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JULIAN OF ASCALON[1]

I

STUDENTS of ancient metrology have long since been acquainted with a short tract, though so far none seems to have been aware of the fact that it has been published[2] in four different versions:

(1) The *manuale legum*, or *Hexabiblos*, of Constantine Harmenopulos, a Byzantine compilation dating from 1345 and transmitted in a great number of manuscripts, has been published a number of times since the *editio princeps* of 1540; the most accessible edition, with Latin translation and some notes, is that of Heimbach.[3] In book 2 ch. 4 (*De novis operibus*), there appears (but not in all MSS) a page-long metrological table (# 12), purporting to derive from an architect Julian of Ascalon, according to the editors not attested elsewhere. The text in the still basic collection of F. Hultsch, *Metrologici scriptores* (Leipzig 1864) i. 54 ff.; 200 f., on which all students of ancient metrology depend, derives from this authority. Though there is nothing in the text of Harmenopulos that indicates the end of his excerpt of Julian, it is implicit in the discussions of modern scholars that only the metrological table is Julian's work and that the paragraphs devoted to building laws which follow it derive from a different source.

(2) Another version of the metrological table, based on two Vatican MSS, was published by Viedebannt in 1917.[4] This version, beside a number of other differences, lacks the title, and the ascription to Julian.[5]

(3) Our table appears (again, without the title) also in a Byzantine tract on taxation preserved in cod. Marc. gr. 173; the tract has been published, without our table, in 1915 and with it (f. 276[r]) in 1927.[6] The MS is from the 12th c., but our table was added by a second hand (13th c.?) which is also responsible for the corrections in the work on taxation. This treatise was composed between 913 and 1139. Julian's table is preceded by a version of the Tabula Heroniana II (*Metr. script.* i. 33 f; 186). No note seems to have been taken by students of metrology of either of these tables.

[1] This paper was written while on Sabbatical leave in Oxford: it is a pleasure to thank once again Corpus Christi College for their hospitality. I am greatly indebted to Ewen Bowie, Hannah Cotton and Abraham Wasserstein who read and commented on various drafts of this paper; needless to say, I alone am responsible for the remaining faults and shortcomings.

[2] There exist at least two unpublished MS versions, cod. Marc. Gr. 174 f. 38[v] (see E. Mioni, *Codices Graeci manuscripti divi Marci Venetiarum* i [Rome 1981] 272) and cod. Scor. R II 11 f. 276 (see P. A. Revilla, *Catálogo de los códices griegos de la biblioteca de la Escorial* i [Madrid 1936] 117); *cf.* N. G. Svoronos, *La Synopsis Major des Basiliques et ses appendices*, (*Études Bibl. Byz.* 4), Paris 1964, 58.

[3] *Const. Harmenopuli manuale legum sive hexabiblos cum appendicibus et legibus agrariis* ... illustravit Gustavus Ernestus Heimbach (Lipsiae 1851); see also K. Krumbacher, *Gesch. byz. Lit.*[2] (München 1897) 607. A volume dedicated to the six hundredth anniversary of the work in 1945, Τόμος Κωνσταντίνου Ἀρμενοπούλου ἐπὶ τῇ ἑξακοσιετηρίδι τῆς Ἐξαβίβλου αὐτοῦ [*1345-1945*], Saloniki 1952, does not contain anything of relevance for the present investigation.

[4] O. Viedebannt, 'Forschungen zur Metrologie des Altertums', Abh. sächs. Ges. Wiss., philol.-hist. Kl. xxxiv.3 (1917) 123 ff. The texts were copied by E. Pernice from Codd. Vat. Gr. 852 f. 15^2 and 914 f. 188^2.

[5] It has been suggested by A. Diller, 'Julian of Ascalon on Strabo and the Stade', *CP* xlv (1950) 22 that these MSS were the *antiquissimae schedae* referred to by Casaubon's note in his edition (Paris 1620) on Strabo 322 and *cf.* on 518. However Casaubon could have been referring to any of the Venetian or Escorial MSS (n. 2), all unknown to Diller, as well as the Geneva MS of the *Tactica inedita* (see below).

[6] See F. Dölger, 'Beiträge zur Geschichte der byzantinischen Finanzverwaltung besonders des 10. und 11. Jahrhunderts', *ByzArch* ix (1927); the text of Julian is at pp. 113-4. The earlier publication is W. Ashburner, 'A Byzantine Treatise on Taxation', *JHS* xxxv (1915) 76 ff.

(4) In 1938 A. Dain published a military treatise erroneously ascribed to the Emperor Leo VI the Wise (886-912).[7] As ch. 3 of this work features, without the title, Julian's metrological table, again with minor differences from the other versions.[8] The name of Julian of Ascalon has been noted by the editor in the margin.

The tradition of the text is still to be disentangled from the relations between these versions. Metrologists, however, were by and large more interested in the contents of the Julianic Table and in its exact place in the history of ancient metrology than in the history of Julian's text. Moreover, they were so absorbed in their own subject, that they did not take note of the fact, that Julian of Ascalon has aroused in the meantime some mild interest among scholars of Byzantine law. Significantly, Julian of Ascalon is acknowledged as a purely metrological writer in such reference works as *RE* and *Der kleine Pauly*.[9] Are we then to blame students of Byzantine law if they totally ignored the significance of Julian for ancient metrology?

II

(5) In 1893 J. Nicole published from a Geneva MS an important collection of laws dealing with the guilds of Constantinople, ascribed to none other than Leo VI.[10] This ascription, never entirely safe even according to Nicole, has been challenged by subsequent scholars.[11] The collection of laws is followed in the MS by another text, attributed to Julian of Ascalon. This text is composed of (*a*) the title given to Julian's Table in the text of Harmenopulos (with exception of the first word, *eparchika*), (*b*) a short preface explaining the division of the laws which follow according to their connexions with the four elements of fire, air, water and earth, (*c*) the metrological table known as Tabula Heroniana V[12] (in a marginal note, according to the editor), which displaces here the table of Julian, and (*d*) a long text identical in the main with the laws following the metrological table of Julian in the text of Harmenopulos, altogether the equivalent of some twenty-five printed pages of Greek. In (*d*) there are some transpositions in the text of Harmenopulos as well as some interpolations, compared with the text of the Geneva MS. Nicole printed the introduction on the four elements and added a *collatio* of the MS with Harmenopulos, but did not print the main, legal, part of the MS. This legal text has been discussed by students of Byzantine law who dismiss the metrological part as an

[7] A. Dain, *Sylloge tacticorum, quae olim 'inedita Leonis tactica' dicebatur* (Paris 1938) The text is based on cod. Laur. 75-6. It had been thoroughly discussed by R. Vári, 'Die sogenannte "Inedita Tactica Leonis"', *BZ* xxvii (1927) 241-270.

