

XXXI.—New Readings in Michigan Ostraca

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In 1935 Professor Leiv Amundsen published his celebrated edition of six hundred and ninety-nine ostraca in the University of Michigan Collection.¹ It was immediately recognized as an achievement in ostracology² equalled by few and surpassed by none.³ Since that time he has been engaged in compiling an exhaustive commentary to accompany the texts. In consequence of the delay occasioned by the war his second volume will doubtless not be ready for several years. Meanwhile, my own work on the still unpublished ostraca in our collection has imposed the duty of

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, University of Michigan Press, 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. Brüssel-Berlin = Paul Viereck, *Ostraka aus Brüssel und Berlin*. (Papyrus-institut Heidelberg, Schrift 4) Berlin-Leipzig, W. de Gruyter, 1922.

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

P. Achmim = Paul Collart, *Les Papyrus grecs d'Achmim à la Bibliothèque Nationale de Paris* (Bulletin de l'Institut français d'archéologie orientale, 31 (1931) 33-111.) Cairo, Imprimerie de l'Institut.

P. Athen. = G. A. Petropoulos, *Papyri Societatis Archaeologicae Atheniensis* (Παπυραρίαι τῆς Ἀκαδημίας Ἀθηνῶν, I) Athens, Academia Scientiarum Atheniensis, 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. Mich. IV = H. C. Youtie, V. B. Schuman, and O. M. Pearl, *Tax Rolls from Karanis*, Part 1, Text. (Univ. of Michigan Studies, Human. Ser. 42) Ann Arbor, University of Michigan Press, 1936.

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, University of Michigan 1939.

² This rarely used word has been employed here because it is convenient for the purpose. As a rule, the study of the Greek ostraca from Egypt is subsumed under papyrology, and I have followed this practice elsewhere. Compare the brief but satisfactory statement by Ulrich Wilcken, *Grundzüge und Chrestomathie der Papyruskunde* (Leipzig-Berlin, 1912), 1.pt. 1.xiii.

³ See, e.g., the review by M(arcel) H(ombert), *CE* 21 (1936) 173f.

revising the texts edited by Amundsen. This task is slowly going forward with the aid of photographs, since all the ostraca in question, apart from ninety-seven which were purchased by the University from Dr. Askren in the Fayûm,⁴ have been returned to the Egyptian Museum at Cairo.⁵ Luckily, the photographs, prepared by Mr. G. R. Swain with his usual skill, are not less valuable than the ostraca for purposes of transcription. Only rarely does one regret that an ostrakon is not available for verifying some detail. With respect to the unpublished material this limitation fortunately does not exist. Of the five hundred and eighty Greek ostraca which remain to be edited, both the originals and photographs are in the possession of the University.⁶

In the critical notes on Michigan ostraca which I have published heretofore,⁷ I have tried to confine my attention to the more important corrections,⁸ especially such as are illuminated by the unedited texts. In the present paper eight ostraca are revised and discussed in the same spirit. Each is equipped with a brief commentary in which the palaeographic problems and the papyrological significance of the texts are emphasized. For the most part the corrections either give meaning to the texts for the first time or radically modify their sense.

As in my earlier work with the Michigan ostraca, I have again profited from the generous assistance of Dr. O. M. Pearl, who has examined a number of the texts with me and has verified my suggestions. His contribution to the reading of No. 492 has been acknowledged in its place. To the published work of Professor

⁴ *Ostr. Mich.* 1, Nos. 1-97. Compare the preface (ix) and the classified list of inventory numbers (225f.).

⁵ *Ostr. Mich.* 1, Nos. 98-699. These are ostraca recovered at Kôm Aushim, the ancient Karanis, by our Near East Expedition during the first five seasons of excavation (1924-1929).

⁶ For more details see Amundsen's preface to *Ostr. Mich.* 1 and the introduction to my "Notes on O(str). Mich. I," *TAPhA* 71 (1940) 623f.

⁷ Scholars accustomed to include the ostraca in their apparatus of sources may find the bibliographical indications useful: "O(str). Mich. I, 24," *AJPh* 61 (1940) 199-201; "O(str). Mich. I, 154," *ibid.* 62 (1941) 80-83 (with O. M. Pearl); "Brief Notes on Michigan Ostraca," *ibid.* 63 (1942) 72-77; "Notes on O(str). Mich. I," *TAPhA* 71 (1940) 623-659; "Critical Notes on Michigan Ostraca," *CPh* 37 (1942) 142-149.

⁸ The corrections selected for treatment have varied considerably in their relative importance. The choice has been made in accordance with my own views of what might interest palaeographers, papyrologists, historians, and philologists. Naturally the notes will not make an equal appeal to specialists in the various branches of ancient study.

Leiv Amundsen I remain under an inexpressible debt. I have retained the terminology adopted by him in *Ostr. Mich.* 1, so far as this was practical, and I have scrutinized his interpretations in *Ostr. Oslo.* for any bearing they may have on the Michigan ostraca.

1. A RECEIPT FOR WORK ON THE EMBANKMENTS

Ostr. Mich. 1.327 is a text of the third century A.D.⁹ which the editor was unable to explain in detail. It has been put into a group labelled "Uncertain" under the general head "Work on the Embankments."¹⁰ When we examine the text itself, we shall readily see why the editor placed it in that category. In Amundsen's transcription it takes the following form.

ΚΕ
'Ανδροκ(λῆς) καὶ 'Ωρίων καὶ 'Ωρος
πήχ() ἐπὶ . . ρυστου.

Like a number of ostraca in the same group¹¹ it begins with a numeral and continues with personal names.¹² There, however, the resemblance ends. The others conclude with a date, but the last line of No. 327 is obviously something else.

After a prolonged study of a photograph of the ostrakon, I am compelled to introduce minor modifications into line 2 and am able, I believe, to offer a more complete understanding of line 3. The new text differs seriously from Amundsen's only in the last two words.

ΚΕ
'Ανδρόμ(αχος) καὶ Κρέων καὶ 'Ωρος
πήχ(εις) ἐῖκοσι ἐπτά.

2. Κρέων: the first letter cannot be ω; this is readily established by even a superficial comparison with that letter in 'Ωρος. The second and third letters are doubtful on any reading. Pearl has suggested

⁹ "Late III/early IV cent. A.D." Amundsen. From the character of the hand I judge that the script ought not to be later than the third century, but in matters of this kind disagreement is easy and not always significant.

¹⁰ *Ostr. Mich.* 1, pp. 76-87. The group in question occupies pp. 82-87.

¹¹ Nos. 303, 304, 306, 307, 310, 313, 316, 320. These texts have been discussed in *TAPhA* 71 (1940) 630f. Receipts for one day's work on the embankments, they follow a simple formula: number of cleruchy, name of person, date of work. See footnote 13.

¹² Three persons are named in No. 327; the receipts described in footnote 11 were issued each to a single person. The number of persons is not essential to the basic interpretation of the receipts. This will be shown in the latter part of section 1.

