scholars have not reached agreement on the exact bearing of this passage. It is Rostowzew's view (*Storia economica* [footnote 30] 536, footnote 39) that the products of the *anabolicum*, previously shipped to many parts of the Empire, were now reserved entirely for Rome. Lewis, *op. cit.* (footnote 30) 144, has suggested that Aurelian restored to Rome the *anabolicae species* which had been diverted by the rebel Firmus, or that henceforth the levy could be met only by payments in kind. Wallace, *op. cit.* (footnote 10) 216, finds it "possible that one of Aurelian's measures was to stop the *adaeratio* of the ἀναβολικόν in Egypt," and believes that "Aurelian insisted upon payment in kind, especially since the products of the tax were to be used directly for the city of Rome." Professor Magie's translation (Loeb Classical Library) of S. H. A. *Aurelianus* 45 is strongly influenced by this interpretation of *anabolicas species aeternas*.

time they range from the early first century A.D. to the early fifth.³⁴ In consequence, although it was a levy of far-reaching importance, on a par with the *annona*, only a few details of its administration are known. Under the supervision of a *procurator*,³⁵ it was placed in the hands of tax-farmers,³⁶ and collection was effected through a variety of officials.³⁷ The *anabolicum* was planned as a tax in kind, but an *adaeratio* was accepted. The available texts relate to payments in money through the third century and to payments in kind from the third to the fifth.³⁸ For flax the rate in the third century (?) was fourteen pounds on each hundred arouras devoted to its cultivation.³⁹ The movement of the goods thus assembled was expedited through the corporation of *anabolicarii*, whose valuable services were rewarded with exemption from *tutelae* and *curationes*.⁴⁰ From Egypt the *anabolicae species* were shipped to important cities of the Empire. After the regulation of the tax by Aurelian the revenues obtained from the sale of the products were reserved in a perpetual grant for the city of Rome.⁴¹

The Michigan ostraca throw light on two points of procedure. (1) They record payments in money, i.e., an *adaeratio* of levies in kind, several years after the reign of Aurelian (270–275 A.D.). They

³⁴ *Ostr. Fay.* 49 (19 A.D.?).; cf. Preisigke, *op. cit.* [footnote 9] Absch. 11, s.v.); *P. Amh.* II.131 (early 2nd cent.); *P. Oxy.* VIII.1135 (3rd cent.); *P.S.I.* VII.779 (3rd cent.?).; *P. Thead.* 34, Col. 3 (324 A.D.); *P. Oxy.* XVII.2154 (4th cent.); *P. Oxy.* VII.1136 (420 A.D.). To these must be added the edict of Tiberius Julius Alexander (68 A.D.; the latest edition is by H. G. Evelyn White and J. H. Oliver, *The Temple of Hibis in El Khargeh Oasis, Part 2, Greek Inscriptions*, The Metropolitan Museum of Art Egyptian Expedition Publications 14, New York, 1939) and the lead *lesserae* which bear the legend *anabolici* (as early as Septimius Severus; Rostowzew, "Anabolicum" [footnote 30]; idem, "Étude sur les plombs antiques," *RN*, 4^{ème} série, 1 [1897] 471 and 3 [1899] 204; Wallace, *op. cit.* [footnote 10] 215. I have not seen Rostowzew's *Catalogue des plombs de la Bibliothèque Nationale*, Paris, 1900, and I am indebted to Dr. Naphtali Lewis for the information that it is simply a reprint of articles which appeared in the *Revue numismatique* between 1897 and 1900).

³⁵ *P. Oxy.* XVII.2154 mentions an ἐπίτροπος; cf. Lewis, *op. cit.* (footnote 30) 141, footnote 3.

³⁶ Edict of Alexander (footnote 34) 21: τισὶν ἀναβολικὰ εἰληφόσι ἐκ τοῦ φύσκου; cf. Rostowzew, "Anabolicum" (footnote 30) 319.

³⁷ *P. Oxy.* VIII.1135 ἀπαιρηταί; 1136 βοηθός; XVII.2154 στρατιώτης; *P. Thead.* 34, Col. 3 ἀποδέκται.

³⁸ Cf. Lewis, *op. cit.* (footnote 30) 142.

³⁹ *P.S.I.* VII.779.

⁴⁰ Huschke, *Iurisprudentiae anteiusinianae quae supersunt*, 5th ed. (1886) p. 758, No. 137: *anabolicarii a tutelis curationibusque habent vacationem*. Cf. Rostowzew, "Anabolicum" (footnote 30) 321; *DS* I, pt. 1, 259, art. *anabolicae species* (Humbert). For other views see *RE* I.2016, s.v. "anabolicarii" (Kubitschek).