[8] The chapter had been published already by R. Vári from cod. Bern. 97, an apographon of cod. Laur. 75-6, in a review (in Hungarian) of H. Diels, *Die Handschriften der griechischen Ärzte, Egyetemes Philologiai Közlöny* xxxi (1907) 610-611.

[9] O. Viedebannt, *RE* x (1917) 17f s. v. no. 10; H. Chantraine, *Kl. Pauly* s.v. no. 20. There are no entries in *OCD*^{2}, *Lexicon der alten Welt* or *PLRE* (but for this last work *cf.* below, n. 64). *The Oxford Dictionary of Byzantium*, which appeared after this paper was accepted for publication, has an entry on Julian with discussion of Harmenopulos, the Geneva MS and the legal contents, but ignores altogether the metrological chapter and its problems and does not attempt to date the author.

[10] Λέοντος τοῦ Σοφοῦ τὸ Ἐπαρχικὸν Βιβλίον. *Le livre du Préfet. L'Édit de l'Empereur Léon le Sage sur les corporations de Constantinople. Texte grec du Genevensis 23 publié pour la premier fois par Jules Nicole, avec une traduction latine, des notices exégétiques et critiques et les variantes du Genevensis 23 au texte de Julien d'Ascalon* (Genève 1893). Though elaborate subtitles are not in vogue now, it is worth while to reproduce this one, including as it does a reference to Julian of Ascalon on the title-page.

[11] See the review of Nicole by C.E. Zachariä v. Lingenthal, *BZ* ii (1893) 132ff. A. Stöckle, *Spätrömische und byzantinische Zünfte, Klio Beiheft* ix (Leipzig 1911) 142 ff. dates the compilation certainly between Leo VI (886-911) and 968, and possibly between 963 and the latter date. G. Zoras, *Le corporazioni bizantine. Studio sull' Ἐπαρχικὸν βιβλίον dell' imperatore Leone VI* (Roma 1931), accepts the dating under Leo VI.

[12] *Metrol. script.* i 37 ff.; 187 ff.

interpolation from the Heronian Table V and also do not realise the significance of Julian for ancient metrology.[13] None of the scholars concerned with this text raised doubts as to the ascription to Julian of Ascalon.

(6) Parts of this text have been published from yet another source. In 1899 A. Papadopoulos-Kerameus noted in his catalogue of the MSS from the *Metochion* of the Holy Sepulchre in Constantinople that cod. 25 contained on fol. 33a-36b a text of Nicole's *eparchikon biblion*.[14] In 1937 D. Gines discovered that in fact a large part of the text was identical with eight sections (# 13, 14, 15, 19, 20, 47, 50, 51) of Julian of Ascalon as found in Harmenopulos, preceded by the ascription to Julian and by a short introduction on fire, and published a transcript of the text.[15] This publication in a Greek journal of Byzantinology has been all but ignored by subsequent scholars.

Unfortunately it is not possible to disentangle the tradition of the text completely. Some lines, however, are clear. Since the Heronian table V was substituted for Julian's own in the text of the Geneva MS and since all three texts—Harmenopulos, the Geneva MS and the Constantinople MS—share a common interpolation (see below) it is not possible to accept the suggestion of Nicole (*op. cit.* 67 ff.) that Harmenopulos copied from the Geneva text, but rather one has to assume that all three texts were derived from a (lost) common archetype. In all probability Harmenopulos interpolated some passages and changed the order of some paragraphs to meet the needs of his compilation, the Geneva MS substituted the Heronian table for the table of Julian, and the Constantinople MS excerpted only a few sections from the same text. How easily a substitution such as that in the Geneva MS could be made is shown by the text of codex Marcianus 173, where the second Heronian table precedes that of Julian. Finally, we shall see that the analysis of the contents of the legal part of the work of Julian of Ascalon proves beyond reasonable doubt that this and the metrological table are of a piece. That the archetype of Harmenopulos, of Nicole's text and of the Constantinople MS was at least one remove from Julian is established by the fact that they share the interpolated section # 47-51 or parts of it. On the other hand the two Vatican MSS, the codex Marcianus 173 and the chapter inserted into the *Tactica inedita* published by Dain are aligned against Harmenopulos in that they all feature at the end of the metrological table a passage on the parasang which is absent from Harmenopulos. Elsewhere the Marcianus 173 is aligned with Harmenopulos on the ratio of the geometric and simple fathom (see below) while Dain's text alone contains a reference to Xenophon in the passage on the parasang. Apparently we have before us a contaminated tradition which, on the present evidence, cannot be satisfactorily disentangled, especially since the different strands of the tradition contain different sections of the work of Julian. Moreover, the text of Harmenopulos is extant in a great number of MSS, and the two unpublished MSS (n. 2 above) have not been collated. Consequently not even a tentative stemma can be offered.

III

We may now consider the contents of the extant part of Julian's writing. (The title in all three extant versions clearly indicates that only extracts of the text are preserved).

[13] G. Ferrini, 'Gli estratti di Giuliano Ascalonita', *RIL*^{2} ser. ii xxxv (1902) 613 ff. = *Opere* i 443 ff.; 'Ambitus und Angiportus', *ZSS RA* xxiii (1902) 431 ff. = *Opere* i 439 ff.; 'Beiträge zur Kenntnis des sogenannten römisch-syrischen Rechtsbuches' *ZSS RA* xxiii (1902) 101 ff. = *Opere* i 397 ff.; H. J. Scheltema, 'The Nomoi of Iulianus of Ascalon', *Symbolae ... J. Chr. van Oven dedicatae*, ed. M. David, E. M. Meijers, (Leiden 1946) 349 ff.

[14] A. Παπαδόπουλος-Κεραμεύς, Ἱεροσολυμιτικὴ Βιβλιοθήκη iv (Petersburg 1899) 37 f. The codex is from the end of the fourteenth century.

[15] Δ. Γκίνης, Τὸ ἐπαρχικὸν βιβλίον καὶ οἱ νόμοι Ἰουλιανοῦ τοῦ Ἀσκαλωνίτου, Ἐπετηρὶς Ἑταιρείας Βυζαντινῶν Σπουδῶν xiii (1937) 183 ff.