Κόμων. 3. εἴκοσι ἐπτά: of the doubtful letters, π comes closest to being certain. With ε at the beginning, about seven letters lost, and τα at the end, the possibilities are limited: εἴκοσι ἐπτά, ἐβδομήκοντα, ἐνενήκοντα, and ἑκατὸν ἐπτά. Of these the second and the fourth are eliminated because neither β nor κ can be read as the second letter. To ἐνενήκοντα there are several objections: (1) ν would be formed differently from the examples of that letter in line 2; (2) no account would be taken of the vertical stroke extending below the line, which Amundsen read as ρ and I have read as a prolonged ι following on σ; (3) the upper part of the letter before τα is curved very much like π and very unlike ν.

The new reading of the ostrakon permits a closer comparison with the group of texts mentioned above. These have been shown to be receipts for one day's work in connection with the *corvée*.¹³ A very simple example from the unpublished ostraca in the Michigan collection will be in point:

Inv. No. 9795

ι Πασίων

Χοι <ά> χ ι.

The three elements that constitute the formula are here exhibited in their briefest form: number of cleruchy, name of person, date of work. For the date No. 327 substitutes a statement of quantity: twenty-seven cubits.

If we accept the hint given by Amundsen in his assignment of the ostrakon to a group containing many work receipts, the problem to be resolved is the significance of a measurement in terms of cubits. All the receipts of this kind—and they are indeed numerous—acknowledge the labor performed either in days or in naubia.¹⁴

¹³ See footnote 11. For a comprehensive discussion of the compulsory labor on the dikes and canals, see Friedrich Oertel, *Die Liturgie. Studien zur ptolemäischen und kaiserlichen Verwaltung Ägyptens* (Leipzig, 1917) 63–78. Less detailed accounts may be read in Wilcken, *op. cit.* (footnote 2) 330ff.; A. C. Johnson, *Roman Egypt to the Reign of Diocletian*, Vol. 2 of *Economic Survey of Ancient Rome*, ed. by Tenney Frank (Baltimore, 1936) 12f.; *P. Athen.* 49, introduction. Some idea of the phenomenal increase in our knowledge of this subject since the papyri and ostraca began to be exploited in large numbers, may be obtained by comparing the introduction in J. Barois, *Irrigation in Egypt* (Translated by A. M. Miller. House of Representatives, Miscellaneous Documents, 9.134. Washington, 1890) with the works cited above.

¹⁴ The normal annual requirement was five days (attested for the Fayûm only) or a still undetermined number of naubia (see footnote 25). The subject is discussed in detail by Oertel, *op. cit.* (footnote 13) 63–78. On the size of a naubion see footnote 15.

The measurement by days has been illustrated above, but it has no importance for No. 327. A naubion, on the other hand, happens to be exactly twenty-seven cubic cubits.¹⁵

The solid cubit appears nowhere else in ostraca or papyri,¹⁶ except in the metrological texts,¹⁷ and of course it was used by writers on that subject.¹⁸ Normally it would be called ὁ στερεὸς πῆχυς,¹⁹ but it is conceivable that the adjective might be omitted in a clear context.²⁰

The ostrakon text is reduced to such brief compass that no verbal context exists for fixing the pertinence of the measurement in cubits. The receipt may be said to have for context only the situation in which it was produced. As a rule, from a document we seek to recreate the background. In the present instance we must reverse the process and see whether a receipt issued to three persons

¹⁵ The naubion is a cube measuring 1 xylon = 3 royal cubits in each of its three dimensions. Any of the following may be consulted: Friedrich Hultsch, "Beiträge zur ägyptischen Metrologie," *APF* 3 (1906) 439; Wilcken, *op. cit.* (footnote 2) lxxii, 334; *ibid.*, pt. 2, 389, introd.; Johnson, *op. cit.* (footnote 13) 467; *Ostr. Oslo*, 14, commentary. If we operate with the metric equivalence of the cubit given by Angelo Segrè, *Metrologia e circolazione monetaria degli antichi* (Bologna, 1928) 45f., we obtain a volume of ca. 2.628 cubic meters for the naubion.

¹⁶ In the extant receipts for work on the embankments, quantities smaller than a naubion are expressed in fractions of that unit, never in terms of the solid cubit. Cf. Oertel, *op. cit.* (footnote 13) 75.

¹⁷ *P. Oxy.* IV, 669, i, 7f.; *P. Rain.* (N.S.) I, 1, ii, 13f. (cf. the editor's comment on p. 52).

¹⁸ Cf. I. L. Heiberg, *Heronis Alexandrini opera quae supersunt omnia*, 4 (Leipzig, 1912) 90.24f.; 404.25f.; 414.8-10. These passages may be found conveniently also in Friedrich Hultsch, *Metrologicorum Scriptorum Reliquiae* (Leipzig, 1864) 1.185.17f.; 187.9-11; 196.18f.

¹⁹ *στερεόν* is defined by Euclid as τὸ μῆκος καὶ πλάτος καὶ βάθος ἔχον (I. L. Heiberg and H. Menge, *Euclidis opera omnia*, 4 [Leipzig, 1885] xi, def. 1); cf. the commentary in T. L. Heath, *The Thirteen Books of Euclid's Elements. Translated from the Text of Heiberg. With Introduction and Commentary*, 3 (Cambridge, 1908) 262f. Theon of Smyrna distinguishes the *στερεόν* from the point, line, and surface, as τὸ ἐπὶ τρία and μῆκος τε καὶ πλάτος καὶ βάθος ἔχον (Eduard Hiller, *Theonis Smyrnaei philosophi Platonici expositio rerum mathematicarum ad legendum Platonem utilium* [Leipzig, 1878] 111.19). *P. Oxy.* IV.669 states that the *στερεὸς πῆχυς* is measured κατὰ μῆκος καὶ πλάτος καὶ βάθος ἦται (i.e. ἦτε) ὕψος. Cf. Liddell and Scott, *A Greek-English Lexicon*, new ed., s.v. *στερεός* II.

With ὁ *στερεὸς πῆχυς*, a solid each of whose dimensions is a cubit, must not be confused the *πῆχυς στερεοῦ*, which is equivalent to the *πῆχυς οἰκοπεδικός*, an area measuring 1 cubit × 100 cubits. Cf. e.g., *P. Grenf.* I.25.3, with editor's note; *P. Lond.* III.1204 (p. 10), 19, with editor's note.

²⁰ As *οἰκοπεδικός* or *στερεοῦ* is omitted in *P. Amh.* II.31.3 φοινικῶνος π(ηχῶν) β, and 10 πῆχ(εις) β, where the cubit employed for measuring a palm grove is naturally the *πῆχυς οἰκοπεδικός*. On the significance of the latter term see footnote 19 *ad fin.*

for twenty-seven cubits of earthwork would correspond to normal practice.