⁴¹ See footnote 33.

leave therefore no ground for the view that Aurelian abolished the privilege of converting the *anabolicum* into a money payment.⁴² (2) In each ostrakon the payment is marked as μηνιαῖον, "monthly instalment." The practice of collecting a fixed sum per month invaded the *annona* as well as the *anabolicum*. It reflects a fatal weakness in the Roman administration of Egyptian finances since it tended to disregard the real basis of taxation. In this respect it is comparable to the Roman predilection for distributed taxes.⁴³

3. PITTACIUM

Of considerable interest are the ostraca in the University of Michigan collection which concern the activities of *pittacia*. *Ostr. Mich.* 1.262 is a list of parcels of land which composed a *pittacium*. No. 151 shows a lessee making payments in kind on behalf of two *pittacia*. In Inv. No. 9998 three members of the *pittacium* of Sotas and two of the *pittacium* of Pleein are credited with providing one donkey each, perhaps for the transport of government grain.⁴⁴ In these and other texts the *pittacium* appears as an agricultural firm which cultivates government land under a system of lease and sublease. The original lessee and responsible head is the *πιττακι-άρχης*, and his tenants and associates are *συγγέωργοι*.⁴⁵ This type of organization recalls the relation of the *ἀρχώνης* to his associates in the tax-farm.⁴⁶

⁴² See footnote 33. The question does arise whether the money payments recorded in the ostraca are not an exceptional levy of the year 279. The name 'Απολιᾶς is not attested elsewhere. If ἀπολιᾶς = ἀπωλείας could be substantiated as well on historical as on orthographic grounds, it would point to a destruction of stores, perhaps by fire on the docks at Neapolis or through destruction of the fleet in a storm of the preceding fall or winter. The collections of money in June would then have the purpose of making good the loss. The meager historical sources, however, say nothing of so great a catastrophe in 278 or 279.

⁴³ Cf. my remarks on the monthly instalments for the ἀφύλισμός of wine, a branch of the *annona*, in *TAPhA* 71 (1940) 638, and the views expressed by Wallace, *op. cit.* (footnote 10) 135, 154f., 168f., with respect to distributed taxes (μερισμοί).

⁴⁴ No. 151 and Inv. No. 9998 have been discussed briefly in my "Critical Notes on Michigan Ostraca," *CPh* 37 (1942) 142-144.

⁴⁵ *P. Berl. Leihgabe* 22, introd., and the references there given to earlier literature; cf. Friedrich Preisigke, *Fachwörter des öffentlichen Verwaltungsdienstes Ägyptens* (Göttingen, 1915) s.v. *πιττάκιον*. A new text, which illustrates the governmental control over *πιττάκια* is *P. Princeton* III.128; cf. the editors' note to line 4, which supplements Kalén's characterization of the *πιττάκιον* (*P. Berl. Leihgabe*, p. 210) as a possibly "erzwungene Form von Afterpacht."

⁴⁶ G. M. Harper, Jr., "The Relation of 'Αρχώνης, Μέροχοι, and Έγγυοι to Each Other, to the Government and to the Tax Contract in Ptolemaic Egypt," *Aegyptus* 14 (1934) 269-285.

No. 151 and Inv. No. 9998 reveal the names of four *pittacia* in operation at Karanis in the fourth century A.D., and the still unpublished portion of the Michigan collection may be expected to yield further information. At the present time I am able to contribute from the untouched resources of the collection only one new text, a receipt for one thousand talents paid by a lessee to the account of a *pittacium*. It also was written in the fourth century, and the size of the payment must be attributed to the inflation which was then in full swing.⁴⁷

Ostr. Mich. Inv. No. 9421

πιτ(τακίου) Παβοῦς Ἀκῶρ(εως)
μισθο(ύμενος) συ(γγέωργος) α (ἔτους) διὰ Θακτῇ
(τάλαντα) ,α.

1. *πιτ(τακίου)*: with the genitive understand ὑπέρ. Ἀκῶρ(εως): read by Pearl. 2. *μισθο(ύμενος) συ(γγέωργος)*: possible also is *μισθο()* *σι()*, which suggests a payment of wages, e.g., *μισθο(ῦ) σι(τοποιοῦ)*. *α (ἔτους)*: here the date follows the description of the person, if my choice of alternatives is correct; in *Ostr. Mich. I.151* it precedes. In both texts the date is an integral part of the description. Θακτῇ: a name hitherto unattested, so far as I know; Θέκλῃ<ς> is not impossible, but it would be more attractive if final sigma were on the ostrakon.