The laws relating to building preserved in the Geneva and Constantinople MSS and in the compilation of Harmenopulos were compiled by Julian of Ascalon: there is the definite ascription,[16] supported by # 42[17] which contains explicit references to the customs of Caesarea and of Ascalon, in all probability attributable to our author. Can the metrological table be an interpolation foreign to the text of Julian? This would assume either the interpolation of two different metrological tables in the same position in the two different traditions of the legal text of Julian—surely an absurd supposition[18]—or the interpolation of a metrological text and then the substitution of a different one for it in a subsequent stage of the tradition. Needless to say, no reason for such an interpolation could be found. It is far more reasonable to assume that a metrological table formed indeed part of the text of Julian and that at one stage of the tradition another text of similar contents has been substituted for it.[19] A reason for the inclusion of a metrological table in Julian's legal work will be suggested below, when the connexion between the table and the laws will become apparent. The process of the substitution and the reason for it are not far to seek. The table of Julian is in some respects unusual, while the Heronian Table provides us with standard Roman measures. Thus, even before discussing the contents and peculiarities of Julian's table we may assume with confidence that it was replaced in the strand of tradition represented by the Geneva MS by a standard table available, a clear case of the *versio facilior* displacing the *versio difficilior*. The main lines of the tradition are plain. The text of Julian comprised, presumably among other parts now lost, the title, the preface of the Geneva MS, of which a part is preserved also in the Constantinople MS, the metrological table extant in a number of slightly differing versions, and the legal chapters more or less as preserved in the Geneva MS and in Harmenopulos and—a very small part—in the Constantinople MS.[20]

Thus the extant parts of Julian's work and the texts preserving them may be summarized as follows (I use the numerals (1)-(6) as in sections I and II above):

1. Title: (1), (5), (6)
2. Introduction on four elements, especially on fire: (5); fire only: (6)
3. Metrological Table: (1), (2), (3), (4)
4. Laws and Customs: (1), (5), (6) (small part only).

Furthermore, the exact confines of the legal chapters can be clearly delineated. Nicole[21] has

[16] That is, in the Geneva and Constantinople MSS; in Harmenopulos one must assume that the title is not restricted to the metrological table.

[17] The references are to the paragraphs of the text of Harmenopulos. R. I. Curtis, *Garum and salsamenta: production and commerce in materia medica* (*Studies in Ancient Medicine* 3, Leiden etc 1991) 188 f. refers to paragraph 22 of our text as belonging to the Byzantine period 'and perhaps referring to the area of Phoinicia or Palestine': this may be taken as implying his awareness of the authorship of Julian.

[18] The only scholar to date who has tried to reconstruct the tradition of the text—and the only one, to my knowledge, who has been aware of, though not interested in, the twofold tradition of Julian (though he, too, was not aware of the texts preserved in the Marcian and Constantinople MSS)—was Diller (n. 5) 22 ff. Focusing on a definite section of Julian's metrological table—on which later—he asserted that it was not Julian's work. He maintained in fact that the metrological texts are interpolations, though he does not attempt to show how two different, but not dissimilar, interpolations got into the same place in the two branches of the tradition. Nor does he prove his contention that 'the original home' of the metrological excerpt was the *Tactica inedita Leonis*.

[19] Both recent learned commentaries on Posidonius, apparently unaware of the publication of Nicole, follow Diller and assign the table to the anonymous author of Dain's *Sylloge tacticorum*: see Edelstein-Kidd *fr.* 203 with commentary = Theiler *fr.* 469 with commentary.

[20] That Harmenopulos manipulated the text of Julian both by means of transpositions and interpolations has been convincingly demonstrated by Scheltema (n. 13) 349 ff.

[21] *Op. cit.* 67 ff., followed with some inaccuracies by Scheltema (n. 13) 352.

already shown that it is the Geneva MS as against the text of Harmenopulos that preserves the correct order of Julian. This order reflects Julian's division of the laws in the preface as relating to the four elements of fire (# 13-22), air (# 23-44), water (# 75-80, 82, 85) and earth (# 83, 86, 88).[22] In fact a further criterion can now be introduced to test Nicole's analysis and incidentally to establish the connexion between the metrological table and the building laws. I have given reasons for believing that the metrological table formed part of Julian's work. The peculiarities of this table will be discussed in the following: in the meantime let it be said only that this table, in common with all Eastern (Babylonian, Egyptian, Jewish etc) systems has the cubit as its basic unit, while Greco-Roman systems are based on the foot. An analysis of the paragraphs of Harmenopulos following the metrological table yields unequivocal results. ## 13-22, dealing with laws concerning safety measures with regard to fire risks in certain industries, state the minimal distances between the industries and other buildings required in the various cases. These minimal distances, about one score instances, are all given in cubits. The same is true about the paragraphs concerning water (## 75-80, about a dozen instances; there are no measurements in 82 and 85) and earth (there are half a dozen instances in ## 87-88). On the other hand the interpolations of Harmenopulos are clearly shown for what they are by employing feet as the unit of measurement: ## 45-46 and 52-74, not in the Geneva MS, have six and thirteen measurements by feet respectively, and none in cubits. (There are no measurements in ## 81 and 84). It is instructive that ## 89-91, following the text of Julian, have eight sets of measurements in feet and two in fathoms. ## 47-51, at the end of the Geneva MS and shown by Scheltema on criteria of both contents and of style to be an interpolation, has one case of cubits and two[23] of feet, as well as two measurements in miles, which never occur elsewhere in Julian: we may conclude without hesitation that the measurement in cubits is due to contamination.

We are still left with ## 23-44, laws concerning the air and the spaces surrounding real estate. Here again we seem to have a case of contamination. The chapter as a whole exhibits thirteen cases of measurements in cubits and nine of feet (as well as two measurements given in fingers, which may belong to either of the two systems). The distribution is telling: in # 23 there is one instance of feet, in # 24, absent from the Geneva MS (see Nicole, op. cit. 72) two of feet, in # 28 three of feet, in # 30 one of feet[24] and one of cubits; # 32 once feet, # 33 once cubits and once feet; from then on all measurements are given in cubits. Considering the results reached above we may assume that some sort of contamination has taken place in the first half of the chapter of laws related to the air.

Having thus defined the extent of the compilation of Julian on the laws and customs of Palestine we have gained a text of some importance on the social, economic and legal history of that country in late antiquity. Until now there have been, apart from the purely legal discussions, only two attempts to examine these laws. The first, by Susumov,[25] deals mainly with the relations between Harmenopulos and the two texts preserved in the Geneva MS; the greater part of his article is taken up by a Russian translation of the text of Julian from the Geneva MS—as far as I know the only translation of the text into a modern language but,

[22] On # 47-51, counted by Nicole as part of this section but shown by Scheltema to be an interpolation, see below. The excerpts in the Constantinople MS come from the section on fire and from the interpolated section # 47-51.

[23] Not three: see Heimbach's n. 49 on # 47, vindicated by the text of the Constantinople MS.