The numeral placed at the head of the text is in no sense a difficulty. As the number of a cleruchy it has significance for the nature of the obligation.²¹ None of the other ostraca, however, which begin with the topographical designation, is addressed to more than one person; No. 327 names three persons.²² This possible obstacle to interpretation also disappears when the whole body of *corvée* receipts is considered. We need not go outside the Michigan collection to illustrate the principle of joint responsibility for the discharge of the annual requirement. *Ostr. Mich.* 1.284 was issued to Charidemos and his two sons, Sarapion and Leonides, for three naubia, while 277 credits two persons with three naubia.²³ In order to emphasize the likeness in this respect to the ostrakon under discussion, I give in full a still unpublished text of the late second to early third century A.D.

Inv. No. 9780
 α (ξτους) Μεσορή
 κῆ Ἀφροδίσι(ος)
 Αἰνείους καὶ
 Αἰνῆς υἱός
 καὶ Ὀρος ἄλλο[ς]
 παρέδωκ(αν)
 τρία.²⁴

The situation reflected by this text is exactly parallel to that in No. 284: a father and two sons have provided three naubia of earthwork.

In its last line, the quantity of work performed, No. 327 differs from those cited above. In the latter the share of each person is at least one naubion;²⁵ in 327 the three persons are credited with

²¹ See footnote 11. The obligation to perform work on the dikes and canals was attached to the land under cultivation. What principle was employed in imposing the *corvée* on landless fellahin, remains unknown. Perhaps this principle, whatever it may have been, would explain the use of two standards of measurement in the Fayûm (see footnote 25).

²² See footnote 12.

²³ Correct Amundsen's Περε|ρῶνος to Περε|ρέως and his παρέδωκεν|γαύβια τρία to παρέδ(σαν) ναύ|βια τρία.

²⁴ Sc. ναύβια.

²⁵ J. G. Milne (*Theb. Ostr.*, pp. 146f.) has suggested that one naubion may be the equivalent of one day's labor and five naubia may represent in terms of work what

twenty-seven cubic cubits, or one naubion, which yields one-third naubion per person. Among the ostraca published by Wilcken is a receipt for a still smaller quantity. On May 7, 105 A.D. a certain Bechis and his two sons received an acknowledgment at Thebes that they had acquitted themselves of the required labor to the extent of one-half naubion, i.e. one-sixth naubion each.²⁶ Most pertinent is another Theban ostrakon of 139 A.D. in which two persons, a father and a son, receive credit for two-thirds of a naubion, or one-third each.²⁷ Except for the difference in the measure used, the amount corresponds exactly to that in No. 327.

This discussion has been sufficient, I believe, to establish two facts: (1) No. 327 resembles in form a number of receipts known to have been issued for labor on the dikes and canals. (2) There is nothing in 327 which is not compatible with the content of the work receipts.

2. A RECEIPT FOR THREE DAYS' WORK ON THE EMBANKMENTS

Ostr. Mich. 1.319 has several characteristics in common with No. 327, which has been analyzed in section 1 of this paper. Both are texts of the third century A.D., both consist of three lines, and both were put by the editor in the "uncertain" group under the head "Work on the Embankments."²⁸ Unlike 327, however, 319 has a relatively simple construction, with very much the look of an account:

Μεσορή	κζ ²⁹
Πεῦς βουκ(όλος)	κη
	κθ

πενθήμερος (see footnote 14) represents in days. The evidence unfortunately will not support the second part of his hypothesis, as he has recognized, and one naubion is somewhat over 2.5 cubic meters (see footnote 15), an optimistic estimate of a day's work. According to Barois, *op. cit.* (footnote 13) 69, "it is estimated that one man can accomplish in one day 2.3 cubic meters of earth-work for the repair of shallow canals and dikes and 1.35 cubic meters for cleaning deep canals." The naubion consequently far exceeds the modern average estimate of 1.8 cubic meters for a day's work. Cf. J. G. Milne, *Ostraka from Denderah*, *APF* 6 [1913] 133; Oertel, *op. cit.* (footnote 13) 75.

²⁶ *Ostr.* 1567.

²⁷ *Theb. Ostr.* 128.

²⁸ See footnote 10.

²⁹ ζ Amundsen, who also failed to observe the vertical alignment of the numerals.

Beside this notation of three successive days³⁰ may be placed another text of the same period from an unpublished Michigan ostrakon recovered at Karanis.

Inv. No. 9984

Φαῶφι κγ

Σωκράτης Σείθου

κδ ὁμοίως³¹

κε ὁμοίως

Hand 2 $\overline{\kappa\varsigma}$ ὁμοίω[s]

$\overline{\kappa\zeta}$ ὁμοίω[s]

This is a receipt in the form of an account³² issued to Socrates, son of Seuthes, for five days' labor, the usual *πενθήμερος*,³³ on the dikes and canals, and comparison with No. 319 makes it evident that the latter is a receipt of the same simple type issued to Peeus the cowherd for three days' labor.³⁴

These receipts of almost primitive conception may be regarded as the base from which was derived the more sophisticated type exemplified in *Ostr. Mich.* Inv. No. 9442 and 9505. Although these texts are available elsewhere,³⁵ they are worth repeating for the sake of the comparison.

Inv. No. 9442

ἐ Ὠρίων Χρυσᾶ Παῖνι

Ἐπεὶφ ὠ $\overline{\kappa\zeta}$ $\overline{\kappa\eta}$ νεομηνία,

(γίνονται) τέσσαρες δ.

³⁰ The editor's note inquires whether *κθ* in line 3 is to be regarded as a correction of *κη* in line 2. The comparison instituted below between No. 319 and Inv. No. 9984 removes the need of such conjecture.

³¹ *ὁμοίως* in lines 3–6 indicates repetition of the name given in line 2. This use of the word is common in papyri and ostraca; cf. Friedrich Preisigke, *Wörterbuch der griechischen Papyrusurkunden* (Berlin, 1925–31) s.v. *ὁμοιος*.

³² Compare my remarks on the form of *Ostr. Mich.* 1.24 and 154 in *AJPh* 61 (1940) 199 and 62 (1941) 82; on the short formulas in receipts of money taxes in *TAPhA* 71 (1940) 645, esp. footnote 73; and on the relation of receipts to tax registers as an explanation of the failure to maintain rigid standards in the composition of receipts, *ibid.* 626, footnote 21.

³³ See footnotes 13 and 14.

³⁴ Extant receipts and ledgers attest work performed for one, two, three, four, five, seven, or ten days. Cf. Oertel, *op. cit.* (footnote 13) 71; also my discussion of Michigan ostraca in *TAPhA* 71 (1940) 628–635. The text of *P. Mich.* Inv. No. 4697A recto, 7, as given *ibid.* 635, is misleading: *ι* is a misprint for *ις*. I owe this correction to Dr. O. M. Pearl.

³⁵ *Ibid.* 631.

Inv. No. 9505

ᾱ Πτολε() Σεμπρωνίου

Παῦνι ιε ις ἐννέα

καὶ δεκάτη, (γίνονται) τρεις γ.

To these may now be added another Michigan ostrakon hitherto unpublished. Like the others, this text also was written in the third century A.D.