Since the appearance of my note on No. 151,⁴⁸ I have had the good fortune to encounter among the published ostraca three short texts of the fourth century A.D. whose connection with the *pittacium* has gone unrecognized. The clue in each instance is the syllable *πιτ*, with or without a mark of abbreviation.⁴⁹ In form they resemble closely Inv. No. 9421, which is printed above. The divergences from the *editio princeps* are noted below each text.

Ostr. Mich. I.144

Ἐπιφ κς *πιτ(τακίου)* Μέ-
λας Σεραπίου(ος) διὰ
Ἀβδὸκ χα(λκοῦ) ,αω.

⁴⁷ Gunnar Mickwitz, *Geld und Wirtschaft im römischen Reich des vierten Jahrhunderts n. Chr.* (Helsingfors, 1932) chap. 3.

⁴⁸ See footnote 44.

⁴⁹ Cf. *Ostr. Mich. Inv. No. 9421.1* (above); Inv. No. 9998.1, 7 (CPh 37 [1942] 144); P. Berl. Leihgabe, p. 208; P. Strassb. I.45.18.

1-2. *πιτ(τακίου)* Μέλας: *πιτμέλας* ostr.; *Πιτμέλας* Amundsen. The name *Πιτμέλας* is not attested elsewhere, but Abok (line 3) is known as the son of Melas from a number of contemporary texts—*Ostr. Mich.* 1.596.3;⁵⁰ 626.6;⁵¹ 686.5;^{51a} Inv. No. 9999; *P. Mich.* Inv. No. 4656. It is not unusual for a son to appear as the agent of his father; cf., e.g., section 2 of this paper and footnote 25.

3. *χα(λκοῦ)*: *χα(λκοῦ)* Amundsen; *sc. τάλαντα*.

The other two receipts differ from No. 144 and Inv. No. 9421 in naming the *πιττακιάρχης* as well as the lessee who makes the payment. In this respect they are like No. 151 and Inv. No. 9998.⁵² They derive a special interest from the fact that they pertain to a single *pittacium*.

Ostr. Mich. 1.146

πιτ(τακίου) "Ολ Καπέει "Αββελ
 Σαμβᾶ (τάλαντα) ββφ.

1. *πιτ(τακίου)* "Ολ: *πιτολ* ostr.; *Πιτόχ* Amundsen. *χ* is not impossible when judged on purely palaeographic grounds; but "Ολ and its variants "Ωλ and "Ωρ are well known from texts of Byzantine and Coptic Egypt,⁵³ and in No. 260, where an almost identical combination of letters occurs, Amundsen has read λ.⁵⁴ Hol, son of Kapeeis, is the *πιττακιάρχης*. Καπέει "Αββελ: *καπειαββελ'* ostr.; Καμείων ἐλ(ἀχιστος) Amundsen. "Αββελ is evidently a variant of "Αβελ. The latter is the normal Greek spelling of the Biblical name,⁵⁵ and is attested in papyri as early as 172/173 A.D. (*P. Mich.* iv.224.1540). The same spelling occurs in *Ostr. Mich.* Inv. No. 9381 (2nd-3rd

⁵⁰ Read Μέλα[νος in place of Μέλλ[α.

⁵¹ Read Μέλανος in place of Μέλλας.

^{51a} Read ['Αβό]κ Μέλα in place of [κ'] ἐλα-.

⁵² See footnote 44.

⁵³ See Friedrich Preisigke, *Namenbuch* (Heidelberg, 1922). Preisigke equates "Ωρ with "Ωρος but not with "Ωλ and "Ολ; Gustav Heuser, *Die Personennamen der Kopten* 1 (Studien zur Epigraphik und Papyruskunde, ed. by F. Bilabel, Vol. 1, No. 2, Leipzig, 1929) 19, 42, 60, accepts Hor = Horus but queries Hol = Hor. Nevertheless, in *P. Gen.* the same person is called both "Ολ and "Ωρ; see the index of personal names, s.v. "Ολ. In *Ostr. Mich.* 1, Index IV, Amundsen suggests that Melas, son of Hol, may be identical with Melas, son of Horus; cf. his discussion in *Ostr. Oslo.*, p. 68.

⁵⁴ The revised text of No. 260 is given farther along in this section. The reference which I made to *Πιτόχ* in *TAPhA* 71 (1940) 633 is now revealed as pointless.

