

CALCULO—LOGISTES—HASHBAN

IN the opening passage of the Breviarium of Festus (1. 1) (written probably c. A.D. 369/70) we read the following: '... ac morem secutus *calculonum*, qui ingentes summas aeris breuioribus exprimunt, res gestas signabo, non eloquar. Accipe ergo quod breuiter dictis breuis computetur...' The problem that I should like briefly to discuss in the following study¹ is: Who were the *calculones*, 'qui ingentes summas aeris breuioribus exprimunt'? This term *calculo*, and indeed the whole problematic clause can, I suggest, only be fully understood and appreciated in the light of monetary developments of the later fourth century.

It is by now a well-known fact that in Egypt from the beginning of the fourth century onwards prices were reckoned in ever more enormously inflated terms, first in talents (= 1500d.) and in the latter half of the century even in myriads. To give but a few examples:

346 P.London. 247	4 Babylonian hides: 120 M.
c. 347 P.Lond. 247 (Fayum)	2 embroidered tunics (σπιχάρια): 154 M.
c. 360 P.O. 1056	1 sol. = 2000 M.d. (cf. P.S.I. 287, of 377, and P.O. 1223)
362 P.O. 1057	1 hide: 750 M.d.
c. 380 P.S.I. VII. 961	1 sol. = 4050 M.d. (cf. P.O. 960).
390 P.O. 1753	3½ lb. meat: 105 M.d. (cf. undated P.O. 1656, 1 lb. meat: 25 M.d.), etc. ²

This situation, in which prices were reckoned in vastly inflated sums of myriads, etc., was true not only of Egypt alone, but—and this is little known—also of Palestine and Syria. Two passages from Rabbinic sources, which were first noted by Saul Lieberman in one of his characteristically enlightening footnotes,³ make this abundantly evident:

(a) In J. Ma'aser Shenii 1, 2 (52 d 19–21) we find R. Jona (*flor.* c. 325–55) asking what would be the case if a man's purse, containing 100 myriad (debased) denarii, fell into a pit, and it would cost him 50 myriad d. to hire someone to get it out. This text should probably be dated to c. 350.⁴ Here we need not concern ourselves with the legal implications of this example.

¹ The idea for this study came to me when first I learned of this passage from Festus. This was at a seminar held in the Warburg Institute on 4 Mar. 1968, in which Prof. W. den Boer read a paper on the Breviarium of Festus. It was he who first pointed out this problem, and I then hazarded an explanation, the substance of which, in a developed form, constitutes the following study. The following abbreviations have been used: d. = denarius; sol. = solidus; mod. = modius; art. = artab; R. = Rabbi; b. = ben or bar (son of); J. = Jerushalmi (= Palestinian Talmud); M. = myriad; para. = paragraph. For the Festus text see J. W. Eadie, ed. (London, 1967), p. 45. For the date of

composition see *ibid.*, pp. 1–3.

² The foregoing examples have been taken from *Byzantine Egypt: Economic Studies*, by A. C. Johnson and L. C. West (Princeton, 1949), pp. 175 ff.

³ See his *Greek and Hellenism in Jewish Palestine* (Hebrew ed., Jerusalem (1962), p. 4 n. 24. See also his remarks in *Annuaire de l'Institut de philologie et d'histoire orientales et slaves*, vii (1939–44), p. 434 n. 4, and his *Tosefta ki-fshutah*, *Zera'im*, vol. ii (New York, 1955), p. 718 n. 39.

⁴ I have discussed texts *a* and *b* in *Archiv Orientalni*, xxxiv (1966), pp. 61–2, 65. There I have gone into the problem of dating in some detail.

We need only note that at this time it was apparently possible for a person to have in his purse one million(!) denarii, and for it to cost him half a million for the relatively simple task of getting it out of a pit.¹

(b) R. Mana II (*flor. c.* 320–50) in J. Kila'im 1. 1 (22 a 8) speaks of an expensive garment worth 30 myriad denarii.²

I shall now cite one further text, which is evidence of this same phenomenon, a text which, strange to say, seems hitherto to have escaped the notice of scholars:

(c) In a 'derashah' (= homily), probably of R. Pinhas (ha-Kohen) b. Hama (*flor. c.* 330–70), recorded in Tanhuma Exodus (Mishpatim, para. 15), we read of a man who has lent his friend '200 or a myriad 300 . . .'.³ The text as it stands is clearly in need of some kind of emendation to make good sense (and style) of it. It has therefore been variously corrected to read, '200 or a myriad or 300',⁴ or '200 or 300 or a myriad',⁵ or even a radical rewriting quite without textual foundation—'100 or 200 or 300'.⁶ However, these emendations are as forced as they are unsatisfactory. I would therefore suggest that we simply move the single 'or' of the ed. princeps' text one word forward, which would leave us with a loan of 'two hundred myriad [denarii] or three hundred (i.e. 300 myriad [d.])'.⁷ According to this, around the middle of the fourth century an ordinary person—the context makes it quite clear that ordinary people are being spoken of—could lend out two to three million (denarii).⁸

Furthermore, there are two Syrian inscriptions which should perhaps be mentioned in this context. They are both undated, but on epigraphic (and other) grounds should be assigned to the fourth century.⁹ The first, a memorial from MJEDIL reads:¹⁰ *μ(υρίων), ας', which ought to mean 12,500,000 d., and the other, on a building from KHARSAH reads:¹¹ *μ(ύρια) φ' = 50,000,000 d. The editors, considering these sums too vast to be plausible, suggest that the numbers be interpreted as meaning 11,200 and 10,500 respectively. However, there is no real basis for such interpretation, and in view

¹ What is, of course, meant is that he had the equivalent of that sum in his purse, probably only a couple of solidi, in effect. See papyrological evidence cited above and see below.

² Cf. P.Lond. 247, of *c.* 347, cited above.

³ This is the reading in the ed. pr., Constantinople 1522 (40 d 15–16) = Venice ed., 1545 (39 a 41) (with some very minor changes). The fact that no units of currency are mentioned also points to this passage's being from the fourth century, as it is common in texts of this period to find that the names of the debased units (usually denarii) have been omitted.

⁴ Mantua ed., 1563 (38 b 34), corrected by Menahem Azariah of Pano, followed by Verona ed. of 1595 (34 a bottom), etc.

⁵ Warsaw ed. of 1877.

⁶ Buber in his Tanhuma edition, Exodus, p. 84 n. 48 (Wilna, 1885).

⁷ The operation is exactly the same in the original Hebrew.

⁸ See also Tanhuma Exodus, Mishpatim, para. 9, which mentions a large sum of '10 myriads' worth the equivalent of homes and fields. (But cf. the parallel in Exodus Rabba which reads '1 maneh' = 100 d.) The text is anonymous and difficult to date. See above, n. 1.

⁹ I have discussed these inscriptions with Gideon Förster (of the Institute of Archaeology, Jerusalem) and he agrees that they cannot be later than the fourth century, especially in view of the (non-Christian) names.

¹⁰ Publications of the Princeton University Archaeological Expedition to Syria in 1904–5 and 1909, Section III, Greek and Latin Inscriptions, part A (Southern), ed. E. Littman, D. Magie, and D. R. Stuart (Leyden, 1921), no. 787¹⁴, p. 392.

¹¹ Ibid. 790⁴, p. 401.

of the Egyptian and Palestinian evidence cited above, the plain meaning should be seriously considered.

Now such valuations were vast only because they were reckoned in *aes* currency, debased monetary units of almost no value.¹ Prices when reckoned in terms of gold solidi, however, were quite reasonable. Thus we find in the *Vita S. Pachomii* 33–4² that sometime between 320 and 346³ wheat cost between 5½ and 13 art. per sol. In 390, according to P.O. 1753, 80 sestarii of olive oil cost 2 sol.⁴ And according to Rabbinic evidence (in J. Baba Kama, 9. 4. 6d) sometime c. 340–50⁵ wheat cost from 20 to 25 mod. per sol.⁶

Furthermore, taxes during this period (or after 366) had to be paid up in pure gold,⁷ and sums of money when mentioned in the Codes, i.e. taxes, allowances, or fines, are usually reckoned in *libra aurei*. Calculated in terms of gold even large sums of money sound relatively small, and when placed alongside the enormous sums of *aes*, reckoned in myriads of debased denarii, they sound quite diminutive.