Inv. No. 9595

Σ]ισόις ³⁶ Ψικεμ[Ἰδρι(ανοῦ) β γ δ, γ(ίνονται) ἡ(μέραι) [τρεις γ.]

The vertical arrangement of the dates in No. 319 and Inv. No. 9984 and the horizontal arrangement in Inv. Nos. 9442, 9505, and 9595 do not conceal the basic identity of form. The cleruchy number with which the texts in the latter group begin and the summation with which they close are not essential elements of a work receipt. In the Michigan receipts for one day's labor on the embankments ³⁷ the cleruchy number is regularly given, but it is omitted in *Ostr. Mich.* 1.318. On the other hand, it is included in a text which suggests the account-type although it pertains to only one day.

Ostr. Mich. 1.326

ιζ

Ἰριων ια.

Very useful for understanding this absurdly brief acknowledgment as well as No. 319 and Inv. No. 9984 is another Michigan ostrakon of the third century.

Ostr. Mich. 1.310μδ Ἰφροδ(ισιος) Πέθως κγ. ³⁸Hand 2 Παῦνι τρίτη ³⁹

καὶ εἰκάδι.

Here the first hand wrote a complete receipt, identical in form with

³⁶ Whether line 1 began with the number of a cleruchy, as in the similar texts, Inv. Nos. 9442 and 9505, cannot be determined because of a light but more or less uniform layer of salt on the surface of the ostrakon. For the significance of the cleruchy number see footnotes 11 and 21.

³⁷ See footnote 11.

³⁸ Πέθως Amundsen.

³⁹ τρίτη Amundsen. The first three letters are very much faded, but they are not in doubt.

No. 326—a form of which No. 319 and Inv. No. 9984 are merely expanded examples, the one with three dates, the other with five. The second hand brought the text into conformity with the type exhibited in the majority of Michigan receipts for one day's work by introducing the name of the month and writing out the number of the day in words.

3. A RECEIPT FOR THE DELIVERY OF CHAFF

Among receipts bearing on the transportation of government grain from Karanis to canal ports ⁴⁰ in the late third and early fourth centuries A.D. the editor of the Michigan ostraca has included one which seems to be very much damaged. In order to save lengthy and complicated discussion I reproduce the published text.

Ostr. Mich. 1.492

[K]αρανίδος
] Θυμ-
] δι(ά) 'Αναλα()
] α'
] καὶ θ (ἔτους) Μῆσο(ρή) δ.

In this transcription No. 492 appears to have sustained such serious loss on the left side as to be without significance of any kind, but renewed study of the ostrakon has revealed that it is intact, and what slight loss has occurred in the writing on its surface is easily supplied. The new text is given with a minimum of discussion.

[K]αρανίδος
 [ἀχύρου] σαρ(γάνη) μία
 δι(ά) 'Αχιλλᾶ,
 [(γίνεται)] σαργ(άνη) α'
 ι (ἔτους) θ (ἔτους) β (ἔτους) Χο(ιὰκ) δ.

1. The simple genitive is equivalent in meaning to ὑπὲρ Καρανίδος. With its initial position compare other receipts in the same class: *Ostr. Mich.* 1.180, 196, and 222. The last especially is very close

⁴⁰ For a general view of the annual movement of grain from the interior to Alexandria, see N. Hohlwein, "Le Blé d'Égypte," *EP* 4 (1938) 99ff. The subject has been treated from the standpoint of taxation by S. L. Wallace, *Taxation in Egypt from Augustus to Diocletian* (*Princeton Univ. Stud. Papyrology*, ed. by A. C. Johnson, No. 2 [1938]) 42ff. Most important is Leiv Amundsen's discussion in *Ostr. Oslo*, 17–21, commentary. Instructive even today is the Michigan dissertation, unfortunately not published, by H. A. Thompson, *The Transport of Government Grain in Graeco-Roman Egypt* (1929).

to 492 in formula. 2. The use of *σαργάνη* as the measure of quantity relates the text to chaff. According to *P. Cair. Boak* 23 the *σαργάνη* was equivalent to 150 *λίτραι*. Amundsen⁴¹ has observed that *σαργάνη* was employed in the Karanis chaff receipts from 292 to January, 298, and thereafter the amounts were given in *λίτραι*. On the basis of *Ostr. Mich.* 1.187–194, Hombert and Préaux⁴² have modified Amundsen's statement; they find that up to January, 298, the *σαργάνη* was used exclusively, but after that date both *σαργάναι* and *λίτραι* are found in the receipts. 3. 'Αχιλλᾶ: read by O. M. Pearl. The construction, *διά* + n. pr., is paralleled in other chaff receipts, which also omit the verb: *Ostr. Mich.* 1.201, 207, and 222. As verb understand *παρηνέχθη*; cf. *Ostr. Mich.* 1.197 and 216. 5. The regnal years are those of Diocletian, Maximian, and the associated Caesars. The date is Nov. 30, 293 A.D.

In its new dress No. 492 is a perfectly conventional acknowledgment to a certain Achilles for one basket, i.e. 150 pounds, of chaff⁴³ which he turned over to government collectors on November 30, 293 A.D. Receipts for chaff are numerous,⁴⁴ for chaff was useful in many ways. It was valuable in the making of bricks and in the heating of baths, quite apart from its obvious military utility in providing bedding and fodder for animals. The collections of chaff were destined in large part for the army.⁴⁵

4. ANOTHER RECEIPT FOR THE DELIVERY OF CHAFF

In Amundsen's edition of the Michigan ostraca from Karanis considerable space is taken by lists of liturgical workers.⁴⁶ One of these, written in a hand of the late third century A.D., consists of three lines in which appear to be given the names of three persons.

⁴¹ *Ostr. Oslo.* 22, introduction (p. 69).

⁴² Marcel Hombert and Claire Préaux, *Les Papyrus de la Fondation Égyptologique Reine Élisabeth VII (Chronique d'Égypte* 30, July, 1940) 294.

⁴³ In 311 A.D., as we have learned from *P. Cair. Boak* 23, chaff was collected at the rate of twenty-five pounds per *aroura*. Hombert and Préaux, *op. cit.* (footnote 42) 295, feel that this must have been combined with some other principle of collection because the quantities specified in the receipts show too great uniformity.

⁴⁴ E.g., *Ostr. Mich.* 1.52, 53, 177–233. Wallace, *op. cit.* (footnote 40) 367, note 23, gives a list of chaff receipts of the Roman period. For the later period see Hombert and Préaux, *op. cit.* (footnote 42) 294.

⁴⁵ See especially Jean Lesquier, *L'Armée romaine d'Égypte d'Auguste à Dioclétien (Mémoires de l'Institut français d'archéologie orientale du Caire* 41, Cairo, 1918) 355–358. Cf. also *Ostr.* 1.162–164; *Theb. Ostr.* p. 133; *Ostr. Oslo.* 22, introduction (p. 69); Hombert and Préaux, *op. cit.* (footnote 42) 295.