⁵⁵ E. Hatch and H. A. Redpath, *A Concordance to the Septuagint* (Oxford, 1906) *Supplement*, s.v.; W. F. Moulton and A. S. Geden, *A Concordance to the Greek Testament* (Edinburgh, 1926) s.v.

cent. A.D.). Josephus has Ἀβελος.⁵⁶ Much later the variants Ἀβελε and Ἀβέλιος are found.⁵⁷ The oblique stroke at the end of the line may be only a space-filler. In *Ostr. Mich.* Inv. No. 10256.3, αθυρ' = Ἀθύρ stands at the end of the line. It may, however, be used to mark a non-Greek name ending in a consonant which does not stand in final position in Greek. The name Ὀλ is sometimes treated in a like manner (*Ostr. Oslo.*, p. 68, footnote 5), and in Greek Biblical texts Hebrew names with similar endings are concluded with an apostrophe.⁵⁸ 2. The beginning of the line is badly faded, and I have hit on no satisfactory reading. Amundsen suggests ἀπέχω τὰς, which is impossible in the new context. I have thought of διὰ Τεβέρ(εως); the traces lend verisimilitude to βερ, but the rest is guesswork. Σαμβᾶ: ἄλλας Amundsen. (τάλαντα): Υ ostr., as in Inv. No. 9421, of which the text may be consulted above; (δραχμάς) Amundsen.

Ostr. Mich. I.260

πιτ(τακίου) Ὀλ Καπέει
Κουαρ() Ἀιῶν η. [
...ω καὶ [

1. πιτ(τακίου) Ὀλ: πιτωλ ostr.; Πετῶλ Amundsen. The name of the πιττακιάρχης is spelled Ὀλ in 146.1, of which the revised text is given above; cf. the note *ad loc.* 2. Κουαρ(): ου very faint; κωμάρ(χαίς) Amundsen. Κουαρ() recalls Roman names like Quartus and Quartinus, but these are not recorded for Egypt; they are conspicuously missing from Preisigke, *Namenbuch*, and Preisigke and Bilabel, *Sammelbuch griechischer Urkunden aus Ägypten*. The *Namenbuch*, however, does record one example of Κοαρτίων, and both Κουάρτος and Κουαρτίνος are listed by Wilhelm Pape, *Wörterbuch der griechischen Eigennamen*, 3rd ed., rev. by G. E. Benseler. Ἀιῶν: nom. for gen.; κώμης Amundsen. η.: Κ[αριίδος Amundsen. 3. ...ιαι καὶ [Amundsen. The line is almost completely faded, and any reading is likely to be deceptive.

⁵⁶ Benedictus Niese, *Flavii Iosephi Opera* (Berlin, 1887–1895) 7 (Index) s.v.

⁵⁷ See Preisigke, *Namenbuch*, under these forms. For the Semitic character of the name in papyri see Heinz Wuthnow, *Die semitischen Menschennamen in griechischen Inschriften und Papyri des vorderen Orients* (Studien zur Epigraphik und Papyruskunde, ed. by F. Bilabel, Vol. 1, No. 4, Leipzig, 1930) 8, 135.

⁵⁸ E. M. Thompson, *An Introduction to Greek and Latin Palaeography* (Oxford, 1912) 62.

4. WORK ON THE EMBANKMENTS

(a) *Naubia*. Among receipts for work in the canals and on the dikes⁵⁹ of the Fayûm the editor of the Michigan ostraca has included as No. 279 a brief text of the third century A.D. from Karanis. His text and notes are a convenient basis of discussion.

Ostr. Mich. 1.279

Νίγερ Διδύμου [Π]ατᾶς
παρ[έ]δω(κας) ναύβ[ια] ρ̄.
(ἔτους) γ' Θ[ωθ] ι.

1. 1. Πατᾶ? 3. Θ[. .]ι or 'Ε[πι]φ[. .]? The text is rather faded.

The relation of [Π]ατᾶς to Νίγερ Διδύμου is not easy to determine. As Amundsen has suggested, the nominative may be an error for a dative, and the first line a normal prescript: "Niger, son of Didymus, to Patas." Then the resolution of the verb in line 2 is necessarily thrown into the second person. However, no other Karanis receipt of this type begins with a prescript, and the verb, which is nowhere written in full, has been consistently resolved in the third person.⁶⁰ The word at the end of the first line may not be a personal name at all, but a term descriptive of Niger, preferably an occupational designation. This possibility fits well with the practice of *corvée* receipts and lists.⁶¹

⁵⁹ The *corvée* has been discussed in some detail by Friedrich Oertel, *Die Liturgie. Studien zur ptolemäischen und kaiserlichen Verwaltung Ägyptens* (Leipzig, 1917) 63-78; more briefly by Wilcken, *Grundzüge* (footnote 13) 330ff., and Johnson, *op. cit.* (footnote 14) 12f. Cf. *P. Athen.* 49, introd. The little that is known of the *corvée* under the Pharaohs has been assembled by W. L. Westermann, "The Development of the Irrigation System of Egypt," *CPh* 14 (1919) 158-164. For the perpetuation of the Egyptian *corvée* into modern times see J. Barois, *Irrigation in Egypt* (Translated by A. M. Miller. House of Representatives, Miscellaneous Documents, 9.134. Washington, 1890) 63-70; Stanley Lane-Poole, *Social Life in Egypt* (London, 1884) 49.