Now throughout the whole of the fourth century the relationship between the debased denarius and (first the aureus and then) the solidus was very fluid, changing almost continuously year by year, and also having regional variations.⁸ A considerable literature has grown up over the past few decades in which the problem of reckoning these relationships has been repeatedly attempted.⁹

In this fluid and ever-changing situation, officials of the treasury and those concerned with taxation must have been faced with much the same problem, namely the translation of (popular) reckoning in terms of vast sums of debased *aes* currency into more compact and manageable accounts, in terms of gold. This would have been of especial concern to the tax officials, since, as we have mentioned above, all taxes (after 366) were collected in pure gold.¹⁰ There must surely have been some kind of official accountants (*calculones*) whose task it was to calculate these mathematical translations, 'qui ingentes summas aeris brevioribus exprimunt'.

¹ See the remarks of L. C. West and A. C. Johnson, in *Currency in Roman and Byzantine Egypt* (Princeton, 1944), pp. 170 et seq.; Johnson in *Egypt and the Roman Empire* (Ann Arbor, 1951), p. 59; A. H. M. Jones, *The Later Roman Empire* (Oxford, 1964), I, p. 440.

² *Patrologia Orientalis* 4/5, ed. Bousquet and Nau (Paris, 1907), pp. 455–8 (Greek), and ed. Bedjan, in *Acta Martyrum et Sanctorum*, vol. 5 (Paris, 1895), pp. 148–51 (Syriac). See also *The Book of Paradise of Palladius*, etc., ed. E. A. Wallis Budge (London, 1904), i. pp. 455–7 = ii. pp. 321–4.

³ *Evangelisches Kirchenlexikon*, iii (Göttingen, 1959), p. 1, s.v. Pachomius.

⁴ Cf. Diocletian's Edict of Maximum Prices (of the year 301), III, 1a–3, ed. Graser (apud Tenney Frank, *An Economic Survey of Ancient Rome*, vol. v, Baltimore, 1940), pp. 322–3.

⁵ See my remarks in *Archiv Orientalni*, loc. cit., pp. 61–2.

⁶ See also my discussion in *Journal of the Economic and Social History of the Orient*, ix, 3

(1966), pp. 207–11 (where some corrections are required).

⁷ See *Cod. Theod.* 12. 6. 12–13, of 366–7; 12. 7. 3, of 367; 12. 13. 14, of 379; and 7. 24. 1, of 395.

⁸ *Ibid.* 9. 23. 1 of 352. See also J. Ma'aser Sheni, 4. 1 (54 d 17–21) and my discussion on this text in *Archiv Orientalni*, loc. cit., pp. 61–2, and in an article to be published in *Numismatic Chronicle* (1968) (*ad fin.*) in greater detail.

⁹ To mention but a few of the more important studies: A. Segrè, *Metrolologia e circolazione monetaria degli antichi* (Bologna, 1928), pp. 454–6, 489–90; id., *Byzantion*, xv, p. 263; Jones, *Econ. Hist. Rev.* v/3 (1953), pp. 308–11; L. Ruggini, *Rendiconti dei Lincei*, xvi (1961), p. 311; West and Johnson, *Currency*, etc., pp. 170 ff.; Rémondon, *Chronique d'Égypte*, xxxi (1956), p. 146; etc., etc.

¹⁰ Taxes were collected in gold before that year (cf. *Cod. Theod.* 11. 9. 2, of 337, for example), but after 366/7 all taxes had to be paid in pure gold.

Now while the word *calculo* (literally, calculator) is certainly well suited to describe these accountants and their duties, it does not seem to be an official term—we should sooner have expected *tabularius* or *numerarius*¹—as it never appears in the Codes, and indeed is strangely absent from the sources.² I would therefore suggest that, rather than being an original term, this is a (literal) translation from the very familiar Greek word *λογιστής*. Up to the time of Diocletian, the *λογιστής* was more or less identical with the Roman *curator rei publicae*,³ but from the early fourth century onwards the two terms are no longer synonymous,⁴ and *λογιστής* seems to have had varying meanings in different regions. Thus, in Egypt, in the early fourth century the *λογιστής* appears (at Oxyrhynchus and Hermopolis) in charge of finances, approving payments from the public treasury and inspecting accounts of village revenues, etc.⁵ In Palestinian (Rabbinic) sources, however, he appears to have been a market commissioner.⁶ To give but one example, we find the following in Tanḥuma Leviticus (Tzav., para. 1):⁷ ‘... It is like unto a butcher who was selling in the market and his shop was full of meat. The *logistes*, passing by, [turned] and stared at the meat. [When] the butcher saw how he was staring at the meat, he said to him, ‘My Lord, I have already sent [you] an *opsonin*⁸ to your house by hand of the servant’.⁹