[24] Confirmed by the Geneva MS; some scholars have emended the place in Harmenopulos, see Heimbach n. 93 *ad loc.*

[25] M. J. Susumov, 'O traktate Juliana Askalonita', *Istorii Antichnaja Drevnost, Srednie Veka* xxxviii (1960) 3 ff. I am most grateful to Mr Robert Powell of Columbia University Library for procuring for me a copy of a journal published in Sverdlovsk—now again Ekaterinburg—and not easily available in the West, and to Dr D.-B. Kerler who disembarrassed me of my ignorance of Russian.

unfortunately for most Western scholars, *obscurum per obscurius*. The other study, even less accessible to most readers, deals with the laws of Julian with special attention to their connexion to the local laws and customs as preserved in Talmudic literature.[26]

No doubt there is still scope for a full-scale analysis of the text. Here only one passage will be discussed. In # 42, in enumerating the laws and customs relating to the construction of buildings when the different floors belong to several landlords, Julian juxtaposes the customs of Caesarea and of Ascalon:[27] according to the custom of Caesarea, once the building is erected a deficiency on the first floor should be dealt with by the landlord of that floor. According to the custom of Ascalon on the other hand, the landlords of the upper and of the lower floors should be responsible in equal shares. The juxtaposition (in *men ... de* clauses) and the provenance of the writer make it clear that whatever his sources for the first half of the sentence, here he is taking up an opportunity to introduce something of which he has personal knowledge from his own town. Moreover, Lieberman[28] has endeavoured to demonstrate that the laws ascribed to builders and preserved in the Palestinian Talmud were those of Caesarea, according to Lieberman's well-known thesis the place of redaction of a large part of the Palestinian Talmud.[29] Thus we may have here the prevailing customs of the provincial capital contrasted with the deviant local custom, of which the author happens to have personal knowledge. Unfortunately it would be idle to try and deduce from this observation something about the date of our author. In all arrangements of provincial boundaries Ascalon remained in the province of which Caesarea was capital, so that we cannot infer from this passage that it was composed before the ascendancy of Jerusalem in the second half of the fourth century.

IV

We may turn now to the metrological table of Julian of Ascalon. Here there are two issues which transcend the highly respectable but altogether unexciting boundaries of metrology. We shall start with the first and more important of these, the assertion that Julian's table reflects Jewish measures. This suggestion was first made in 1859 by Fenneberg,[30] but after incorporation into the standard work of Hultsch no references seem to have been made to the original author of the thesis. The importance of this suggestion should be obvious, so there is no getting away from examining it even at the peril of entanglement in a highly complicated specialist subject.

An analysis of Julian's table (as known from Harmenopulos) will show that it employs three different measures of the fathom. In the sixth sentence, or equation, of the table there are two alternative measures of the fathom, the fathom of six feet and the fathom of nine spans + four hands[31] = seven feet. In the tenth sentence we are given the equation 100 geometrical fathoms = 112 simple fathoms. Fenneberg was no doubt right in recognizing that since the basic unit of measurement is the cubit rather than the fathom, which is a derivative measure universally

[26] S. Lieberman, 'A few words on the book by Julian the architect of Ascalon *The laws of Palestine and its customs*', *Tarbiẓ* xl (1970-71) 409 ff. (Hebrew with English summary). The English summary is reprinted in S. Lieberman, *Texts and Studies* (New York 1974) 309.

[27] Lieberman (n. 26) 416 may be right in suggesting that such references to local customs may have been frequent in Julian's work but have been omitted by the excerptor.

[28] *Op. cit.* (n. 26) 411 ff.

[29] S. Lieberman, *The Talmud of Caesarea: Jerushalmi Tractate Nezikin, Tarbiẓ Suppl.* ii 4 (1931) (Hebrew).

[30] Ludwig Fenner v. Fenneberg, *Untersuchungen über die Längen- Feld- und Wegemaasse der Völker des Althertums insbesondere der Griechen und der Juden* (Berlin 1859) 87 ff. It should be kept in mind that Fenneberg knew Julian's table only from the work of Harmenopulos.

[31] τέταρτον in Dain's *Tactica inedita* is evidently a wrong expansion for δ (δακτύλους).

reckoned at four cubits, the table reflects a system based on different cubits. The Jews used, according to Fenneberg, (*a*) the simple or regular cubit, the measure derived from the arm of a man (Ezek. 40:5, Dtr. 3:11, Josh. 3:4), (*b*) the ancient measure of the Tabernacle and the Temple, also called by the Rabbis, according to Fenneberg, the cubit of the building, the sacred, Mosaic or middle cubit, and (*c*) the mystical cubit of the vision of Ezekiel, a cubit and a hand in length (Ezek. 40:5). These three cubits are identical with those in our table: the regular cubit of six hands, the mystical one of seven and the middle one, which should be equated, one understands from Fenneberg's argument, with the geometric cubit (on which presumably the geometric fathom is based).

Hebraica (et Aramaica) non leguntur. Fenneberg's ingenious argument, accepted unquestioningly by Hultsch[32] and, via Hultsch, apparently by many metrologists since,[33] does not in fact reflect accurately the evidence of the Jewish sources, quite apart from the point that according to Fenneberg's system the geometric cubit should have been halfway between the two other cubits, viz. six and a half hands in length. A survey of Talmudic concordances (admittedly not available to Fenneberg and Hultsch) will show that the Rabbis were acquainted with two cubits: the normal cubit of six hands, also called the cubit of the building, the middle cubit etc, and the cubit of five hands employed, in Rabbinic discussion, for some of the vessels and implements of the Temple (and hence called the cubit of vessels).[34] It is these two cubits that are constantly in use in Rabbinic discussions. No doubt as far as the Jews were concerned, the seven-hand cubit of Ezekiel was only a prophecy of things to come. Similarly, the cubits described[35] on the gate of the Temple known as 'Susa, the capital', respectively one-half a finger and a finger longer than the normal, 'Mosaic' cubit, were in use for tenders concerned with work on the Temple and its implements only, and are in Rabbinic discussion of purely theoretical value.[36]

Moreover, Fenneberg's conclusion that there were three different cubits in Julian's table (based only, it should be kept in mind, on the text as transmitted in Harmenopulos) is wrong. The ratio between geometric and simple cubits[37] according to that text is 100 : 112 ($\overline{\rho\,\iota\,\beta}$); this, too, is the text of the codex Marcianus 173; in that of *both* Vatican MSS 100 : 118 ($\overline{\rho\,\iota\,\eta}$), emended by Viedebannt so as to conform with Harmenopulos; in Dain's *Tactica inedita* the figures are missing altogether. There exists a perfectly simple solution which will emend the corruption as well as resolve the inconsistency in Julian's text. After giving two different cubits with a ratio of 6 : 7 one would expect the same cubits and the same ratio the next time two cubits (labelled 'geometric' and 'simple') are mentioned. This ratio could be expressed as 100 : 116⅔, written in Greek $\overline{\rho\,\iota\,\varsigma\beta}$'.[38] This figure could easily be corrupted to $\overline{\rho\,\iota\,\beta}$ in Harmenopulos and the

[32] F. Hultsch, *Griechische und römische Metrologie*[2] (Berlin 1882) 437; *cf.* id., *Metrologici scriptores* (Leipzig 1864) 54 f.

