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570TH ORDINARY GENERAL MEETING,

HELD IN COMMITTEE ROOM B, THE CENTRAL HALL WESTMINSTER, ON MONDAY, MAY 17TH, 1915, AT 4.30 P.M.

E. J. SEWELL, ESQ., IN THE CHAIR.

The Minutes of the preceding Meeting were read and confirmed.

The SECRETARY announced that Mr. Walter Henry Bacon, the Rev. William Edgar Woodhams Denham, and Miss Jessie Little had been elected Associates of the Institute.

The CHAIRMAN introduced the Rev. Archibald R. S. Kennedy, M.A., D.D., Professor of Hebrew and Semitic Languages in the University of Edinburgh, and called upon him to address the Meeting on the subject of "Hebrew Weights and Measures."

HEBREW WEIGHTS AND MEASURES. By Professor ARCHIBALD R. S. KENNEDY, M.A., D.D.

THE sources of our information regarding the weights and measures of the nations of antiquity are of two kinds, monumental and literary. Under the first head, the monumental evidence, fall (*a*) such actual standards of measurement as have survived to our own day—inscribed weights, measuring-rods, etc., and (*b*) other archæological remains, such as coins and buildings, from which their respective units of weight and of length may be readily deduced. The literary evidence is also of a twofold character, since it includes (*a*) the direct evidence of early writers on metrology, and (*b*) the more or less incidental references in ordinary writers to the values of the various standards in use in their day.

As regards Hebrew weights and measures in particular, the monumental evidence is exceedingly limited. Indeed it is only in the department of the weight-standards of Palestine, for which a considerable amount of fresh evidence has recently come to light, that we have monumental data of any extent. As for the literary evidence, it may be said that while the Biblical data are on the whole sufficient to enable us to reconstruct the various scales, and to determine the *relative* values of the different denominations in each scale, we are dependent

on later writers, among whom Josephus is pre-eminent, for the valuation of these in terms of the better-known Greek and Roman measures.

The aim of this lecture is to provide a summary of our present knowledge of the weights and measures current in Palestine from the Hebrew conquest to the end of the Jewish state in A.D. 70, distinguishing at the same time results that are certain, or fairly certain, from those to which only varying degrees of probability can be assigned. Where my results differ from those of other students in this field, I shall do my best to state as clearly as possible the evidence on which these results are based.

Before proceeding to details, however, I wish to make two remarks of a general nature. The first is a reminder that the Hebrews were the heirs of the older Canaanites, whom they dispossessed of their land and whose advanced civilization they adopted. When, therefore, we speak of the weights and measures of the Hebrews, in the pre-exilic period of their history at least, we are really dealing with the metrology of the earlier inhabitants of Canaan. The second remark is this: the key to the metrology of Palestine is found in its geographical position. From the earliest times, Palestine was the meeting place of the two great civilizations of the ancient world, the Babylonian and the Egyptian. It is natural, therefore, to expect that its metrology would reflect this fact of history, and such we shall find to be the case.

I.—Hebrew Weights.

Passing now to the more detailed exposition of the three main systems of weights, measures of length, and measures of capacity, I propose to begin with the department of Palestinian metrology for which the monumental evidence is most abundant and most decisive, viz.: the weight-standards of Palestine.

The excavations carried out in the last twenty years or more by our own Palestine Exploration Fund, and by the Germans, Austrians and others, have brought to light a very large number of ancient Palestinian weights. Professor Macalister's great work, *The Excavation of Gezer* (ii, 278–292), alone contains a descriptive list of well over two hundred weights. These, with similar material from other sites in south-west Palestine, from Taanach, Megiddo, Jericho and Jerusalem itself, await the attention of an expert metrologist. A modest beginning was made by myself two years ago (see *Expository Times*, xxiv,

August and September, 1913, "Inscribed Hebrew Weights from Palestine"); the results will be summarized below. *Cf.* E. J. Pilcher, *Weights of Ancient Palestine* (from *P.E.F.St.*, 1912).

The weights in question are almost all of stone, as we should expect from the Old Testament references, where the Hebrew word rendered "weight" literally means "a stone" (Leviticus xix, 36, Deuteronomy xxv, 13, 15, etc.). "Hard, compact, and heavy stones, capable of taking a polish, such as hæmatite, jasper, basalt, and quartzite, are the stones chiefly used" (Macalister, *op. cit.*, ii, 279*f*—where *see* fig. 429 for illustration of "typical forms of weights"). For the smaller weights the two commonest forms are the shuttle-shaped and the dome-shaped, the former tapering to a blunt point at both ends, the latter "either hemispherical, or more or less cylindrical, with convex top and plane base."

The influence of Babylonia on the Hebrew weight-system is seen in the adoption of the Babylonian scale of three denominations based on the shekel as unit; 50 shekels made a mina (Hebrew *māneh*), and 3,000 shekels, or 60 minas, a talent. That the shekel was the unit of weight among the Hebrews is evident from the rarity of the term mina in the Old Testament. The pre-exilic writers, indeed, never use the mina or "pound," preferring to express even large weights of silver in terms of the shekel, and the largest as so many talents and shekels.

A very slight acquaintance with the actual weights recovered from the soil of Palestine reveals the existence side by side, in ancient times, of a bewildering variety of standards of weight. Let me try to pass in review the more assured, at least, of these standards.

(i) *The Phœnician or* 224*-grain shekel.*

This is the best attested of all the Palestinian weight-standards. Its unit is the shekel universally known as the Phœnician shekel from the fact that the rich series of silver coins struck by the great trading cities of Phœnicia, such as Tyre and Sidon, are on this standard. The highest effective weight shown by the coins is 223·8 grs. (Hill, *Brit. Mus. Cat.* [B.M.C.], *Coins of Phœnicia*, p. cxxxiv), and the theoretical weight of the shekel is usually reckoned as 224·6 grs. The average weight, however, of the shekels or tetradrachms of the coinage both of the Phœnician cities and of the Ptolemies of Egypt, who adopted this standard, may be set down as about 218 grs., the weight of our own half-crown.

Now the shekel of 218–224 grs. has this special interest

for us to-day, that beyond all doubt it is *the Hebrew silver shekel, in terms of which money was weighed and paid in all periods of Hebrew and Jewish history.* Other shekels, as we shall see, were known and used, but *this* shekel is *the* Hebrew shekel *par excellence.* It is "the shekel of the sanctuary," more correctly, as in the Greek translation, "the sacred shekel," so frequently used in the priestly sections of the Pentateuch legislation (*see* the detailed argument in my article, MONEY, in Hastings' *Dictionary of the Bible* [H.D.B.], iii, 422).