⁴⁶ *Ostr. Mich.* 1, pp. 149–168.

Because it deserves a closer scrutiny than it has hitherto received, the editor's transcription is repeated here.

Ostr. Mich. 1.569

Σείθης καὶ

Ἰσχυρᾶς, Παιηοῦς

Πτολ(εμαίου)

The ostracon, as Amundsen has described it, is of "yellowish gray pottery," and the ink is "in part very much faded." The first line has almost vanished. Ἰσχυρᾶς is well preserved, as are the three letters which follow it, but the fourth, Amundsen's η , is dubious, and the remainder of the line is hopeless. Finally, in taking $\pi\tau\omicron\lambda$ in line 3 as a unit the editor is forced to disregard an oblique stroke which juts off from the upper right corner of the first letter. Repeated attempts to solve the riddle of the third line have led to what I believe is a more accurate interpretation of the writing. Every letter which has no dot beneath it is read with certainty.

κῶμη(ς) Καρ[αν(ίδος)]

Ἰσχυρᾶς Ναι

π (ἀρηγεγκε) τὸ ᾄ(χυρον).

1. κῶμη(ς): κῶμη ostr. Amundsen saw something on the ostracon which suggested σ after η . On the photograph the space is blank. For the meaning of the genitive see section 3 of this paper, p. 448. Καρ[αν(ίδος)]: Amundsen saw a trace of the third letter on the ostracon, and nothing after it. The photograph shows a space between the third letter and the edge of the ostracon sufficient for the restoration, but I cannot judge whether the space is or is not blank.
2. Ναι: The first letter is a characteristic ν with high crossbar, a common type at this time. Comparison with π in line 3, which has an equally characteristic curved top, is decisive. The fourth letter resembles β or κ , although Amundsen's η would not be unreasonable if the first letter had been π , since Παιηοῦς is a good name. Neither Ναιβίον nor Ναιβία[νοῦ]⁴⁷ is entirely satisfactory because κ

⁴⁷ These are normal Greek spellings of *Naevius* and *Naevianus*; see Wilhelm Pape, *Wörterbuch der griechischen Eigennamen*, 3rd ed. (Braunschweig, 1911), s. *vv*. For $ae > ai$ and $v > ov$ or β see Bernhard Meinersmann, *Die lateinischen Wörter und Namen in den griechischen Papyri* (*Studien zur Epigraphik und Papyruskunde*, ed. by Friedrich Bilabel, 1, Schrift 1, Leipzig, 1927) 111, 114. The names are rare in papyri and

looks even better than β for the fourth letter. Nothing can be done with Νάρκισσος because the second and third letters do not permit any reading except $\alpha\iota$. For the same reason ναύβ(ιον) α and ναύβια must be rejected. 3. $\pi'\text{τοα}'$ ostr. According to his note on this line Amundsen saw $\pi'\text{τολ}'$, and this he resolved Πτολ(εμαίου) , thus disregarding the oblique stroke above τ . $\pi(\alpha\rho\eta\nu\epsilon\gamma\kappa\epsilon)$: The single-letter abbreviation occurs also in *Ostr. Mich.* 1.190–192. This verb is characteristic of Fayûm chaff receipts.⁴⁸ Normally the verb precedes the name of the contributor, but in *Ostr. Mich.* 1.219 also the verb follows the name. $\tau\acute{o}$ $\alpha(\chi\upsilon\rho\omicron\nu)$: The omission of a quantity expressed in terms of baskets or pounds⁴⁹ is unusual but not unparalleled. In a Theban ostrakon of 140 A.D.⁵⁰ the collectors of chaff declare to a certain Amenothēs: $\alpha\pi\acute{\epsilon}\chi\omicron\mu\epsilon\nu \pi\alpha\rho\acute{\alpha} \sigma\omicron\upsilon \tau\acute{o} \alpha\chi\upsilon\rho\acute{o}\nu \sigma\omicron\upsilon \tau\eta\varsigma \eta\pi\epsilon\iota\rho\upsilon \tau\omicron\upsilon \pi\rho\acute{\omega}\tau\omicron\upsilon \xi\tau\omicron\upsilon\varsigma$. In an ostrakon of the fourth or fifth century A.D. from Upper Egypt⁵¹ $\upsilon\pi\omicron\mu\eta\eta\sigma\tau\alpha\iota \tau\acute{\omega}\nu \xi\alpha\kappa\tau\acute{o}\rho\omega\nu$ state that they have received from a certain Patachoumis $\tau\acute{o} \alpha\iota\rho\omicron\upsilon\nu \sigma\omicron\upsilon \mu\acute{\epsilon}\rho\omicron\varsigma \alpha\chi\upsilon\rho\omicron\nu$.

No. 569 is, then, not a list of persons, but an acknowledgment to Ischyra that he has turned over his quota of chaff. Although chaff was collected at the rate of twenty-five pounds per *aroura*,⁵² the receipt does not specify the extent of the obligation discharged by Ischyra. Nevertheless, it leaves no doubt that Ischyra has met that obligation in full.⁵³

5. A LIST OF LITURGICAL WORKERS

Under the heading "Payments in Money and Kind" Amundsen has edited two mixed accounts of the third century A.D. which record expenditures both in money and in kind,⁵⁴ and a third account written late in the same century. The last, *Ostr. Mich.* 1.149,

ostraca, but Νεββιανός occurs in tax registers from Karanis (*P. Mich.* IV, pt. II, Index III), and Νάκουος in a graffito at Abydos (*Sammelbuch* III.6041).

⁴⁸ See footnote 44. Receipts from Upper Egypt which are phrased objectively generally use $\mu\epsilon\tau\rho\acute{\omega}$ and $\mu\alpha\rho\alpha\delta\acute{\iota}\delta\omega\mu\iota$ in the Ptolemaic period (*Ostr.* 1.102) and $\mu\alpha\rho\alpha\kappa\omicron\mu\acute{\iota}\zeta\omega$ in the Roman (*ibid.* 117).

⁴⁹ See section 3 of this paper, p. 449.

⁵⁰ *Ostr.* 865; cf. *Berichtigungsliste* 2, pt. 1.81.

⁵¹ *Ostr. Strassb.* 466; cf. the editor's note.

⁵² See footnote 43.

⁵³ The omission of a statement of quantity or amount when the obligation is fully met is easily illustrated from almost any edition of ostraca. See, e.g., *Theb. Ostr.* 29 (private receipt), 30 ($\xi\pi\iota\delta\acute{\epsilon}\kappa\alpha\rho\omicron\nu$), 44 (bath tax), 64 (weavers' tax); cf. *Ostr.* 1.103.

⁵⁴ *Ostr. Mich.* 1.147 and 148.

has the following text:

κώμ(ης) Καρανίδος⁵⁵
 "Ἡρων 'Απωνέω(ς)
 Δημήτριος ἕτερος⁵⁶
 Κόμων Καλλων(ίου)
 5 Δημήτριος
 Καλλωνίου
 ὑπ(έρ) α (ἔτους) (δραχμάς) 'Γ'
 καὶ ἀνν(ώνης)(?) α
 .].[. .]. Κοπρή.