[33] E.g. C. F. Lehmann-Haupt, 'Historisch-metrologische Forschungen 2: Die hebräischen Masse und das pheidonische System', *Klio* xiv (1915) 345 ff.; Viedebannt (n. 4) 123 ff.; contra A. Oxé, 'Die Masstafel des Julianus von Askalon', *RhM* cvi (1963) 263 ff., who does not quarrel with the main proposition here under discussion, but insists on the use of the Babylonian-Persian system in Palestine.

[34] Talmudic Concordances s.v. אמה will provide all the necessary evidence; the most comprehensive for our subject is H. J. Scheftel, *Erech Milin ... for Coins, Measures, Weights etc*[2] (Berdichev 1907, repr. Tel-Aviv 1969) 11-19 (Hebrew). For a succinct survey see e.g. S. Krauss, *Talmudische Archäologie* ii (Leipzig 1911) 388 ff.

[35] *mKelim* 17.10; *bPesachim* 86a.

[36] *Cf.* A. Böckh, *Metrologische Untersuchungen über Gewichte, Münzfüsse und Masse des Altertums in ihrem Zusammenhange* (Berlin 1838) 270 f.

[37] It has been shown that the relationship expressed in fathoms is based on one in cubits. For the sake of convenience I shall speak of cubits, even though the text deals with fathoms.

[38] *Cf.* Oxé (n. 33) 267.

Marcian codex (or in a common ancestor), and to $\overline{\rho\,\iota\,\eta}$ ($\varsigma+\beta = \eta$) in the Vatican MSS, and could be altogether misunderstood, and hence left out, by the scribe of the *Tactica inedita*. Consequently in the equation 1 mile = 750 geometric fathoms, 875 simple fathoms has been corrupted to 885 simple fathoms (see Appendix). The existence of two cubits, a simple one of six hands, and a 'geometric' one, viz. one employed for the measurement of plots, buildings, areas etc on the other hand agrees not only with the Eastern, that is Babylonian and Egyptian systems, which employ besides the simple cubit the 'royal' cubit of seven hands,[39] but is expressly attested by a Palestinian author, who was, as will be shown, not far removed in time from Julian. Epiphanius, a native of Palestine and the bishop of Salamis in Cyprus, best known for his fanatical Medicine-Chest for Heresies, the *Panarion*, composed in 392 a work normally referred to as *On Weights and Measures*. The work survives only in part in Greek, but is available in its entirety in a Syriac translation: intended as a sort of Biblical *Realencyclopädie*,[40] a large part of it deals indeed with biblical weights and measures,[41] Evidently Epiphanius collected the material earlier in Palestine,[42] as can also be seen from his frequent references to local conditions. It will be seen in what follows that besides his definition of the cubit as equivalent to six hands the measuring-rod of five cubits described by him employs seven-hand cubits, presumably 'geometric' ones used for the measurement of buildings, plots, etc.

Negligence of, and by, scholars may sometimes be beneficial. Fenneberg, having argued that the Julianic table reflected a Jewish system of measurements, and tacitly assuming, as he had a right to, that Julian was not a Jew himself, tried to establish the historical circumstances of this composition and suggested (*op. cit.* 109 f.), that it may have been connected with Julian the Apostate's attempt to rebuild the Temple of Jerusalem. This suggestion was ignored by all authors[43] concerned with that intriguing historical episode—it may be mentioned that in the Bodleian I found the pages of Fenneberg uncut—but it has sent me on an extended wild-goose chase, of which the present study is an indirect outcome.

Whatever the theories concerning the measures, Jewish or other, in use in Palestine, two important pieces of archaeological evidence have since come to light that have bearing on the matter. The first is an inscription of the Jerusalem aqueduct from the neighbourhood of Bethlehem, first published in 1926.[44] Apparently from the time of Justinian, the inscription threatens with the appropriate legal measures whoever builds at a distance of less than fifteen feet from the aqueduct: in order to make the order as clear as possible, at the end of the inscription, is depicted the exact size of the foot by which the distance will be measured. It equals 308 mm., almost exactly the size of the Attic foot.[45] The second and more recent

[39] Hultsch, *Metrologie* (n. 32) 349 ff.; 437 ff. Needless to say Hultsch's calculations, based as they are on the ratio of 100 : 112, should be disregarded.

[40] W. Schneemelcher, s.v. Epiphanius von Salamis, *RAC* v. 917.

[41] The Syriac text was first published by Paul de Lagarde, *Symmicta* ii (Göttingen 1880), 150 ff.; it is available in an English translation by J. E. Dean, *Epiphanius' treatise on weights and measures: the Syriac version* (*Stud. Anc. Or. Civ.* xi), Chicago 1935.

[42] E. D. Moutsoulas, 'L'oeuvre d'Epiphane de Salamine "de mensuris et ponderibus" et son unité littéraire', *StudPatr* xii (1971) 120.

[43] Including myself, see 'The revolt under Gallus and Julian and the rebuilding of the Temple' in Z. Baras et alii (eds.), *Eretz Israel from the destruction of the Second Temple to the Muslim conquest* (Jerusalem 1982) 202 ff. (Hebrew).

[44] F.-M. Abel, 'Chronique. I. Inscription grecque de l'Aqueduc de Jérusalem avec la figure du pied byzantin', *RB* xxxv (1926) 284-8.

[45] The foot was not a Jewish measure: see e.g. Hultsch, *Metrologie* (n. 32) 434 ff. The foot is never used as a unit of measurement in the Hebrew Bible or in Talmudic literature.

discovery is more remarkable still. It consists of a measuring rod, discovered on the mosaic floor of a room on an ecclesiastical farm in Western Galilee, dated fairly conclusively to the years 610-617.[46] The length of the rod is 2.59 m.—exactly five cubits of 518 mm., if we calculate these cubits at seven hands and the cubit of six hands at 444 mm.: this length of the cubit has been established by the measurement and the inscription of Hezekiah's tunnel.[47] This is most remarkable indeed, since exactly such a measuring rod of five cubits is described by Epiphanius.[48] No doubt here, too, conditions in Palestine did not change until at least the end of Byzantine rule. Thus the archaeological evidence enables us to assert with certainty that at least two measuring systems were in operation in Palestine: the official one, based on the (probably Attic) foot, and the local one, which had as its basic unit the long cubit of seven hands, probably alongside the cubit of six hands.[49] Moreover, there exists evidence of Christian employment of the seven-hand cubit of this measure, very close in time, as will be shown, to Julian of Ascalon.[50] The church of St Polyeuktos at Constantinople was erected about 524-7 by the princess Anicia Juliana:[51] the long verse inscription describing the building is copied in *AP* 1.10 and has been partly recovered in the excavations. It has also been revealed that the plan was that of a quadrangle of 51.45 x 51.90 m., that is exactly 100 cubits of our measure: according to the excavator of the site it was the builder's intention to imitate the Temple of Solomon.[52]