⁶⁰ *Ostr. Mich.* 1.272-278, 280-293; *TAPhA* 71 (1940) 625f.; 72 (1941) 444; *CPh* 37 (1942) 145. *Ostr. Cair. Lewis* 7 follows the same pattern and may indeed belong to the Karanis group. When the editor assigned it to the 1st cent. B.C., he could not know that the hand closely resembles that of *Ostr. Mich.* 1.290, which also was written on a Mesore 8. Amundsen rightly attributed most of the Michigan texts to the 3rd cent. A.D.; a few dated examples belong to the late 2nd cent. At the end of line 4 of the Cairo ostrakon a few rapidly written letters have been left unread. I suggest that a pause be made after παρὲδ(σαν) and a new sentence begin with σεσ(ημελώμαι) as a reading of the doubtful letters. σεσ(ημελώμαι) followed by the amount of a contribution is conventional; cf. Preisigke, *op. cit.* (footnote 9) s.v. σημειῶ. (I am happy to record that these suggestions have the approval of the editor, Dr. Naphtali Lewis.)

⁶¹ Cf., e.g., *Ostr. Mich.* 1.272, 274; Inv. No. 9543, which is published at the end of section 4(a) of this paper; *P. Schow* (= *Sammelb.* 1.5124) *passim*.

A more serious problem arises in the second line, where Niger is credited with one hundred naubia. A task of such magnitude imposed on a single person is without parallel. Fifteen is the greatest number found in a receipt from Upper Egypt, and in that instance the receipt was issued to three persons.⁶² In the ostraca from Karanis there is no number above ten.⁶³ Since the obligation to perform work of this kind was attached to arable land,⁶⁴ and especially since the principle of apportionment is unknown, an assessment of one hundred naubia is a theoretical possibility.⁶⁵ Nevertheless, one man could not discharge the obligation in less than a hundred days, and that is a modest estimate. He would certainly need the help of a gang of laborers in order to be rid of the burden within a reasonable time.⁶⁶

As it happens, the hand that produced No. 279 is responsible also for a still unpublished ostrakon in the Michigan collection.

⁶² Oertel, *op. cit.* (footnote 59) 75f.; Wilcken, *Grundzüge* (footnote 13) 334. For the significance of larger numbers in the 3rd cent. B.C. see footnote 65.

⁶³ *Ostr. Mich.* 1.294. Following Amundsen's text of 279, Wallace, *op. cit.* (footnote 10) 142, gives the data of the Michigan receipts as follows: "the number of *naubia* recorded in individual receipts is 1, 3, 4, 5, 10, and 100."

⁶⁴ The work performed in terms of naubia was assessed *ὕπερ ἀρουρῶν*. The pertinent Karanis documents are *Ostr. Mich.* 1.273 and Inv. No. 9650 (ined.), both written in the 3rd cent. A.D. Important also are *Ostr. Bodl.* 1.120 (146 or 135 B.C.) and *P. Strassb.* 1.43 (331 A.D.) 18f. Cf. Wallace, *ibid.*; Oertel, *op. cit.* (footnote 59) 75, 79-81. The *περθήμερος* may have been taken for administrative purposes as the equivalent of 5 naubia (see footnote 65) and imposed on landless fellahin who would not be reached by an assessment based on the possession of land (cf. *TAPhA* 72 [1941] 444, footnote 21).

⁶⁵ Lane-Poole, *op. cit.* (footnote 59) 49 refers to the modern "*corvée*, or forced labour, which means that every landholder, up to the owner of one hundred acres, is bound to come in person, or pay a substitute, to work for two or three months in the year at the repair of the canals." In *P. Par.* 66 (= *U.P.Z.* II.157; 242/1 (?) B.C., Thebes) the average individual assignment is 30 naubia, but these would be equivalent to less than 10 Roman naubia and could be disposed of in approximately 10 days (*δεχήμερος*, the Egyptian week). The same requirement is exhibited in *Ostr. Bodl.* 1.244-246, contemporary Theban texts. This corresponds to the double *περθήμερος* sometimes required in the Fayûm in Roman times and compares favorably with the highest number (10 naubia) found in the Michigan receipts of the 3rd century A.D. (*Ostr. Mich.* 1.294). On the distinction between the Ptolemaic and the Roman naubion see Wilcken, *Grundzüge* (footnote 13) 330, 334; on the probable equivalence of 30 Ptolemaic naubia and 10 days' work see *U.P.Z.* II, p. 16, footnote 6, and Préaux, *op. cit.* (footnote 7) 396. Miss Préaux remarks: "la corvée était sans doute moins longue qu'on se l'est imaginé." Despite the fact that the Roman naubion would lie beyond the capacity of an average worker to accomplish in one day (*TAPhA* 72 [1941] 444, footnote 25), the rough equation, 1 naubion = 1 day, may have satisfied the official conscience, and Milne may have hit on the truth when he suggested that 1 naubion was the equivalent of 1 day's labor and 5 naubia represented in terms of work what *περθήμερος* represented in days (*Theb. Ostr.*, pp. 146f.). See footnote 64.