This identity of the Hebrew and Phœnician shekel (mina and talent) is further shown (1) by the fact that the famous Jewish shekels and half-shekels of the years 1 to 5 are on this standard, the best specimens in the British Museum register 218 to 220 grs.—it is immaterial for my argument whether you regard them as struck by Judas Maccabæus or, as I have always held, by the leaders of the First Revolt, A.D. 66–70; (2) by Josephus' valuation of the Tyrian and Hebrew shekels equally at 4 Attic drachms (*B.J.*, II, xxi, 2, *Ant.* III, viii, 2); and (3) by the express evidence of the Mishna, which lays down that "all payments according to the sacred shekel are to be made in Tyrian money" (Bekoroth viii, 7).

In the Pentateuch the "sacred shekel" is defined as "twenty gerahs," themselves defined by the Greek translators as "20 obols." Its talent of 3,000 shekels (673,800 grs.) is thus equivalent to 60,000 obols or 10,000 Attic drachms of 67·38 grs. The importance of this equation will appear in the sequel.

Passing now from the evidence of the coins to that of existing stone weights, it is interesting to find that the largest Hebrew weight known to me is a Hebrew talent on this same standard. It is a cylindrical stone weight said to weigh 42½ kilogrammes, say 93¾ lbs. avoir., now in the museum of St. Anne's at Jerusalem. An inscription is said to read "weight of King David, 3,000 shekels," but to me, at least, it is quite illegible (see *Jewish Chronicle*, August 16th, 1912)! The corresponding shekel ($\frac{1}{3000}$) is 14·18 grammes or 218·8 grs. By far the largest weight found by the Germans at Megiddo weighed 2,775 grammes, which represents a weight of four minas, or 200 shekels of about 214 grs. A large proportion of the weights found by Mr. Macalister at Gezer, from ¼ and ½ shekel upwards, belong also to this system. Professor Flinders Petrie, twenty years ago, assigned 44 per cent.—27 out of 61—of the Lachish (Tell el-Hesy) weights to the Phœnician standard.

It only remains now to explain briefly the latest weight-system of the Jews in the later Roman period, as found in the Mishna in use both for money and merchandise. It will be seen to be an ingenious combination of elements derived from Phœnicia, Greece and Rome. Its composition is shown in the following table:—

THE LATEST JEWISH WEIGHT-SYSTEM.

Denarius-drachm (Heb. *zûz*)	1					52·63 grs.
Shekel (old ½ shekel)	2	1				105·26 „
Sela (original shekel)	4	2	1			210·52 „
Mina (light)	100	50	25	1		5263 „
Mina (heavy)	200	100	50	2		10526 „
Talent (light)	6000	3000	1500	60	1	315780 „
Talent (heavy)	12000	6000	3000	120	2	631560 „

The system, it will be seen, is based on the denarius, which as $\frac{1}{96}$ of the Roman libra or pound of 5,053·3 grs., and $\frac{1}{8}$ of the uncia, formed a convenient unit for an international system of weights. It was fitted into the Greek system as the equivalent of the lowered Attic drachm, with the latter's subdivision into 6 maahs or obols, omitted in the above table, and into the older Hebrew system as one-fourth of the original shekel, now somewhat lowered and named *sela* (*cf.* Josephus, *Ant.* III, viii, 2, the old Hebrew shekel = 4 Attic drachms). The term shekel, however, is now confined to the original half-shekel, or light Phœnician shekel. As in the Greek system, the light mina or "pound" contained 100 denarius-drachms, or 50 light shekels, while the heavy and original Hebrew mina contained 50 of the original shekels. The former, although really $\frac{1}{24}$ more than the Roman pound (*libra*), was popularly regarded as its equivalent, the terms *maneh* and *lîtra* being interchangeable in the Mishna. Each mina had, further, its corresponding talent; the heavy talent of 60 heavy minas, containing 12,000 denarii, weighed exactly 125 Roman pounds ($\frac{1}{96}$ lb. × 12,000 = 125), the new system thus fitting admirably, at top and bottom, into the Roman imperial system. This value of the Hebrew talent under the Empire—say 90 lbs. avoir. —is vouched for both by the early writers on metrology, and by an existing talent weight with the legend PONDO CXXV TALENTVM SICLORVM [M] III., *i.e.*, 125 pounds or 3,000 (heavy) shekels.

(ii) *The Babylonian or 252-grain shekel.*

That this is the value of the original Babylonian shekel has been amply proved by the researches of Professor Lehmann-Haupt. By this indefatigable metrologist, indeed, it is regarded as the basal unit of all the weight-systems of antiquity. By this shekel and its 60-fold or mina, merchandise and the precious metals were alike weighed in Babylonia itself; but in commercial dealings with the West, it is maintained, a special mina of 50 shekels was introduced for the weighing of gold. Now in almost all the recent textbooks and dictionary articles, my own included, you will find it stated that this shekel of 252 grains was also the gold standard in use among the Hebrews. But a fresh examination of the evidence in the course of preparing this lecture leads me to have serious doubts as to the validity of the accepted opinion.

The principal witness for the use of the Babylonian gold shekel and its multiples by the Hebrews has hitherto been believed to be Josephus. This writer, in his account of the visit of the triumvir Licinius Crassus to Jerusalem in 54 B.C. (*Ant.* XIV, vii, 1) tells how the latter robbed the temple of its vast deposits of gold and silver, including a beam of solid gold weighing 300 minas, and adds: "Now among us the mina is equal to 2½ litras (Roman pounds)." According to this statement the gold mina in Josephus' day weighed 12,633 grs., which yields a shekel ($\frac{1}{60}$) of 252·6 grs., the precise value of the heavy Babylonian shekel. On this basis, accordingly, the tables of the Hebrew gold weights in the current textbooks, etc., have been constructed. But, as I have said, I am now convinced that we have been led astray in this matter by the historian's manner of expression.