V

Another part of the table of Julian has aroused the interest of scholars for quite different reasons. First, the tradition of this part. Towards the end of the text in Harmenopulos we are told that according to Eratosthenes and Strabo the mile equals 8⅓ stadia, according to the prevailing custom 7½ stadia. The Vatican MSS and the Marcianus 173 add to this a paragraph on the parasang, which most reckon at 40 stadia, some at 60; and Strabo cites Posidonius as witness that sometimes it was reckoned at more than 60 stadia. Finally, a sentence defines the *schoinos* as a Greek measure equivalent to the *parasang*.[53] Dain's *Tactica* agrees with the Vatican and Marcian MSS, but it gives the mile an unparalleled 8¼ instead of 8⅓ stadia, probably a copyist's error, and in the passage on the parasang it also mentions that Xenophon reckoned it at 30 stadia.[54]

The reference to Eratosthenes' measurement of the stade—the only one of its kind in an

[46] C. Dauphine, 'A VIIth century measuring rod from the ecclesiastical farm at Shelomi in Western Galilee (Israel) (with one plate)', *JOeB* xxxii,3 (1982) = *Akten, XVI Intern. Byz. Kongr.* ii.3, 513-522. This seems to be the only whole Byzantine measuring rod discovered to date as well as the only one discovered in Palestine from any period.

[47] For these measurements *cf.* R. B. Y. Scott, 'The Hebrew cubit', *JBL* lxxvii (1958) 205-214; *id.*, 'Postscript on the cubit', *JBL* lxxix (1960) 368. A. S.Kaufman, 'Determining the length of the medium cubit', *PEQ* cxvi (1984) 120-132, arrives at very similar results (446 mm for the standard cubit), but by far less reliable methods; see also G. Busing, 'Metrologische Beiträge', *JDAI* 97 (1982) 1 ff.

[48] Epiph. *de mens.* 59, 69 Dean. He discusses the cubit of six hands at 69 f.

[49] A. Ben-David, 'The Hebrew-Phoenician cubit', *PEQ* xc (1978) 27 f. should be disregarded.

[50] For what follows I am indebted to Michael Vickers, who also enabled me to consult his forthcoming 'Wandering stones: Venice, Constantinople and Athens', *Festschrift W. Heckscher.*

[51] On her life see C. Mango and I. Ševčenko, 'Remains of the Church of St. Polyeuktos at Constantinople', *DOP* xv (1961) 244.

[52] R. M. Harrison, *Excavations at Saraçane in Istanbul* i (Princeton 1986) 410; id., *A temple for Byzantium. The discovery and excavation of Anicia Juliana's palace-church in Istanbul*, (Austin 1989) 137 ff.

[53] Diller (n. 5) 24 n. 16 has drawn attention to the fact that similar statements occur in schol. Lucian *Icarom.* 1, 99 Rabe.

[54] See Xen. *Anab.* ii 2.6; v 5.4; vii 8.26. N.b. that all three passages have been bracketed by Krueger: this reference may be an argument in favour of authenticity.

ancient metrological writer—has aroused interest far beyond the circle of specialists in ancient metrology, since it appears to bear on the subject of the accuracy of Eratosthenes' measurement of the circumference of the earth.[55] However, we shall deal here only with the question of the accuracy of the quotations and what could be learned from them about the person of Julian.

It has been universally held that the reference to Eratosthenes and Strabo means that the first is quoted in a secondary manner *via* the latter, but since no such reference to Eratosthenes can be found in Strabo's extant work in all probability we have here a confusion with Plb. xxxiv 12.2a, quoted at Strabo vii C 322.[56] It should be noted, however, that one recent authority is prepared to consider the reference to Eratosthenes as genuine.[57] Still, the reference to Strabo as quoting Posidonius is very much an argument in favour of taking the first reference, too, as at second hand. Moreover, here too the quotation may be erroneous, since Strabo xvii C 804 quotes Artemidorus rather than Posidonius.[58] Nevertheless, according to Theiler (*ad fr.* 469) a genuine quotation in the lost final section of Book vii of Strabo is a possibility; Edelstein-Kidd are prepared to see here (*ad fr.* 203) a reference to Strabo xi C 518, where however Posidonius is not mentioned. Finally, the reference to Xenophon—or, what passed for the text of Xenophon—is correct. It emerges from these passages that Julian was indeed somewhat reckless with checking his sources, though not quite as careless as most modern scholars dealing with him.

VI

Having thus defined the contents of his writing we may now try to elicit from our text some information concerning the person and time of Julian of Ascalon.

Julian's time is assumed as unknown by all writers, nor is the inclusion of his writing in various compilations between the ninth and the fourteenth centuries helpful, since one is on safe ground in assuming that he predates the second third of the seventh century, that is to say the Arab, and presumably also the Persian conquest of Palestine. He is also certainly later than Strabo, the latest writer quoted by him.[59] The name Julian, though very popular in the later Empire, is attested already in the latter half of the first century.[60]

However, scholars concerned with the legal parts of Julian's work have tried to establish more exact time-limits. Ferrini (*Opere* i 409 n. 1) dated Julian to about the beginning of the sixth century, after the Emperor Zeno, whose constitution is referred to (# 46) and before the *Digest*, as may be deduced from the direct quotation of Papinian (# 51). However, Scheltema has shown (*op. cit.* [n. 13] 352 f.) that the last sections of the Geneva MS, identical with Harmenopulos ## 47-51, form an appendix which was not part of the original work by Julian,[61] so that there is no need to deal with the question whether the quotation of Papinian is direct or drawn from a *Novel*.[62] On a similar line of reasoning the reference to the

[55] The bibliography on the subject is enormous. The latest contribution known to me, which may also be consulted for some earlier bibliography, is D. Engels, 'The length of Eratosthenes' stade', *AJP* cvi (1985) 298 ff.

[56] See O. Viedebannt, 'Eratosthenes, Hipparchos, Poseidonios. Ein Beitrag zur Geschichte des Erdmessungsproblems im Altertum', *Klio* xiv (1915) 232 ff.; Oxé (n. 33) 269 ff.; Diller (n. 5) 24; Engels (n. 55) 299 n.3.

[57] *Cf.* O. A. W. Dilke, 'Table ronde on Graeco-Roman cartography (Paris 1987)', *JRA* i (1988) 89.