⁶⁶ *TAPhA* 72 (1941) 444, footnote 25.

The latter is well preserved and easy to read. Since it does much to substantiate my revision of No. 279, the text is worth reproducing at this point.

Ostr. Mich. Inv. No. 9294

Κοπρῆς Μουραν(οῦ)
παρέδω(κε) ναύβ(ιον) ἐν
ἡμῖν.
(ἐτους) γ' 'Επίφ.

With the aid of this receipt, which was not available to Amundsen, every difficulty is eliminated from the last line of No. 279, and for the rest an excellent photograph prepared by Mr. Swain comes to our assistance. The revised text follows closely the pattern of Inv. No. 9294. It is given here with a few comments on palaeography.

Ostr. Mich. I. 279 (revised)

Νίγερ Διδύμου . . . ιτᾶς
παρ[ε]δω(κε) ναύβ(ια) τρία.
(ἐτους) γ' 'Ε[πί]φ.

1. The horizontal strokes above the text have been taken over from Amundsen; the photograph is not helpful on this point. . . . ιτᾶς suggests a hypocoristic in -ās, a form commonly assumed in the Roman period by occupational descriptions, e.g. ταπιτᾶς, but I am unable to read the vague traces before doubtful ι.⁶⁷
2. ναύβ(ια): the word is similarly abbreviated in Inv. No. 9294. τρία: the reading carries conviction in spite of the dots. The spacing is exactly right, and the traces before ρ justify τ. Of ι only a tiny remnant remains, and of α only the long tail which the letter sometimes receives at the end of a line in order to fill the space. It is this which Amundsen took to be a bar above and to the right of the numeral.
3. 'Ε[πί]φ: cf. Amundsen's comment and Inv. No. 9294.

In No. 279 Niger, son of Didymus, is credited with three naubia; in Inv. No. 9294 Kopres, son of Muranus, with one and a half naubia. These are small but normal quantities. Both receipts were written by the same official within a single month, perhaps even on the same day. They differ from other Karanis receipts of the same type⁶⁸ only in having the date at the close instead of the beginning. In order to clarify the comparison I submit an

⁶⁷ Bror Olsson, "Die Gewerbenamen auf -ās in den Papyri," *Aegyptus* 6 (1925) 247-249; "Die περιεκτικά auf -ών, ἐλαιών etc. in den Papyri," *Aegyptus* 13 (1933) 327, footnote 2; "ΠΕΛΕΚΑΣ," *Archiv für Papyrusforschung* 11 (1935) 219.

⁶⁸ See footnote 60.

unpublished example which illustrates the usual arrangement of the parts. It bears the date August 5, 188 A.D.⁶⁹

Ostr. Mich. Inv. No. 9543

κη (ἐτους) Μεσορή ιβ̄
 Σαμβᾶς γέρδ(ιος) παρέ-
 δωκ(ε) ναύβια δύο.

Here too the occupation is stated, and the contribution falls within the attested limits.

(b) *Laborers and Donkeys.* *Ostr. Mich.* 1.64, a text of the late third or early fourth century A.D.,⁷⁰ has been placed by the editor among "Lists of Donkey-drivers and Caravans." The ostrakon was purchased from Dr. Askren in 1925, and so presumably was found in the Fayûm although its exact provenance was not known.⁷¹ Since a fresh reading of the ostrakon has aided materially in fixing more closely both its meaning and its provenance, it may not be unprofitable to republish the text. Where the revision differs from the *editio princeps*, the divergence is noted in the critical apparatus.