In placing before you the grounds for this revolutionary conclusion, I propose to start from another passage of Josephus which has caused much perplexity to metrologists. In an earlier part of the same work (*Ant.* III, vi, 7) the historian gives the weight of the golden candlestick of the Tabernacle both as a talent—as in the original source, Exodus xxv, 39—and as 100 minas. Now the strange equation of a talent with 100, instead of 60 or 120, minas shows that Josephus is here expressing the talent of one weight-system in terms of the minas of another. But we know from the Pentateuch, Josephus' sole authority, that the talent in question is the Hebrew-Phœnician talent of 3,000 "shekels of the sanctuary," originally 673,500 grs., but reduced when the *Antiquities* were written to 631,560 grs. (*see* table

above). The $\frac{1}{100}$ part of this talent gives a mina of 6,735 to 6,315 grs.; but this is precisely the range of the *Syrian-Attic monetary mina* in Syria and Palestine under the Seleucid dynasty (for actual weights *see* below). Josephus, therefore, here informs us that a (heavy) Hebrew talent of *gold* was equal in weight to that of 100 Attic minas, or 10,000 drachms. But I would specially ask you to note that the same applies to Josephus or his authorities, when reckoning with talents of *silver*, as anyone may see who takes the trouble to compare the various entries of the revenues of Herod and his family in book XVII of the *Antiquities* (*cf.* XIX, viii, 2). Here talents and ten thousands of drachms are used interchangeably. Again Herod's bequest to Augustus and his family is given in XVII, viii, 1, as 15,000,000 drachms, but in xi, 5, as 1,500 talents, showing as before that Josephus knows only *one* talent of 10,000 (reduced) Attic drachms. Elsewhere, it is true, in a passage already twice cited, he tells us that the Hebrew silver shekel was equal to 4 Attic drachms, which gives 12,000 for the talent. Here, however, "Attic drachms" are the denarius-drachms of the late Jewish system explained above; the weight and intrinsic value of the talent are the same in both equations.

Returning now to the crucial passage which has hitherto been supposed to disclose the Babylonian gold standard, I ask your particular attention (1) to the fact that there is no hint of any distinction between the standard of the "2,000 talents of (silver) money" and the "8,000 talents of gold" in the temple treasury, and (2) to the alternative weights given to the gold beam in question, viz., 300 minas each of $2\frac{1}{2}$ Roman pounds, and, near the end of the section, "many ten thousand (drachms)," that is, as we have just seen, "many *talents*," in reality only six! From this, in the light of the results of the preceding paragraph, we see that *the talent is the same heavy Hebrew-Phœnician talent*, equal in weight to 10,000 Attic drachms; only —and here, in my opinion, lies the solution of the apparently irreconcilable discrepancy between the two passages—Josephus, instead of reckoning the talent of 125 Roman pounds at 100 ordinary or light Attic minas of $1\frac{1}{4}$ pounds, as in the former passage, here reckons it at 50 heavy Attic minas of $2\frac{1}{2}$ lbs. each.*

* The value of the talent of 125 libras of gold, at the British mint price, may be put at about £5,125. The amount of gold in the temple treasury, 8,000 talents, would thus reach the huge total of £41,000,000 sterling. The monetary value of the silver talent of the same weight on the basis of 25 denarius-drachms to the pound sterling was £480.

The main support for the current view that the Jews weighed their gold with the Babylonian shekel, mina and talent, is thus swept away. We find instead that the two well-known standards, the Phœnician and the Attic, were used side by side for gold as well as for silver, and that the heavy Hebrew-Phœnician talent was reckoned as containing on the one hand 60 heavy, or 120 light, Phœnician minas, and on the other 50 double or 100 ordinary Syrian-Attic minas. This equation of the two standards doubtless prevailed throughout the Greek period of Jewish history.

The practice of the pre-exilic period I am content to leave an open question at this stage: it will meet us again immediately. I would only say that I am not convinced by another argument for the use of the Babylonian gold standard by the Hebrews. In II Kings xviii, 14, we read that Hezekiah was ordered by Sennacherib to pay an indemnity of, *inter alia*, 30 talents of gold, which is the precise sum mentioned in the Assyrian record of the invasion. The inference is a natural one, that the Assyro-Babylonian and Hebrew gold talents were identical. But there are difficulties in the way which it would take too long to specify at present.

(iii) *The Syrian or* 160-*grain Standard.*

About twenty-five years ago there was first published a tiny shuttle-shaped weight from Samaria of 39¼ grains, the double inscription on which gave rise to an excited controversy among Old Testament scholars. On one side, in old Hebrew characters, were the words "quarter of a N–Ẓ–PH" (provisional pronunciation "neẓeph"). Since then several small dome-shaped weights have turned up from various parts of Palestine with this legend "neẓeph." Like all ancient examples of a given unit, they vary considerably in weight; but when we remember that these small weights were used exclusively by retailers of the precious metals in the form of rings and similar ornaments, we need not hesitate to estimate the full value of the neẓeph standard as about 160 grs., a standard which Flinders Petrie, many years ago, found largely represented in Egypt, only he estimates it wrongly at 80 grains. The Chaplin weight, first mentioned, yields a value of 157 grs. for its 4-fold the neẓeph, which is about the weight of the best specimens.

As for the origin of this new Palestinian standard, I still adhere to the explanation given in 1902 (*H.D.B.* iv, 905) that we have here a shekel derived from the light Babylonian trade

mina of 7,580 grs. (60 light shekels of 126·4 grs.) on Lehmann-Haupt's "raised Norm A,"—*i.e.*, raised 5 p.c.—or 7,960 grs. A weight is still in existence inscribed "Mina of King Antiochus Theos Epiphanes," which weighs precisely this amount, and other inscribed minas of Antioch range about 8,000 grs. In the West, I have suggested, this mina was divided into the usual 50 shekels of 160 grs. nearly. This derivation is not affected by the proposed identification of the term neẓeph with the Arabic *nuṣf*, meaning a half; in this case the former would be the light form of a corresponding heavy shekel of 320 grs., derived as above from the heavy trade mina of Babylonia.

This 160-grain standard is very largely represented among Mr. Macalister's Gezer weights, especially among those from the older Semitic strata. This is what we should expect if I am right in believing that the gold payments of the Princes of Syria to their Egyptian overlords in the sixteenth century B.C. were calculated on the neẓeph standard (*loc. cit.*, 904).

Its special interest for us, in the light of the preceding section of my lecture, is that the neẓeph has as good a claim as, if not a better claim than, the Babylonian shekel to be regarded as the Hebrew gold shekel of the pre-exilic period. In the first place it is admittedly a gold standard, and is found on the spot; secondly, it stands in a most convenient relation to the Hebrew silver shekel of 224 grs., since with gold to silver as 14 : 1 one neẓeph of gold was equal in value to 10 shekels of silver ($160 \times 14 = 224 \times 10$); thirdly, there is a curious tradition preserved by the Jewish writer Maimonides that the Hebrew shekel was originally the weight of 320 grains of barley, our Troy grains, and so continued until the time of the second Temple, when it was displaced by the *sela*, *i.e.*, the heavy Phœnician shekel (*see* table above). Is there not here a problem calling for further investigation? At any rate, no one can deny that the neẓeph-shekel was, if not *the*, at least *a*, gold shekel both before and after the Hebrew conquest of Canaan.