If I rightly understand this text, the four men named in lines 2-6 are said to have paid three thousand drachmas toward the fulfilment of an unspecified obligation to the account of the first year of an unnamed emperor, and have turned over for the *annona* of the same year a quantity of grain.⁵⁷ In the latter transaction they have acted through Kopres.⁵⁸

The published text has been correctly read through line 6, and no objection can be taken to line 9, but lines 7 and 8 are not satisfactory. The writing on the ostrakon falls into a different pattern:

7. γί(νονται) ἄν(δρες) γ,
 8. καὶ 'Ονν(ῶφρις) α

With this new reading the character of the text is entirely changed. It is a list of men used in public service, whether on the *corvée*⁵⁹ or in the transport service⁶⁰ or in the police administration.⁶¹ Line 7 gives the number of men named in the preceding lines. Since the name in line 4 was added in smaller writing after the text was completed,⁶² the numeral 3 was correct when it was set down and

⁵⁵ For the significance of the genitive see section 3 of this paper, p. 448.

⁵⁶ ἕτερος is correctly read. It appears to distinguish this Demetrios from Demetrios the son of Kallonios, whose name is given in lines 5-6; the order of the names is indeed odd. On the insertion of line 4 see footnote 62.

⁵⁷ For a brief account of the Egyptian *annona* see Wallace, *op. cit.* (footnote 40) 23-25; cf. *Ostr. Oslo*, p. 66, with the references there given.

⁵⁸ This interpretation follows the notes appended by Amundsen to his text.

⁵⁹ See footnote 13.

⁶⁰ *Ostr. Oslo*, p. 48; Oertel, *op. cit.* (footnote 13) 116-121.

⁶¹ Cf., e.g., *Ostr. Mich.* 1.82; *Ostr. Strassb.* 534; *Theb. Ostr.* 139.

⁶² Amundsen's observation that line 3 "seems to be a later addition" is not confirmed by the photograph. Doubtless he intended to apply the statement to line 4.

the scribe failed to correct it when he inserted the name of Komon.⁶³ After the total had been drawn in line 7, another omission was discovered, and the name of Onnophris was then added in line 8 and the numeral α, i.e. "one person," placed to the right of the name. Line 9 may preserve the name of the official charged with supervision of the men listed in the preceding lines.⁶⁴

Lists of liturgical workers with totals drawn are fairly common on the ostraca,⁶⁵ and there is no reason to believe that they are in any way different from similar lists without totals. The latter exist in great number.⁶⁶

6. A. SCHOOL EXERCISE

On an ostrakon in the Michigan collection, published under the number 659 and assigned by the editor to the third or fourth century A.D., someone drew rather than wrote two lines which have been read as

ANTΩNI
ΣΑΤΡΑ.

This text is mysterious, and Amundsen cannot be blamed for failing to find a satisfactory interpretation.⁶⁷ The ostrakon has occupied my attention many times during the last year, and only recently have I seen the letters as they were actually made. Repeated examination has confirmed the new reading, and it is submitted here together with a palaeographic interpretation.

ANTΩNI
ΕΔΓΒΑ

⁶³ Amundsen's reading of the numeral is indubitably correct. γ is damaged but certain; δ is impossible.

⁶⁴ Cf., e.g., *Ostr. Mich.* 1.615, a list of six names followed by δι(ά) Νεᾶς ἀρχεφύδου. In No. 356 five men are credited with the transportation of wood; the list concludes with δι(ά) Ἰσιδώρου [π]εδιοφύλαξ. No. 342 is a list of men who supplied 16 donkeys; the total number of donkeys is given in line 11 and this is followed by Νεῖλος ἀρχ(ε)φοδος in lines 12-13, which conclude the text.

⁶⁵ E.g., *Ostr. Mich.* 1.86, 580, 585; *Ostr.* 1486; *Ostr. Brüssel-Berlin* 74-76; *Ostr. Bodl.* 1.391; 2.76, 80; 4.80-82, 84, 87, 88; *Ostr. Wilbour* 78; *Ostr. Strassb.* 523, 525, 527, 531, 534, 538, 539, 545, 548, 549, 555, 564, 565.

⁶⁶ The Michigan collection is rich in texts of this type. See *Ostr. Mich.* 1, pp. 149-168.

⁶⁷ In a brief note Amundsen wavers between the view that the lines may hold a proper name—'Αντώνι(ος) Σατρά or Σατρα()—and the possibility that their purpose is magical. From magical papyri he cites Σατραπάμμων and Σατραπειν.

The first letter of line 2 could in a pinch be read Σ, because the fading perceptible throughout has obliterated the tongue of E. From the Greek point of view 'Αντωνις = 'Αντώνιος,⁶⁸ Lat. *Antonius*, would be desirable, but several considerations lend support to the reading adopted above. (1) The crucial letter shows no flattening at the top, although this might be expected of sigma and may be observed in the sigmas of Nos. 657 and 658, of which the hands are somewhat comparable.⁶⁹ (2) The disposition of the text in two lines seems to mean that the writer—evidently a schoolboy⁷⁰—devoted the first line to his name and the second to the first five letters of the alphabet. (3) Perhaps more significant is the frequent use of ANTΩNI as a Coptic name from the fourth century on.⁷¹ The boy's Greek name was "Antonios," but he was accustomed to being called "Antony" in the Coptic fashion at home.⁷²

The last letter of line 2 was recognized as A by the editor, but he neglected the usual criteria in identifying the three letters between E and A. The second letter of the line has not the angular loop, nor the strongly oblique concluding stroke of alpha; its right side is almost vertical, and it has an almost horizontal bottom. As between A and Δ, the choice is obvious. The middle letter, which Amundsen called T exhibits only a minute extension of the horizontal to the left of the vertical; that is because the letter is not T, but Γ.⁷³ The letter immediately before A has two loops, the

⁶⁸ The substitution of -ις for -ιος is well known from the beginning of the Christian era; see Albert Thumb, *Die griechische Sprache im Zeitalter des Hellenismus* (Strassburg, 1901) 154f.

⁶⁹ See the editor's notes to 659.

⁷⁰ Although the character of the text was obscured for the editor by his reading of line 2, he was working toward the right conclusion when he remarked that the script resembled that used in Nos. 657 and 658. The latter have been accepted as school exercises by Paul Collart, *Les Papyrus scolaires* (*Mélanges Desrousseaux*, Paris, 1937) 72, No. 47. Considerable light is thrown on the rôle of ostraca in ancient education by Diogenes Laertius (7.174), who reports of Cleanthes: τοῦτόν φασιν εἰς ὄστρακα καὶ βοῶν ὠμπλάτας γράφειν ἅπερ ἤκουε παρὰ τοῦ Ζήνωνος, ἀπορίε κερμάτων ὥστε ὠνήσασθαι χαρτία.