But there is an even more interesting, and for us illuminating, passage found in Yalkut Deuteronomy, para. 808:¹⁰ ‘It is like unto a city that was in need of bread. The people cried out to the *hashban*¹¹ [and] two bakers came forward and ground [flour] all through the night. [Then] they wished to make the dough, but the candle went out, and they could not see. What did they do? They kneaded the dough and baked the bread [without seeing properly. Next morning] they brought it out, and filled (i.e. stocked) the market [with bread]. The *hashban* came and saw that the bread was mixed with *kibar* (stuff of inferior quality)¹² [and] he said to them (the bakers), “Really you ought to have the axe put across your necks, and you should be taken round the town (i.e. paraded in this manner). But what can I do to you, who have filled the city [with bread] in the hour of wrath (i.e. God’s wrath, = the hour of need)?”’

Now the word *hashban* means literally a ‘calculator’, and is clearly a precise

¹ In the *Codex Theodosianus* we find the tax accountants are called *logographi* (*Cod. Theod.* 8. 2; 8. 4. 8; 8. 7. 6; 8. 7. 11; 11. 4. Also in *Cod. Iust.* 10. 69. 1, *Dig.* 50. 4. 18.10). We also find the term *rationes* (*ibid.* 8. 5. 23, etc.).

² See A. Souter, *A Glossary of Later Latin* (Oxford, 1964), p. 356, s.v. citing *Ang. ord.* 2. 12. 35 (of the year 386–7) and *Anth.* 96. 1.

³ Liddell and Scott², p. 1056b, s.v. II. 2.

⁴ West and Johnson, *Byzantine Egypt: Economic Studies*, p. 323.

⁵ *Ibid.*, pp. 103, nn. 18, 164, 173, 325, etc.

⁶ M. Jastrow, *Dictionary of the Talmud Babli and Yerushalmi, and the Midrashic Literature*, p. 696b, s.v., and S. Krauss, *Griechische und lateinische Lehnwörter im Talmud, Midrasch und Targum*, ii (Berlin, 1899), p. 308b, s.v.

⁷ = Yalkut Lev., para 479; cf. Yalkut Micah, para. 555 and Tanḥuma Buber, Lev. p. 12.

⁸ *ὀψώνιον*—an allowance, here probably meaning a bribe. See Jastrow, *Dictionary*, p. 106a, s.v.

⁹ This is an anonymous text, undated, but probably of the later fourth century.

¹⁰ Quoted as coming from Deuteronomy Zuta, a rather obscure and little-known Midrash. (See Zunz–Albeck, *Ha-Derashot be-Yisrael*, Jerusalem, 1959, pp. 123, 391–2.) See S. Buber, *Likkutim* (Vienna, 1895), p. 3. The text is not easily datable.

¹¹ Such is the reading in the ed. pr., Salonica 1526–7. In subsequent editions it was altered to *heshbon* (which makes no real sense in this context). In modern ed. (Berlin, 1926, etc.) the word *agronomos* has been substituted without warrant.

¹² *κιβάρ(ιος)*, *cibar(ius)*. See my article, ‘Pat Kibar’, in *Tarbiz*, xxxvi/2, (Jerusalem, 1967), pp. 199–201.

translation of the Greek λογιστής. Here again, the *hashban* λογιστής is seen to be some sort of market inspector. Thus the term *logistes* in the (early) Byzantine period has differing meanings in Palestine and in Egypt.¹

It would appear that the λογιστής that Festus had in mind was yet a third kind of official, an accountant, possibly in the treasury, but more probably involved in the calculation of taxes. Festus translated λογιστής literally into *calculo*, as did the anonymous author of our Midrash into (the lexicographically identical) *hashban*.

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¹ For the Syriac usage of this word see *Ecclesiastical History of Eusebius*, ed. McLean and Wright (Cambridge, 1898), p. 339, line 6, and *History of the Martyrs of Palestine by Eusebius*, ed. W. Cureton (London, 1861), p. 34 n. 2. See Brockelmann, *Lexicon Syriacum*²,

p. 359a, s.v., and Payne Smith, *Thesaurus Syriacus*, 1904b, s.v. See also *Acta Martyrum et Sanctorum*, ed. Bedjan, vol. 1 (Paris, 1890), p. 251, line 1 (referred to in *Supplement to the Thesaurus Syriacus, etc.*, ed. J. P. Margoliouth, Oxford, 1927, p. 177b, s.v.).