(iv) *The Persian Silver Standard.*

With the fall of Babylon in 538 B.C., Palestine became a part of the vast Persian Empire under Cyrus and his successors. Of the latter Darius Hystaspis has a special claim on our attention, since his famous gold coin, the daric, and its twentieth in value, the "Median siglos" in silver, were the first coins to circulate in Palestine. The daric weighed 130 grs. of pure gold, nearly

7 grs. more than our sovereign of 22 carats fine, and was a light Babylonian shekel of the so-called "royal" standard. At the then current price of gold in terms of silver ($13\frac{1}{3}:1$), it was worth ten light silver shekels or staters of 173·3 grs. ($130 \times 13\frac{1}{3} = 173{\cdot}3 \times 10$), or twenty half-shekels of 86·6 grs. The latter weight was selected by Darius for his silver coinage. The siglos, the Græcized form of the Babylonian *shiḳlu*, was thus not what its name suggests, a true shekel or stater, but a half-shekel.

Now among the weights published by Professor Macalister in his *Exploration of Gezer* (ii, 285, fig. 433) is a small weight of 343·8 grs., described as "the frustum of a pyramid," and bearing in old Hebrew characters the interesting legend "ii of the King's (shekels)." (Fig. 1.) Its weight identifies it as a double-shekel on the Babylono-Persian silver standard as just explained. A close parallel to the above inscription is furnished by a reference to a loan in one of the recently discovered Jewish papyri from Elephantine (Sachau, No. 28, l. 4), which amounted to "4 shekels by the weights (literally, stones) of the King." The latter expression, in its turn, recalls the weight of Absalom's hair, II Sam. xiv, 26—probably a reader's gloss from the Persian period—viz., "200 shekels after the King's weight (lit., stone)." The shekel of this passage, however, is the ordinary trade shekel of 126–130 grs., not the exclusively silver shekel of the Gezer weight. The latter, further, enables us to fix with precision the amount of silver entered in the lists of gifts in the books of Ezra and Nehemiah. The mina, or "pound," of our Version is, of course, 50 of "the king's shekels," or rather less than $1\frac{1}{4}$ lbs. avoir. The gold is entered as so many *darkemônim*, or drachms (A.V. drams, R.V. darics) of 126–130 grs., so named as being $\frac{1}{100}$ part of the heavy Babylonian gold mina.

Returning from the literary to the monumental evidence of the presence in Palestine of the Persian silver standard, I make out that it is entitled to claim at least a fifth of the weights in the Gezer collection, ranging from the quarter and half-shekel, or siglos-weight, up to 15 shekels. Similarly, at least a fourth of the weights found in the fifth stratum at Megiddo appear to belong to this standard.

Now if we accept the view of modern criticism that the Priest's Code assumed its final shape in the early Persian period, we can understand the emphasis with which it is laid down that all reckonings are to be made by "the shekel of the sanctuary"; in other words, in terms of the national Hebrew-Phœnician shekel as opposed to the popular Persian shekel of the government currency.

To face p. 286.

Weights Recently Found in Palestine.

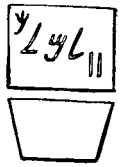

FIG. 1.—PERSIAN WEIGHT, "2 (SHEKELS) OF THE KING."

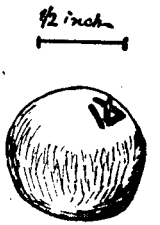

FIG. 2.—PALESTINIAN WEIGHT WITH PREVIOUSLY UNKNOWN SYMBOL.

FIG. 3.—HEBREW WEIGHT, INSCRIBED פים OR פיש (?).

FIG. 4.—GEZER MARKET WEIGHT.

Here, too, I propose to place, provisionally at least, a series of ten or twelve inscribed weights from various parts of Southern Palestine, including Jerusalem and its neighbourhood, and, let us note, "the Persian and Hellenistic" strata of Gezer. The distinguishing feature of the series is the presence of a symbol resembling X with a connecting bar across the top,  , and standing for the unit or shekel of the series. (Fig. 2.) It is accompanied by numerical signs belonging to a hitherto unknown notation, the value of which, however, may be inferred from the weight relative to the two known signs I and II. Of the ten catalogued by Mr. Macalister (*op. cit.*, ii, 287 ff., *cf.* Pilcher, *P.E.F.St.*, 1912, 191) two must be set aside as decidedly abnormal or fraudulent; an average of the remaining eight gives a unit of approximately 175 grs., a trifle in excess of the normal Persian silver shekel. Staters of this as a maximum value were struck in Cyprus and at Aradus, in Phœnicia, in the Persian period.

We have not quite finished with this popular standard, for a still more perplexing problem is presented by three small weights which have recently come to light, each inscribed with three old Hebrew or Phœnician characters, the meaning of which is still to seek. The average weight of the three is 116·4 grs., and as, *faute de mieux*, I would read the inscription (Fig. 3) as a contraction of the Hebrew words for "two-thirds" (*Exp. Times*, xxiv, 541), we reach a unit of 174·6 grs., almost identical with the unit last mentioned, which was referred to the Persian standard. (For the latest attempts to solve the riddle of the mysterious trinity of letters, see *P.E.F.St.*, 1914, 99; 1915, 40*f.*)

(v) *The Æginetan Standard.*

One of the oldest and most widely spread weight-standards of antiquity, believed by eminent metrologists (Hultsch and Petrie) to have been in use in Egypt as far back as the time of Khufu, the builder of the great pyramid, is that known as the Æginetan. The name is due to its having been adopted as the standard of the earliest currency of Europe, that of the island of Ægina. Besides being the almost universal commercial standard in Greece, it was in use all round the Eastern Mediterranean, including Cyprus and Crete. It need not surprise us, therefore, to find among the Gezer weights a square leaden disc weighing 4,923 grs. (about 11¼ oz.), with the official inscription of the Agoranomos: "Year 84 (*?*)"—this, if correctly read, is 229–228 B.C.—"of Sosipater, Controller of the market, ½ mina."

(Fig. 4.) This yields a mina of 9,846 grs., and a drachm of 98½ grs., revealing the well-known standard of Ægina. Of later date and yielding a slightly higher drachm is another square leaden weight, also figured in the *Gezer* volume (ii, 286, fig. 435). It weighs 4,068 grs. and is ornamented by two cornucopiæ crossed, a symbol of the later Seleucid kings, within and around which are a Greek Δ, the sign of 10, *deka*, and four balls symmetrically arranged. This I now interpret as four dekadrachms, or 40 drachms of 101·7 grs.

To the Æginetan standard must be assigned a considerable number of the ordinary uninscribed Gezer weights, from half-drachms upwards. One weight in particular, marked with five strokes and weighing 995 grs., is clearly five Æginetan shekels or didrachms. The same holds good of the weights recovered by the Germans from the site of the ancient Megiddo, such as the series weighing 9½, 19 and 38 grammes, or 1½, 3 and 6 Æginetan drachms of just under 98 grs. (Schumacher, *Tell el-Mutesellim*, 104). Of the weights from Lachish (Tell el-Hesy) no fewer than 30 per cent. belong to this system, a percentage surpassed only by the weights on the Phœnician standard (*P.E.F.St.*, 1892, 114).