[58] *Cf.* Viedebannt (n. 56) 233; Oxé (n. 33) 269, Diller (n. 5) 24.

[59] Regrettably nothing in the *Nachleben* of the authors mentioned in the various recensions of the text admits conclusions as to its date.

[60] E.g. Jos. *BJ* vi 81ff; Martial iii 25.2; *CIL* xiii 10010.1063.

[61] Three of these five chapters appear also in the Constantinople MS.

[62] It is altogether unintelligible why Scheltema (n. 13) 360 has to discuss the point after having (correctly) asserted that the relevant passage did not form part of Julian's work.

constitution of Zeno at # 46 should be eliminated as evidence, since the paragraph does not appear in the Geneva MS and is thus not part of the text of Julian. But Scheltema (op. cit. [n. 13] 359f) tried to establish a *terminus post quem* of his own in arguing that # 26 reflects the legislation on the *praescriptio longi temporis* attributed by modern jurists to Justinian. Whether this is so or not, it has been shown above that # 26 belongs to the contaminated part of Julian's text, and thus on its own will not serve as an indicator of the time of its composition.

It seems to me, however, that it is possible to make a fairly safe identification as to the time and the person of Julian.[63] Aeneas of Gaza directs the last of his twenty-five letters to an architect Julian.[64] The subject of the letter is a highly praised water-pump invented by Julian for Aeneas' garden and built by a *tekton*; something, however, with the machine is amiss and should be mended, an unmistakeable invitation to the inventor. We may thus deduce that the inventor lived at such a distance from Gaza as made it practicable to come and solve the problem. There being no indications to the contrary, the existence, on the one hand, of an architect Julian of Ascalon and, on the other hand, of an architect Julian, presumably not far from Gaza,[65] makes the identification at least plausible. Aeneas was born perhaps c. 430, was studying by ca. 450 with Hierocles and is attested in 488 as active in Gaza.[66] We do not know into which period of his adult life the letter belongs, so that it can be only dated to the second half of the fifth century. Nor do we know whether Julian was a coeval, a younger or an older contemporary, so that his life-span may be put into any time between the beginning of the fifth and the middle of the sixth centuries.[67]

Here one more piece of evidence should be considered. An architect Julian is attested in two church inscriptions from Brad, on the road from Antiochia to Chalcis in Syria, dated respectively to 402 and 399.[68] This Julian may have been, though this does not seem very probable, the father or grandfather of our Julian: if so, they may well have been Christians.[69]

We may now sum up what is known about the person of Julian. Both the references in # 42 and in the letter of Aeneas testify, that he lived in, not only hailed from, Ascalon. He was an architect (thus designated by both himself and acquaintances), perhaps from a family of architects, and an engineer given to (not faultless?) mechanical inventions. The classification of the laws according to the four elements may attest some sort of interest in the more

[63] This identification has been already suggested, perhaps overcautiously, by the late Y. Dan, *The city in Eretz-Israel during the Late Roman and Byzantine periods* (Jerusalem 1984) 182 (Hebrew), an excellent work that deserves to be better known. The identification has been also made by N. van der Wal and J.H.A. Lokin, *Historiae iuris Graeco-romani delineatio: les sources du droit byzantin de 300 à 1453* (Groningen 1985) 50, who also try to fix the date between September 531 and December 533. Their dating is based on the interpolated parts of the text. I am indebted for this reference to the kindness of Ranon Katzoff.

[64] Most accessible in Hercher, *Epistolographi* 24 ff. or Enea di Gaza, *Epistole* a cura di Lidia Massa Positano (Naples 1950) (with introduction, Italian translation and commentary). This Julian is duly registered as no. 16 in *PLRE* ii, where however no notice is taken of, and needless to say no identification is attempted with, Julian of Ascalon.

[65] The distance between the two cities is approximately 22 km.

[66] See E. Legier, 'Essai de biographie d'Enée de Gaza', *Oriens Christianus* vii (1907) 349 ff.; F. Schemmel, *Die Hochschule von Konstantinopel* (Berlin 1912), 17. The absence of a formula appropriate to the dead in a reference to him in 514 by Zacharias Scholasticus does not seem to me sufficient evidence that he was still alive at the time, as Legier would have it. Nothing is gained by the fact that Aeneas' *Theophrastus* was composed prior to 534.

[67] The dates of Aeneas are far from safe. If we put his birthdate at roughly 450 (as Legier [n. 66] would have it) we can put the date of birth of Julian between c. 420 and 480. It will be clear (cf previous n.) that these dates do not enable us to decide with certainty whether Julian composed his work before or after the codification of Justinian, though on chronological grounds the former possibility seems much more likely.

[68] J. Lassus, *Sanctuaires chrétiens de Syrie* (Paris 1947), 257 inscr. no. 1, 259 inscr. no. 9. See also a discussion of the building activities of Julian in G. Tchalenko, *Villages antiques de la Syrie du Nord* (Paris 1953) i, 108 f.

[69] This is an almost certain deduction from the text of the first inscription.

theoretical side of the physical sciences.[70] It cannot be said whether he was a pagan or a Christian (unless we accept the connexion with the church-building Julian in northern Syria), but at least a modicum of classical upbringing, not unexpected in a cultural centre like Ascalon,[71] is evident both from his writing in a simple, unaffected and clear Greek style and from the references to classical authors—even if some are second-hand or faulty—at the end of the metrological table. Some education of the correspondent can also be inferred from the letter of Aeneas with its classical allusions: his garden is like the garden of Alcinos, the machine if not mended will resemble a painting of Helen without the head.[72] Interest in the law of the country and in local customs may attest a healthy dose of local-patriotism.

Metrology, Byzantine law, Rabbinics and archaeology all had to join in our quest for the elusive Julian of Ascalon. Philology, however, is still the fountainhead of the study of classics. A synopsis of the MS tradition and the easy equation of the architect Julian of Ascalon and of the architect Julian mentioned in a letter of Aeneas of Gaza might have saved much ink and some outlandish theories.[73]

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APPENDIX

The following passages are offered solely as an aid to the reader and are not intended as part of the forthcoming critical edition. The notes on variants are in the main restricted to issues discussed in the text of this paper; expansions of numerals are disregarded. I use (1)-(6) from sections i and ii above as sigla.