Ostr. Mich. 1.64

Σαρᾶς
 Χερᾶς
 Μέλας 'Ατεισίου
 Οὐνᾶφρις Παλήμων
 5. Πτολεμέ Πεμέτος
 'Ωρίων Κυρι(), (γίνονται) ἐρ(γάται) ε.
]χεις ὄνον α
]μος ὄνος α

1-2. I.e., Saras, son of Cheras (= Chairas?). The use of the nominative for the father's name is further illustrated in 4. The full name occupies two lines because Σαρᾶς takes up the width of the ostrakon at the top. This interpretation is justified by 6, which shows that only five contributors are required in 1-6. 3. 'Ατεισίου: Θεωκίου Amundsen. Melas, son of Atisius, is attested also in ostraca known to have come from Karanis: *Ostr. Mich.* 1.611.1,⁷² and Inv. No. 9998.5.⁷³ 4. Οὐνᾶφρις = Οὐενᾶφρις a late variant of 'Ουνῶφρις.

⁶⁹ *Ostr. Mich.* 1.272 and 273 were written in the same regnal year and use the same order.

⁷⁰ "Date: late III cent. A.D." Amundsen.

⁷¹ See footnote 12.

⁷² Read 'Ατισίου in place of Αἰγίου.

⁷³ See footnote 44.

Παλήμων: nom. for gen.; Παλήμων(νος) Amundsen. It is almost certainly the same person who is mentioned in *Ostr. Mich.* Inv. No. 10256, a Karanis ostrakon of 296 A.D., in the phrase Παλήμων Πτολλᾶς (for Πτολλᾶ) διὰ Ουεναφ(ρίου). Sons are not infrequently named as agents of their fathers.⁷⁴ 5. Πτολεμέ: a late, Copticized form of Πτολεμαῖος. 6. Κυρι()⁷⁵ (γίνονται): κυρι! ostr.; Κῦρι γ(ίνονται) Amundsen. ἐρ(γάται) ε: ὄ(νοι) ρε Amundsen. The first letter is somewhat damaged, but it is open on the right side and the tongue, as distinct from top and bottom, is plainly visible.⁷⁶ Furthermore, the choice between ε and ο is facilitated by considerations of probability. 105 donkeys are a very large number to be attached to the names of five or at most six men,⁷⁷ and while there is no *a priori* objection to the number in Amundsen's text,⁷⁸ it would require substantiation which it does not derive from the Michigan ostrakon. 7-8. The difference in case between ὄνον and ὄνος is without significance; both lines record a contribution of one donkey.

This list falls into two parts. Lines 1-6 are devoted to persons who either served as workmen or contributed workmen; lines 7-8,

⁷⁴ See sections 2 (footnote 25) and 3 (p. 77) of this paper.

⁷⁵ The published text of *Ostr. Mich.* 1.458, a transport receipt of 298 or 306 A.D., mentions a Κῦριλλος, father of Pemes, with whom one might be tempted to equate at least tentatively Κυρι(), father of Horion, but unfortunately Πεμές Κυριλλου in 458 is an erroneous reading of δεκαπ(ρώτου) Κυριλλου. This decaprotus recurs in *Ostr. Mich.* Inv. No. 9764, another Karanis transport receipt of the same year, but must be distinguished from the decaprotus of the same name in *Ostr. Mich.* 1.68 (261 A.D., Theadelphia).

⁷⁶ In this instance the ostrakon has proved more valuable than the photograph. In the latter the damaged letter exhibits a vague and hazy outline, whereas the ostrakon, when examined through a glass, leaves no doubt that the letter is ε. As a rule the photographs have proved superior to the ostraca for the purpose of transcription, but often a combined use of ostrakon and photograph is indispensable. See p. 65 and footnote 26.

⁷⁷ Lines 7-8 of the ostrakon under consideration record contributions of 1 donkey only; cf. the lists in *Ostr. Mich.* 1, pp. 88-96, where the number runs from 1 to 3. An exception is No. 353, which lists three groups of persons, comprising seven individuals altogether; the total number of donkeys is 26. In *Ostr. Oslo.* 26 (4th or 5th cent. A.D.) seven men contribute a total of 40 donkeys, and the individual contributions run from 2 to 9. Twelve drivers were in charge, with roughly 3 donkeys to a driver. In one instance a driver had only 2 animals under his care, and in another he was responsible for 6.

⁷⁸ In *Ostr. Mich.* 1.65 (3rd cent. A.D.) a certain Didas is credited with 33 donkeys on behalf of three villages. In No. 402 (285 A.D.) Ptolemy, son of Julian, contributes 19 sacks = 19 donkeys (cf. *Ostr. Oslo.*, p. 50). [The editor has dated No. 402 tentatively in 283 A.D., but β (ἔρους) must be read in place of ζ (ἔρους) in line 3. The text was written in the 1st year (line 5) of an unnamed emperor.] Three receipts issued to Ptolemy, son of Kopres, in association with Valeria Antonia and Pečous, between March and August, 293 A.D., cover a total contribution of 25 donkeys (*Ostr. Mich.* 1.439, 440, 445). The more important landholders would have relatively heavy contributions to make, but the number of such persons was inevitably limited.