Here, in my opinion, we must also include a series of three small dome-shaped weights of values ranging from 90·58 to 102·7 grs., with an average of close on 96 grs. All three are inscribed with the Hebrew word *beḳa*, or half-shekel (Exodus, xxxviii, 26, where the Greek translators render "one drachm per head, the half of a shekel"). These *beḳa* weights, therefore, I reckon as Æginetan drachms, each half of the shekel of the five-shekel Gezer weight mentioned a moment ago.

Under this head, finally, I would also place a tiny inscribed weight in bronze—unique, so far as I know—which came from Samaria. The Hebrew inscription may be read as "five" or as "a fifth," but as the weight is only 38·6 grs., the latter is the only possible interpretation. I take it, therefore, to be ⅕ of an Æginetan shekel of 193 grs., of which we have just seen the *beḳa* weights to be one-half. This is confirmed by the shape of the weight, which is that of a turtle or tortoise, animals inseparably associated with the coinage of Ægina.

(vi) *The Attic Standard under the Seleucids.*

When Solon reformed the metrology of Athens he rejected the Æginetan in favour of the Euboic-Attic standard for the new currency, while retaining it for all commercial purposes.

The Attic standard was adopted by Alexander the Great for his international currency, and continued by his successors, the Seleucid kings of Syria, under whose rule the Jews passed from that of the Ptolemies in 198 B.C. From this date drachms and tetradrachms on the Syrian-Attic standard were the legal currency of Palestine; the talents and drachms of the books of Maccabees are those of the Syrian currency. It was probably in this period that the practice which we found in Josephus began of reckoning a Hebrew-Phœnician talent as the equivalent of 10,000 Syrian-Attic drachms (*cf.* Jos., *Antiq.* XII, iii, 3—Antiochus' grant for the temple service of 20,000 drachms or two talents).

From the Seleucid town on the site of the modern Sandaḥannah in South-west Palestine were recovered at least two weights on this standard. The smaller of the two is another leaden market-weight with the legend "Of Agathocles, Controller of the market" (Bliss and Macalister, *Excavations in Palestine*, 61, fig. 28). Its weight of 2,238 grs. shows it to be a tritemorion, or third of an Attic mina with a drachm of the normal value of 67 grs. The other weight is a large circular bronze, 4½ inches in diameter, and weighing nearly 1½ lbs. avoir. It represents an Attic mina and a half, somewhat over weight, and agrees remarkably with two of the larger weights of the same period at Gezer, which work out at one half and 1¼ of the same mina.

Let me now sum up in a single sentence the results of this long investigation. Confining myself exclusively to the evidence of inscribed weights, including coins, I have traced the use of the following seven weight standards in Palestine in Bible times: (1) at all periods, from the earliest to the latest, the national *Hebrew-Phœnician* shekel,—the "sacred" shekel of the Priests' Code, required for all transactions with the balance —of the theoretical value of 224 grains, but with an actual range of 230–210 grs.; (2) the early Eastern standard, best known as the *Æginetan*, or Attic commercial, standard, originally of 100 grs. more or less; (3) the perhaps equally ancient *Syrian* standard—probably originally of Hittite origin —of 160 grs., with a strong claim to be admitted as the Hebrew gold shekel of pre-exilic times; (4) the *Babylono-Persian* light gold shekel of 130 grs., introduced by Darius, the older form of which (126 or its double, 252 grs.) is currently accepted, but without conclusive evidence, as the Hebrew gold shekel; (5) the *Babylono-Persian* silver shekel of 173 grs.— the two last standards also in the books of Ezra and Nehemiah;

(6) in the Seleucid period the *Attic* monetary standard, of which the drachm ranges from 67–63 grs., and (7) *the syncretic weight-system* of the Roman period, combining and adjusting elements of the Phœnician, Greek and Roman systems, with its talent of 10,000 Syrian-Attic drachms or 12,000 Phœnician drachms, or Roman denarii.

II.—Measures of Length.

The earliest standards of measurement everywhere are those of Nature's own providing, the finger, the hand, the foot; the almost universal cubit is the length from the elbow to the tip of the middle finger. The largest of the natural measures is "the stretch," the Greek *orguia* (Acts xxvii, 28) or fathom, which is practically equal to the height of the individual, or four times the cubit-length. The native Hebrew measures were based on this natural scale, but without the foot and the fathom. The names of the several members of the scale are known to us from the Old Testament, and are given in the table below. The three most important are the finger breadth or digit, the handbreadth or palm of 4 digits, and the cubit of 6 palms or 24 digits. If, then, we can determine the absolute length of any one of these, we can easily calculate the value of the others.

For this purpose one naturally turns first of all to the Hebrew scriptures, but the result is disappointing. Take, for example, the statement in Deut. iii, 11, regarding the basalt sarcophagus of Og, King of Bashan, which is said to have measured 9 cubits by 4, "after the cubit of a man." In modern English this means "in terms of the natural cubit," which, as I have said, was reckoned in antiquity as one-fourth of the height of an average man. Four such natural cubits is the length prescribed by the Jewish law for the last resting-place of the human body (*Baba bathra* vi, 8). In Egypt this cubit was reckoned at 17·7 inches, in Greece about 17·47 inches. There and thereabouts we must place the Hebrew "cubit of a man."

When we turn to the Jewish historian Josephus, we find that while he frequently gives us the value of the Jewish weights and measures of capacity in terms of Greek metrology, he nowhere does this with the measures of length. The inference is unavoidable that such a comparison was unnecessary, owing to the practical identity of the Jewish and Greek measures of length. This inference is confirmed by a comparison of Acts i, 12, where the distance of the Mount of Olives from Jerusalem is given as

a Sabbath-day's journey, which was 2,000 *Jewish* cubits, with the *Antiquities*, XX, viii, 6, where the distance is given as five stadia, which are 2,000 *Greek* cubits.

As regards the monumental evidence, we have no actual standards to tell their tale, as was the case with the Jewish weights. No measuring rods have survived, such as are frequent in Egypt. Such monumental evidence as is available is all, therefore, indirect. From the reign of Hezekiah, probably, we have the Siloam tunnel or aqueduct with its famous inscription giving the length as 1,200 cubits. According to the learned archæologist, Père Vincent, who recently had a unique opportunity of taking exact measurements, the actual length of the tunnel is between 533 and 534 metres, say 1,750 feet, more or less (*Rev. Biblique*, 1912, 425*f*). This gives 17½ inches for the cubit, but unfortunately the 1,200 cubits of the inscription is, from the nature of the work, only the nearest approximate round number; from the literary evidence, however, we know that 17½ inches cannot be far out.