1. *Title.*
Ἐπαρχικὰ ἀπὸ τῶν τοῦ Ἀσκαλωνίτου Ἰουλιανοῦ τοῦ ἀρχιτέκτονος ἐκ τῶν νόμων ἤτοι ἐθῶν τῶν ἐν Παλαιστίνῃ

ἐπαρχικὰ om. (5), ἐπαρχικὰ...τοῦ om. (6)
περὶ νόμου (6)
ἐθῶν (1) (6): ἠθῶν (5)

2. *Introduction.*
Τεσσάρων ὄντων τῶν στοιχείων, πυρὸς, ἀέρος, ὕδατος, γῆς, ἀπὸ δὴ τούτων ἀμφισβητήσεις τοῖς ἀνθρώποις ἐγγίγνονται· ὅθεν ἀναγκαῖον ἡγησάμεθα τὰ κατὰ μέρος ἐκ τούτων καὶ ταχυμερέστερον συμβαίνοντα εὖ τάξαι, εὖ θέντες καὶ τὰς αἰτίας καὶ τὰς δικαίας

[70] For an interest in the subject at approximately the same period see the *Excerptum de quattuor elementis*, printed at 127-8 of Mynors' edition of Cassiodorus. A. Cameron, *Circus factions: Blues and Greens at Rome and Byzantium* (Oxford 1976) 59; 64 discusses the writers who trace the colours of the factions to the four elements; note among them Malalas, p. 176 Bonn, approximately a contemporary of Julian of Ascalon.

[71] See my 'Greek Intellectuals from Ascalon', *Cathedra* 60 (1991) 5-16 (Hebrew). For a list of intellectuals in Ascalon see Steph. Byz. s.v. and for a brief discussion e.g. E. Schürer, *The history of the Jewish people in the age of Jesus Christ* ii, ed. G. Vermes and F. Millar (Edinburgh 1979) 49. From later periods one may mention e.g. Ulpian the sophist, Zosimus and the important mathematician Eutocius, whose commentaries on Archimedes and Apollonius of Perge are extant.

[72] This last reference would enhance the temptation to accept # 49 as genuine: in the discussion of laws governing the viewing of public pictures Achilles and Aiax are given as examples.

[73] I am preparing, in collaboration with Rivkah Fishman-Duker, an edition, with introduction, English translation and notes, of the text of Julian.

διαλύσεις ἢ βλάβας. καὶ ἔστι πρῶτον περὶ πυρός. Τὸ πῦρ καὶ ὁ καπνὸς καὶ ἡ ἀτμὶς πρὸς τὰς τῶν καύσεων δυνάμεις ἢ καὶ τὰ πλήθη τὴν διαφορὰν τῶν βλαβῶν καὶ τῶν διαστημάτων ἔχουσιν· ὅθεν ταῦτα ἀφορίσαντες, οὑτω καὶ τὰ διαστήματα ἐροῦμεν ἐν πείρᾳ τούτων γενόμενοι.

τεσσάρων...περὶ πυρός om. (6)

3. *From the Metrological Table.*
1. ὅτι ὁ δάκτυλος πρῶτός ἐστιν· ὥσπερ καὶ ἡ μονὰς ἐπὶ τῶν ἀριθμῶν.
2. ἡ παλαιστὴ ἔχει δακτύλους $\overline{\delta}$.
3. ὁ ποὺς ἔχει παλαιστὰς $\overline{\delta}$ ἤτοι δακτύλους $\overline{\iota\varsigma}$.
4. ὁ πῆχυς ἔχει πόδα $\overline{\alpha}$L′ ἤτοι παλαιστὰς $\overline{\varsigma}$ ἤτοι δακτύλους $\overline{\kappa\delta}$.
5. τὸ βῆμα ἔχει πήχεις $\overline{\beta}$ ἤτοι πόδας $\overline{\gamma}$ ἤτοι παλαιστὰς $\overline{\iota\beta}$.
6. ἡ ὀργία ἔχει βήματα $\overline{\beta}$ ἤτοι πήχεις $\overline{\delta}$ ἤτοι πόδας $\overline{\varsigma}$ ἤγουν σπιθαμὰς $\overline{\theta}$ δακτύλους $\overline{\delta}$.
10. τὸ μίλιον κατὰ μὲν Ἐρατοσθένην καὶ Στράβωνα τοὺς γεωγράφους ἔχει στάδια $\overline{\eta}$ καὶ $\overline{\gamma}$, ἤτοι ὀργίας $\overline{\omega\lambda\gamma}$. κατὰ δὲ τὸ νῦν κρατοῦν ἔθος στάδια μὲν ἔχει ζL′ ἤτοι ὀργίας $\overline{\psi\nu}$ ἤτοι βήματα ,$\overline{\alpha\phi}$ ἤτοι πήχεις ,$\overline{\gamma}$.
11. δεῖ δὲ γινώσκειν, ὡς τὸ νῦν μίλιον ὀργίας μὲν γεωμετρικὰς ἔχει $\overline{\psi\nu}$, ἁπλᾶς δὲ $\overline{\omega o\varepsilon}$. αἱ γὰρ $\overline{\rho}$ ὀργίαι γεωμετρικαὶ $\overline{\rho\iota\varsigma}\beta'$ ἀποτελοῦσιν ἁπλᾶς ὀργίας.
12. ὁ παρασάγγης περσικόν ἐστι μέτρον, οὐ παρὰ πᾶσι δὲ τὸ αὐτό, ἀλλὰ παρὰ μὲν τοῖς πλείστοις τεσσαρακονταστάδιός ἐστι, παρὰ δὲ Ξενοφῶντι τριακοντα στάδιος, παρ' ἄλλοις δὲ καὶ ἑξηκονταστάδιος. καὶ ἔστι πολλῷ πλέον ἐν ἄλλοις καθ' ἅφησι Στράβων προφέρων μάρτυρα τοῦ λόγου τὸν πολυμαθῆ Ποσειδώνιον.
13. ἡ σχοῖνος Ἑλληνικόν ἐστι μέτρον ταὐτὸ τῷ παρασάγγῃ, ποτὲ μὲν τεσσαρακονταστάδιος, ποτὲ δὲ ἑξηκονταστάδιος.

3 om. (1)
6 σπιθαμὰς $\overline{\theta}$ δακτύλους $\overline{\delta}$ (1); σπιθαμὰς $\overline{\theta}\delta'$ (2), (3); σπιθαμὰς $\overline{\theta}$ τέταρτον (4)
10 σταδίους $\overline{\kappa\gamma}$ ἤτοι ὀργίας $\overline{\omega\lambda\varsigma}$ (3); σταδίους $\overline{\eta}$ καὶ τέταρτον (4); τοὺς ἀκριβεῖς γεωγράφους (4); ἐπικρατοῦν (4)
11 $\overline{\omega o\varepsilon}$ scripsi; $\overline{\omega\mu}$ (1), (3); $\overline{\omega\pi\varepsilon}$ (2); vacat (4)
$\overline{\rho\iota\varsigma}\beta'$ scripsi; $\overline{\rho\iota\beta}$ (1), (3); $\overline{\rho\iota\eta}$ (2); vacat (4)
12. παρὰ δὲ Ξενοφῶντι τριακονταστάδιος (4)