⁷¹ Gustav Heuser, *Die Kopten* (*Quellen u. Studien z. Geschichte u. Kultur d. Altertums u. d. Mittelalters*, II: *Prosopographie von Ägypten*, IV. Edited by F. Bilabel and A. Grohmann. Heidelberg, Selbstverlag von F. Bilabel, 1938) 25.

⁷² The question arises whether the ostracon ought to be classified as Coptic rather than Greek. Amundsen has correctly assigned the writing to the third or fourth century A.D., and this date does not exclude Coptic. Cf. footnote 89.

⁷³ See footnote 81, where it is suggested that T was written for Γ in Meyer *Ostr.* 83. If the letter is constructed as in the Michigan ostracon, it may be Γ mistaken for T by the editor.

upper one well preserved and the lower still visible in outline even where the ink has practically vanished.

In the second line, then, we have the first five letters of the alphabet in reverse order, while the first line consists of a name. Either the two lines are a formal exercise, or a schoolboy was amusing himself with writing his name and then the letters of the alphabet backwards. The children of antiquity were not encouraged to neglect the ABC.⁷⁴ Their minds were charged with the letters, memorized in both directions, and they were drilled in writing them both consecutively and in a mixed order. These methods were noted by Quintilian, who disapproves of "teaching small children the names and order of the letters before their shapes. Such a practice makes them slow to recognize the letters, since they do not pay attention to their actual shape, preferring to be guided by what they have already learned by rote. It is for this reason that teachers, when they think they have sufficiently familiarized their young pupils with the letters written in their usual order, reverse that order or rearrange it in every kind of combination, until they learn to know the letters from their appearance, and not from the order in which they occur."⁷⁵

Quintilian's account of elementary education, so far as it concerns instruction in the alphabet, is confirmed in detail by the papyri and ostraca, which preserve just such exercises as he describes.⁷⁶ Four ostraca, for example, in the Strassburg collection have the letters written in their proper order, both forwards and backwards, and arranged both in horizontal and in vertical lines.⁷⁷

⁷⁴ For a penetrating discussion of Greek education in Egypt, with abundant bibliography, see Claire Préaux, "Lettres privées grecques d'Égypte relatives à l'éducation," *RBPh* 8 (1929) 757-800. This article, characterized by Paul Collart (*CE* 22 [1936] 493 note 1) as "nourri et subtil," is limited to the material furnished by the private letters and contains consequently little specific information on elementary instruction. The conservative character of Greek education in the Hellenistic world has been stressed recently in a brief sketch by Michael Rostovtzeff, *The Social and Economic History of the Hellenistic World* (Oxford, 1941) 2.1058-1061. See footnote 76.

⁷⁵ *Inst.* 1.1.24f.; transl. by H. E. Butler, in the "Loeb Classical Library" (1920). The passage has been cited in the same connection by Erich Ziebarth, *Aus der antiken Schule (Kleine Texte für theologische und philologische Vorlesungen und Übungen*, 65 [1910]) p. 3.

⁷⁶ A list of these texts has been compiled by Collart, *op. cit.* (footnote 70) 70f. The same author has given a very readable account of the school texts in a lecture entitled "À l'école avec les petits grecs d'Égypte," in *CE* 22 (1936) 489-507; on the alphabet see esp. 497.

⁷⁷ *Ostr. Strassb.* 805-808.

On a papyrus at Vienna may be seen the alphabet written twice in full, in two successive lines. In the first line the letters proceed in the usual way from alpha to omega; the second turns them about and runs back from omega to alpha.⁷⁸ Quintilian's *varia permutatio* is illustrated in *Ostr. Mich.* 1.672, which exhibits the letters from alpha to lambda in a curious arrangement:⁷⁹

ΑΒΓΖ

ΔΘΙΑ

ΕΗΚ

To No. 659, which has a name in the first line and letters of the alphabet in the second, may be compared a Theban ostracon of the Roman period in the Deissmann collection.⁸⁰ The latter is strikingly similar in its arrangement:

Καμήτις

ΑΒΓΔΒ

ΤΑ⁸¹

"Kamētis" is a good Egyptian name with a proper Greek ending,⁸² and the order of the letters in line 2 leaves no doubt that the text is a school exercise.⁸³

7. NAME TAGS

Ostr. Mich. 1.694 has been placed by the editor in a group of badly mutilated ostraca under the rubric "Fragments and Uncertain Texts."⁸⁴ Although No. 694 is not damaged, its entire text is one short and unintelligible word:

+ πολω

The first three letters are large and clumsy,⁸⁵ but entirely clear.

⁷⁸ *Stud. Pal.* II, XLV.

⁷⁹ Since the letters are large and clear, Amundsen has given a photograph of the ostracon without a transcription. Only E is damaged.

⁸⁰ Meyer *Ostr.* 83.

⁸¹ The preceding line suggests that T is a blunder for Γ and that lines 2-3 are an unsuccessful attempt to write the first four letters of the alphabet as a palindrome. See footnote 73.

⁸² Friedrich Preisigke, *Namenbuch* (Heidelberg, 1922) s.v.

⁸³ So far as I can see, Collart, *op. cit.* (footnote 70), has not entered it in his list. Meyer called it a writing exercise, but entertained some doubt: "Schreibübung (?)." According to his description, it is written, as might be expected, in an awkward uncial.

⁸⁴ *Ostr. Mich.* 1, pp. 176-181.

⁸⁵ In his note to 694 Amundsen observes that the ostracon bears a "very unskilled handwriting."

If the last letter were really ω , it would be most curiously formed. Upon the left side of a broad and awkward ν ⁸⁶ would be set an oval resembling \circ . So strange a combination might be interpreted, I suppose, as a correction to ω or to \circ .⁸⁷

Luckily a more satisfying solution of the difficulty is at hand.⁸⁸ When the seemingly confused writing has been unscrambled, the letters $\nu\beta$ emerge with striking clarity, and the text of the ostrakon may be given with certainty as

+ ΠΟΑΤΒ

The name is probably Πολύβιος or Πολυβιανός.⁸⁹

The brevity of the text recalls that group of ostraca which have written on them only the name of a single person.⁹⁰ They are evidently name tags, ostraca placed on sacks of wheat, bags of chaff, etc., to identify them as the property of the person whose name they bear.⁹¹ Doubtless they were much in use at estate threshing-floors, which were frequented by large numbers of tenants; at the government granaries, which were devoted to the storage of grain and other agricultural products in behalf of private persons as well as the state; and at all stages of the complicated business of transport.

Among receipts concerned with the transportation of govern-

⁸⁶ Perhaps better described as a deep ω with a flat center.

⁸⁷ In his "General Index of Greek Words" the editor, with evident reluctance, offers the suggestions $\pi\acute{o}\lambda\omega$ and $\pi\omicron\lambda\omega$ ().

⁸⁸ In justice to Amundsen I must state that my correction of his text is the result of more than a year's interest in the writing on this ostrakon. The text has very little significance, but the palaeographic problem which it presents proved irresistible.