A few years ago it occurred to me to examine the remains of Herodian masonry with the assistance of the very full and detailed measurements in the reports of the British surveyors, Sir Charles Wilson, Sir Charles Warren, and others. The results were published in a series of papers in the *Expository Times*, vol. xx (1908–09). Let me give you briefly one or two of the more striking. Taking some of the more important of the lower courses of masonry in the retaining walls of the Haram area, which are acknowledged by all to be Herodian, I found, for example, that the foundation course at the S.E. angle, where, in the words of the official report, the stones are as perfectly preserved "as if they had been recently cut," showed a uniform height of 3 feet 8 inches. Now as stones were no doubt cut, as bricks were made (Mishna, *Erubin* i, 3), in so many handbreadths, this yields 15 handbreadths, or 2½ of a cubit of 17·6 inches *without a remainder*. From the courses of masonry I proceeded to test this result by the length of the eastern and western walls of the Haram itself, from the S.E. and S.W. angles, to the points at which it is now agreed they met the north wall in Herod's reconstruction. The distance on the survey map is, as nearly as may be, 1,173 feet, which is just 800 of a 17·6 inch cubit. I then had the curiosity to try the position of the several gateways. To my surprise, I confess, I found that the distance of the Double Gate in the South Wall from the S.W. angle, as measured by the surveyors, viz., 330 feet, is exactly 225 of the 17·6 cubit *without a fraction over*.

The original jambs of the Triple Gate were 400 cubits from the same angle, and 200 from the S.E. angle. On the west side of the Haram, we have Barclay's gate at 271 feet, or 185 cubits, from the S.W. angle, and the historic gateway at Wilson's arch at 586 feet, or 400 cubits, from the same point.

These measurements, I venture to think, speak for themselves. *The cubit of Herod's builders was a cubit of* 17·6 *inches* (447 millimetres).

There is evidence, moreover, that this same cubit was in use at a much earlier period. In excavating the earliest part of the south wall of the city, Dr. Bliss came upon some "most beautifully-set work" in the "remains of three courses, each 23½ inches high." This is exactly 8 handbreadths of a 17·6 cubit. Again, the sill of the ancient Valley Gate measured 8 feet 10 inches, otherwise 6 cubits (*Excavations at Jerusalem*, pp. 30, 19). These two monuments of the Hebrew monarchy, possibly even of Solomon's reign, therefore, show the earlier use of the Herodian cubit. The real length of the Siloam aqueduct by the same cubit works out at 1,194, as compared with the round 1,200 cubits of the inscription.

The following table shows the scale of the Hebrew measures on this valuation of the cubit:—

Digit	1					·733	inches.
Palm	4	1				2·93	„
Span	12	3	1			8·8	„
Cubit	24	6	2	1		17·6	„
Reed	144	36	12	6	1	105·6	„

As to the origin of this cubit there can hardly be any doubt. It is the early Egyptian cubit of practically the same length which seems to have been displaced in Egypt itself by the longer, or "royal," cubit of seven handbreadths (20·63 inches).

Granted that the available evidence up to this point has revealed only one cubit of six handbreadths, in use from the monarchy to the first century A.D., is there evidence of another cubit—larger or smaller, as the case may be—in use alongside of it? First of all the later Jewish doctors and some modern writers speak of a cubit of five handbreadths, but, as it seems, on insufficient evidence. On the other hand, every previous writer on this subject, myself included, has told us of the cubit of seven handbreadths—the above-mentioned Egyptian "royal" cubit—introduced to us by the prophet Ezekiel (Ezekiel xl, 5, xliii, 13).

Well, I have already ventured on one metrological heresy in

this lecture; I am now going to risk another. After careful examination of the original text of Ezekiel xl, 5, I have been forced to the conclusion that it can only be rendered, as it is in all the ancient versions, Greek, Latin, and Syriac: "and in the man's hand (was) a measuring-rod, six cubits and a handbreadth," not as hitherto, "six cubits of a cubit and a handbreadth *each*," *i.e.*, of seven handbreadths or 28 digits. But the present text is almost certainly corrupt, as the parallel passage, xliii, 13, is admitted to be. I can only conjecture that a line has fallen out, and for this reason. Elsewhere Ezekiel makes a point of defining the several values in the scales, both of weight and of capacity, which he employs (*see* xlv, 10–14); probably, therefore, the original text of xl, 5, ran thus: "and in the man's hand (was) a measuring-rod of six cubits by (the measure of) the cubit, and of 24 handbreadths by (the measure of) the handbreadth." This would at least be in agreement with the monumental evidence, for in my series of articles on Herod's temple (*Exp. Times*, xx, 182), I have shown that the court of Zerubbabel's temple was a square of which the side was 500 of the 17·6 cubit, which is precisely Ezekiel's specification (xlv, 2). For it is generally admitted that the second temple, in all probability, followed in this respect the directions of the prophet. On literary and archæological grounds, therefore, the case for Ezekiel's cubit of seven handbreadths (20·63 inches) falls to the ground, and with it the inference, based on II Chronicles iii, 3, that the temple of Solomon was built on the scale of this longer cubit of "the former measure."

Nevertheless, there is good evidence for the use in Palestine of such a cubit at a later date in the table of measures of length attributed to Julian of Ascalon (in Hultsch, *Metrol. Scriptor.* i, 200*f*, cf. *Encyc. Biblica*, iv, col. 5293*f*). The table is an excellent example of the metrological syncretism which we found in the latest Jewish weight system, showing how, about the second century of our era, the various standards of length, Roman, Greek, Jewish and Persian, were accommodated to each other. The Roman imperial mile of 1,000 double paces of 5 feet each, had long been reckoned as $8\frac{1}{2}$ Greek stadia, each of 600 feet. But in Palestine, as we know from the Talmud, the Persian measure, the *rîs*, called *stadion* by the Greeks, was in use. It was $\frac{1}{30}$ of the parasang, of which the mile (Hebrew *mîl*, Greek *milion*, Matthew v, 41) was reckoned approximately as one-fourth, or $7\frac{1}{2}$ rîs (Mishna, *Yōma* vi, 4, 8). Julian gives us the subdivisions of the official Græco-Roman mile of $8\frac{1}{3}$ stadia, and of the popular Persian and Hebrew *mîl* of $7\frac{1}{2}$ stadia,

or rîs. In the equation of these disparate elements he introduces us explicitly or by implication to three different fathoms of 96, 100 and 112 digits respectively, implying cubits of 24, 25 and 28 digits. The existence of the first two is attested by the Mishna, which speaks of two cubit rods of 24 and 25 digits preserved in the precincts of the temple, that of 24 digits being described as "the cubit of Moses" (*Kelim* xvii, 9, 10). The third is the Persian cubit, originally the Egyptian "royal" cubit, of 20·7 inches or thereby, of which 3,000 went to the *mîl*.