to others who contributed donkeys. A study of the persons concerned points to Karanis as the source of the ostrakon,⁷⁹ and its twofold structure relates it closely to *Ostr. Mich.* 1.337. In that list lines 1–5 are devoted to the provision of donkeys; lines 6–11, of workmen.⁸⁰ The two sections have separate headings: *ὄνοι (πρώτη) ἐκβολή*⁸¹ and *ἐργάται ὁμοίως*. The word *ἐκβολή* is associated with work in the canals. As *ἀναβολή* was used for building up the banks,⁸² so *ἐκβολή* was used for cleaning out the canals. By an extension of its primary meaning, it seems to designate also a section of a dike *thrown up* in the course of such work.⁸³ No. 337, therefore, states that four men contributed donkeys and four others provided laborers for dike work. In the same way No. 64 credits five men with a total of five laborers,⁸⁴ and each of two men with one donkey.⁸⁵

⁷⁹ See the critical apparatus above. Other ostraca in the Askren collection have been assigned to Karanis on the same grounds: Nos. 4 (*CPh* 37 [1942] 147, footnote 17); 19 (*TAPhA* 72 [1941] 458, footnote 98); 82 (? see *Ostr. Mich.* 1, Index IV, for 'Hrās s. of Kastor); 88 (correct 'Ιερῶς to Πεθῶς, and see *P. Mich.* iv, pt. 2, Index III, under *Διδυμάριον* m. of Heras; w. of Petheus s. of Heras). Nos. 70 and 76 are assigned to Karanis by Amundsen, 70 tentatively, 76 with certainty.

⁸⁰ For textual corrections see *CPh* 37 (1942) 147, footnote 17.

⁸¹ A genitive is expected but a succession of nominatives is not surprising in lists, receipts, and other memoranda. Cf. Amundsen's remarks in *Ostr. Mich.* 1, p. x and *Ostr. Oslo.*, p. 49.

⁸² *TAPhA* 71 (1940) 635, footnote 46.

⁸³ Preisigke, *op. cit.* (footnote 9) s.v. *P. Schow* (= *Sammelb.* 1.5124) 192 localizes a group of workmen at a β ἔγβ[ολῆς]. The word is somewhat ambiguous, but its connection with dike work in that document is indisputable. Preisigke's definition draws support from a suggestion made by Dr. Naphtali Lewis for the interpretation of *Ostr. Mich.* 1.311 (*TAPhA* 71 [1940] 632f.). Cf. the *ἐκβολαῖς χωμάτων*, "inspectors of dikes" (*P. Lond.* v.1648, introd.) and *χωματεκβολία* (*P. Ryl.* ii.90.17, note).

⁸⁴ *Ostr. Mich.* 1.266 equates 1 ἐργάτης with 2 ναύβια. *Ostr. Mich.* Inv. No. 9889 (15 A.D.) and 9393 (1st to 2nd cent. A.D.) are receipts issued to persons who contributed ἐργάται. Similar receipts from Palestine (6th cent. A.D.) pertaining to the cleaning and repair of cisterns have been published in *AJA* 40 (1936) 452–459. Conceivably a lessor might be said to contribute an ἐργάτης in the person of a lessee who has contractually undertaken to perform the χωματικά ἔργα. Compare the implication of the ὑπέρ phrases in *corvée* receipts, e.g., *P.S.I.* ix.1044–47 (2nd cent.) and introd.; see also the lists given by Oertel, *op. cit.* (footnote 59) 65–69, Col. 6. The same relation would exist where a man hired a substitute to work in his name (*P. Cair.* Boak 15: 297 A.D., Karanis).

⁸⁵ On the use of donkeys in dike work see Wilcken, *Grundzüge* (footnote 13) 335f.; Oertel, *op. cit.* (footnote 59) 70. The significant passage is *B.G.U.* III.969 (142 A.D.) 23ff.: ἔθος δ' ἐστὶν τὸν ἔχοντα ἰδίους ὄνους τοῦτοις ἀπεργάσασθαι, εἰ δὲ μὴ ἔχοι, πενθήμερον μετρῖν (= μετρεῖν) εἰς τὸ δημόσιον. With this practice may be compared the use of ἴδια κτήνη for transport of government grain (*Ostr. Oslo.*, p. 48). *Ostr. Mich.* 1.357, 358 are receipts issued to persons who contributed one donkey for dike work. This interpretation is confirmed by a formal comparison with Karanis receipts for one day's work (*TAPhA* 71 [1940] 630f.). In line 3 of Nos. 357 and 358 correct εἰς to γ (ἔρους).

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