⁸⁹ A glance at Pape, *op. cit.* (footnote 47), under Πολυβ-, will reveal other possibilities. When Preisigke published his *Namenbuch* (footnote 82) in 1922, no name beginning Πολυβ- had occurred in papyri or ostraca. Subsequently an Aurelius Polybius has become known from *Sammelbuch* 6612 (365 A.D.), and a Claudius Polybianus from *P. Achmim* 6 (end of II cent. A.D.).

Since the ostrakon has ΠΟΑΤΒ in a hand of the late third to early fourth century A.D., the name may be complete in that form, i.e. it may be a characteristic Coptic treatment of Πολύβιος. The omission of -ιος in Copticized Greek names is illustrated by Gustav Heuser, *Die Personennamen der Kopten (Studien zur Epigraphik und Papyruskunde, 1, Schrift 2.* Edited by F. Bilabel. Leipzig, 1929) 91. Especially pertinent is ETΣEB from Εὐσέβιος.

To distinguish Greek from Coptic in the extremely brief texts which sometimes occur on ostraca, is not always possible. See footnote 72. Amundsen may have had this possibility in mind when he asked, in his note on the Christian symbol, whether the Coptic ⲫ was intended. So far as I know, neither + nor ⲫ is exclusively Coptic.

⁹⁰ Cf. *Ostr. Mich.* 1, pp. 169-171.

⁹¹ In his note to No. 641 Amundsen uses the term "identification slip."

ment grain from Karanis to canal ports for transshipment to Alexandria ⁹² is a quite small ostrakon ⁹³ of the late third to the early fourth century A.D. ⁹⁴ The *editio princeps* shows a few letters of a single line, which would have introduced a receipt of five to ten lines.

Ostr. Mich. 1.535

ἐ]ν θη(σαυρῶ) Καρ[νίδος

The truth is that nothing has been lost on the left side. Although the lower left corner has broken off, carrying with it a minute portion of ν, there remains before the letter a margin of .3-.4 cm. Amundsen's interpretation was conditioned primarily by his acceptance of the second letter as θ. What really stands here is ε, but of a type that is not common. The letter begins at the top, swings in a shallow arc downward, climbs again from the bottom until it almost strikes the left wall of the letter near the top, then projects in a straight line to the right and meets iota. ⁹⁵ Once this formation has been recognized, there is no difficulty in reading the few letters which comprise the text:

Νεικαν[

If the ostrakon is actually broken on the right, ⁹⁶ the most likely reconstruction is Νεικάν[ωρ. ⁹⁷ This is the only name, of those beginning with Νεικαν- or Νικαν-, which is found in the Michigan ostraca. ⁹⁸

The smallness of the ostrakon taken together with the presence of only one name on its surface points to its use as a name tag. Size, nevertheless, is not a sure criterion. No. 694, which has been discussed above, is unusually large for a text of this type; it meas-

⁹² See footnote 40.

⁹³ Cm. 3.1 × 2.1, as measured by Amundsen.

⁹⁴ "Early IV cent. A.D.?" Amundsen. Cf. footnote 9.

⁹⁵ In the tables of cursive alphabets compiled by E. M. Thompson, *An Introduction to Greek and Latin Palaeography* (Oxford, 1912) 191-194, examples of this epsilon are seen in the columns for the third and second centuries B.C. and the sixth century A.D. As may be inferred from the alphabets at the end of Victor Gardthausen, *Griechische Palaeographie*, 2nd ed., II (Leipzig, 1913), this form of the letter played a considerable part in shaping the character of the Greek minuscule.

⁹⁶ Judgment based on a photograph is likely not to be satisfactory. In this instance the photograph does not show the lateral surface. Amundsen saw the ostrakon itself, and he evidently assumed a break.

⁹⁷ A recognized variant of Νικάνωρ. See Pape, *op. cit.* (footnote 47), and Preisigke, *op. cit.* (footnote 82), under Νικ- and Νεικ-.

⁹⁸ *Ostr. Mich.* 1.19.6 and 125.2. Although No. 19 is part of the Askren collection a comparison of names reveals it to be a Karanis ostrakon. Νικάνωρ occurs also in the unpublished ostraca in the Michigan collection.

ures 13×7.1 cm.⁹⁹ By way of illustrating the great variety in the size of the name tags, in the arrangement of the names on the ostraca, and in the dates at which they were written, I reproduce a few from the unpublished ostraca in our collection.¹⁰⁰

Inv. No. 9557 4.9×5.3 cm. I cent. A.D.
Περεσοῦχος

The name is written toward the top of the ostrakon. Below the writing is a blank space of 3.7–4 cm.

Inv. No. 9362 2.7×2 cm. II/III cent. A.D.
Σοίου

The ostrakon is roughly triangular, and the name nicely fills the space. The name is not attested elsewhere. Pape, *op. cit.* (footnote 47), records Σώβιος = Σωσίβιος from an Ephesian coin, but Σοίβιος is probably an Egyptian name.

Inv. No. 9616 3×2.1 cm. II/III cent. A.D.
Σαλιωῆς

The name is so placed on the ostrakon that there is an upper margin of .5 cm. and a lower margin of 1–1.2 cm. The same name occurs in *P. Mich.* Inv. No. 4656 (Karanis, late III/early IV cent. A.D.), where Salious is father of Aeis and Analis.

Inv. No. 9292 7.7×4 cm. III cent. A.D.
Τιβερῖνος

The name is written toward the top of the ostrakon. Below the writing is a space of 2.7 cm. Cf. Inv. No. 9557, above.

Inv. No. 9818 6.2×4.2 cm. III cent. A.D.
Πανῆλος χαλδός

⁹⁹ Of *Ostr. Mich.* 1.641, Amundsen observes that "the sherd is bigger than those used as identification slips (?). Perhaps only a writing exercise." No. 641 is smaller than No. 694, and size is not a useful criterion for distinguishing between a name tag and a writing exercise, or between either of these and a so-called pot inscription. More important are the shape of the sherd, the character of the handwriting, and the position of the name on the sherd. The large uncials of No. 641 do suggest an exercise, but the mark of abbreviation points to a degree of informality hardly suitable to a scholastic performance, and the placing of the letters toward the center of the ostrakon, as if they were intended to be in sole possession, makes a name tag the simplest explanation. See the descriptions attached to Inv. Nos. 9362, 9616, and 9801, at the end of this section. Collart, *op. cit.* (footnote 70), has not included 641 in his list of school exercises.

¹⁰⁰ For those published by Amundsen see footnote 90.

Inv. No. 9423 8.5 × 8.5 cm. Late III/early IV cent. A.D.
'Αρπαῖσις Πρωτάρχου

Inv. No. 9801	5.3 × 5 cm.	IV cent. A.D.
	Ἀβούρς	
	Στρονθοῦ	

Above line 1 is a margin of .7 cm.; below line 2 a margin of 1.8–2.6 cm.

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