Two provisional conclusions may be drawn from this hurried summary: (1) The introduction of the long cubit must be assigned to the Persian period of Jewish history, in which were introduced the Persian standards for gold and silver; (2) when we remember that it is in the books of Chronicles, Ezra, and Nehemiah—they are really subdivisions of a single work—that we meet with these Persian standards, is it not probable that the Chronicler, in saying that Solomon's temple was built by cubits of "the former measure" (*see* above), is referring to the natural cubit of 24 digits (17·6 inches) in contradistinction to the Persian official cubit of 7 handbreadths, or 28 digits?

Finally, in view of the wide diffusion of Babylonian influence in the earliest times in the West, including Syria and Palestine, the use in the latter countries of the Babylonian cubit is not at all improbable. Indeed, most recent German writers on the subject maintain that it is the original Hebrew cubit. They point to the recent discovery that the bricks of which the walls of Megiddo and Taanach are composed show parts or multiples of the Babylonian cubit of 19½ inches, and claim for it that it is not only Ezekiel's supposed cubit of "a cubit and a handbreadth," but also "the former measure" of Solomon's temple (Benzinger, *Hebr. Archäol.*, ii, 190). But I trust I have succeeded in convincing you that the true Hebrew cubit in all periods was one of 17·6 inches (447 mm.), of whose Egyptian origin there can be no question.

III.—Measures of Capacity.

The measures of capacity are the least satisfactory department of Hebrew metrology. The names and relative values of the several members of the scale, it is true, are known from the Old Testament (*see* table below), but we are still far from general agreement as to their absolute values in terms of our modern standards. This is due partly to the inconsistency of the literary evidence, and partly to the absence, until the other day, of any monumental evidence in the shape of actually

existing measures, by which to control the literary data. To do anything like justice, therefore, to this section would require much longer time than is now available. I must content myself with a few indications of the present state of our knowledge.

The unit of the Hebrew system was the log, the multiples of which were as follows :—

Ephah-bath.		Seah.		Hin.		Kab.		Log.
1	=	3	=	6	=	18	=	72
		1	=	2	=	6	=	24
				1	=	3	=	12
						1	=	4

Of these the ephah, seah and kab are mentioned in the Old Testament as dry measures; the bath (of the same capacity as the ephah), hin and log as liquid measures. Traces are also found of a probably older decimal system, which may be represented thus :—

1 homer or kōr	=	10 ephahs	=	100 omers.
		1 ephah	=	10 omers.

Our search for the absolute values of the above measures must begin with the evidence of Josephus, who repeatedly explains to his readers the value, in his day, of the Jewish measures in terms of the current Greek and Roman measures. This he does all but uniformly on the footing that the Hebrew unit, the log, is equivalent to the Attic xestes, itself the counterpart and namesake of the Roman sextarius; the ephah-bath of 72 logs is thus equated with the Greek metretes of 72 xestai, and similarly with the intermediate members.

Here, however, we are confronted with two difficulties: (1) these equations are at the best only popular approximations, for it is extremely improbable that the log was the exact measure of the sextarius-xestes; (2) there is considerable divergence of opinion among metrologists as to the exact value of the sextarius and xestes themselves. Our latest English authority (Flinders Petrie, art. WEIGHTS AND MEASURES, *Ency. Brit.*, 11th ed.) estimates the capacity of the sextarius at 34·4 cubic inches, just under an imperial pint (34·66 cubic inches); the xestes he would make a trifle higher, 35 cubic inches, or 1·009 of a pint. For all practical purposes we may safely take the sextarius-xestes as equal to our pint, which thus becomes provisionally our value for the log. From this as a basis the values of the higher members of the scale are easily calculated; the seah of 24 logs

is thus 1½ pecks, the ephah of 72 logs is our bushel, while its companion liquid measure, the bath, is 9 gallons. We must remember, however, that the higher we go in the scale the less accurate are our approximations according as the log differed less or more from our standard pint.

But even with this caution, there is considerable evidence, including a passage in Josephus' own writings (*Ant.* III, xv, 3, as emended by Hultsch), to the effect that the Hebrew measures were, originally at least, somewhat smaller than the popular estimates just given. Thus it is probable that the ephah-bath originally did not exceed 64 to 66 pints, a conclusion confirmed by the statement in the Mishna (*Menakhoth* vii, 1), that "5 Jerusalem seahs are equal to 6 wilderness seahs," *i.e.*, the seah-measure of Mosaic times, pointing to a later increase of $\frac{1}{6}$ or 20 per cent. (For details *see H.D.B.* iv, 910 ff.)

In the early writers on metrology, such as Epiphanius, there are several references to the Hebrew measures, but these are sometimes contradictory, at other times too indefinite, owing to our ignorance of which of the numerous modii, medimni, etc., they are using in their comparisons. Thus, in a recent essay in *Klio* xiv (1914), pp. 357 ff., Professor Lehmann-Haupt, starting from one of Epiphanius' notices, reaches a value for the seah of 27½ xestai, which, since he takes the xestes at ·96 pint, is 26·4 pints. This raises the ephah-bath of 3 seahs to 45 litres or 79·2 pints. Another German metrologist, O. Viedebannt, who has made a special study of ancient measures of capacity, reaches quite different conclusions (*see* art. HIN in Pauly-Wissowa, *Real-encyclopädie*, etc., 1913, and several papers in Hermes, 47, 1912). The fact that one can hardly find two metrologists agreeing in their estimates of the Hebrew measures proves conclusively, to my mind, the inadequacy of literary evidence, even when combined, as with Viedebannt, with brilliant speculations in comparative metrology, to solve the problem without the aid of monumental evidence in the shape of actual measures.

Now such evidence, though not so precise as one could have wished, is at last available. At various intervals in the last twenty-five years or thereby, stone vessels, apparently intended as measures of capacity, have been discovered by the Assumptionist Fathers in Jerusalem. A full account of them is given by the learned Père Germer-Durand in a lecture published, with illustrations, in a small volume entitled *Conférences de Saint Étienne*, 1909–1910 (Paris, Victor Lecoffre).

The measures in question belong to two distinct sets, one of

four larger vessels, and another of eleven smaller measures, the latter apparently all fractions or multiples of the omer. I shall confine myself to the larger set as more useful for our purpose. The four larger stone measures evidently stand in a definite relation to each other, represented by $1 : \frac{3}{4} : \frac{1}{2} : \frac{1}{4}$. The largest of the set is said to contain 21·25 litres, or 37·4 pints, which I take to represent one-half of the ephah-bath (not the whole measure as Germer-Durand supposes, see *Exp. Times*, xxiv (1913), p. 293 ff.). Assuming that the capacity is correctly given, we get a new value for the ephah-bath of 42·5 litres or 74·83 pints, which yields a log of 1·04 pint. This is very near Petrie's valuation of the Attic xestes as 1·01 pint (*see* above).

It is, of course, inadmissible to draw too definite conclusions from a single set of measures. Moreover, it is extremely disappointing, in the interests of scientific accuracy, that the actual capacity of each of the four vessels has not been published, in which case we should have been able to strike an average which might have modified to some extent the equation based on the largest vessel alone. Still we should be grateful for this, the first, opportunity of controlling the literary by monumental evidence. So far as the latter goes, it accords with Josephus' testimony to the practical equality of the Jewish and Græco-Roman measures in the last years of the Jewish state. For similar evidence as to the earlier periods of Hebrew history we may wait in hope, taking as our motto: *dies in diem docet.*

I append a table showing the comparative values of the Hebrew measures in terms of Josephus' equation of the log with the sextarius, estimated at one pint, and of the new Jerusalem measures (the numbers in parentheses are the number of logs in each member).

HEBREW MEASURES OF CAPACITY.

	Value in pints.	
	(*a*) According to Josephus.	(*b*) The Jerusalem measures.
Log	1	1·04
Kab (4)	4	4·16
Omer ($7\frac{1}{5}$)	$7\frac{1}{5}$	7·48
Hin (12)	12	12·47
Seah (24)	24	24·94
Ephah-Bath (72)	72	74·83
Homer (720)	720	748·3

Discussion.

The Chairman said: The learned and instructive paper to which we have just heard, deals with a subject of a very special and technical nature. There may be some present who will be prepared to criticise the methods and discuss the results laid before us. For my own part, I do not feel myself competent to do so, and can only accept Professor Kennedy's conclusions on his authority.

But though the subject is a special and technical one, it is not without bearings of very general interest to all of us. In the narratives of the Bible it not unfrequently happens that what the critics call the "historicity" or "unhistoric character" of the narrative is made to depend upon the correspondence of ascertained facts with those described in the narrative. If we can be certain what the weights, measures, coins, etc., actually represent, we are able to apply this test. Such evidence is also of value sometimes as to the authenticity of a narrative. If we can ascertain whether facts of this nature (coins, measures or weights) actually correspond with the facts, we have a good deal of ground for inferring that the narrative was written by someone personally acquainted with the conditions existing at the time to which the narrative relates.

The subject matter of Professor Kennedy's paper lies, therefore, at the base of many enquiries of great interest. It happens fairly often that cobwebs of criticism have to be swept away because they rest on no ascertained and positive knowledge; it is a great advantage to have such clear and definite facts as have been placed before us, and we owe Professor Kennedy an additional debt of gratitude for having so plainly told us where the evidence available was good and sufficient, and where it was only sufficient to produce varying degrees of probability.

The Professor has spoken of "a bewildering variety of standards" in use in Palestine. The phrase is most applicable to the conditions which prevailed not long ago in Southern India, where every district had its own measures, and to enhance the difficulty of comparison, these different measures, etc., often went by the same name. One source of difficulty in comparing different measures there arose from the fact that they were sometimes "struck" and sometimes "heaped." A "struck" measure is one in which the grain or flour contained in the measure is rendered level with the top of the measure by drawing the hand or anything flat over the

surface; a "heaped" measure is one in which the surface of the grain is heaped up as high as it will stand.

Naturally the grain-dealers preferred to buy by the one and sell by the other measure. It will also be seen that if the measure was (as generally happens) cylindrical in shape, the greater or less the diameter of the top of the measure, the greater or less would be the conical heap which stood on the top and formed the difference between the "struck" and the "heaped" measure.

It would be interesting to know whether the evidence available showed any trace of a corresponding difference in Bible times.

Professor KENNEDY replied that this source of uncertainty in both aspects was found to exist. Thus the "heaped seah" or peck was estimated to contain a quarter more than the "straked seah."

Mr. M. L. ROUSE said that here in England owing to the uncertainty attaching to selling dry goods by measures of capacity, we sold them, as a rule, by weight instead.

With regard to the length of the cubit of Ezekiel xl, was there not evidence from chapter xli, 8, that a longer cubit than ordinary was referred to, because it speaks there of a "full reed of six *great* cubits"?

Colonel M. A. ALVES: Regarding measures of capacity I am unable to speak; so I merely observe that as, in the Wilderness, each person's daily allowance of manna was an omer, seven pints seems to have been a very good allowance.

As to weights, it may be noted that, whilst in Ezekiel xlv, 12, as in the Pentateuch, the weight of the shekel is stated to be 20 gerahs, the special "sanctuary" shekel is alluded to in the Pentateuch alone. The "king's" shekel is also mentioned in II Samuel xiv, 26.

Ezekiel xxxvi to xlviii are still unfulfilled prophecy; it would seem, therefore, as if some clue to the shekel and gerah was existing somewhere, though perhaps not as yet brought to light.

As with his shekel, Ezekiel's cubit is still future; and as, *see* Matthew xxiv, 1–2, every stone of Herod's Temple has to be thrown down, there will be nothing in it to act as a standard.

As the new sanctuary shekel is to weigh the same as the old, it would seem reasonable to suppose that the new sanctuary cubit should measure the same as the old which the Children of Israel brought with them out of Egypt.

Whatever its derivation, may not the word "'ămmāh" have as

wide a meaning as the word "ell," which varied from 27 to 54 inches?

The LECTURER replied that in Ezekiel xl, 5, the Vulgate gave the same rendering as the Septuagint: "a reed of six cubits and a handbreadth." In the present Hebrew text the word "cubit" was used with two different values side by side.

In the disputed passage, it had been his wish not so much to solve the problem which the passage presented, as to point out that there was a problem. As regards the expression in Ezekiel xli, 8, in our Authorized Version, "great cubit," the word in the original could not mean "great"; the real meaning was unknown (*cf.* margin of Revised Version, "six cubits to the joining"). The most difficult book in the Bible from a textual point of view was the book of Ezekiel.

The CHAIRMAN then proposed a hearty vote of thanks to Professor Kennedy for his most valuable and informing lecture, and this was passed by acclamation.

The Meeting adjourned at 6 p.m.

NOTE.—The Lecturer desires to express his grateful acknowledgment of the courtesy of the Committee of the Palestine Exploration Fund in permitting the use of their blocks to illustrate certain of the weights referred to in the Lecture.