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WEIGHTS OF ANCIENT PALESTINE.

By E. J. PILCHER.

1. *Introduction.*

READERS of the *Quarterly Statement* have noted from time to time the discovery of small weights with strange marks and inscriptions upon them. Some have been found in the course of the Fund's Excavations, and others have been picked up by natives. Most of these weights are of hard stone, round in shape, with a domed top and a flat bottom, very suitable for use with scales; but there are some examples in metal of a different form. None are large, and it would therefore seem that they were intended for weighing something valuable. They appear to be too early for use as coin weights, and even if they were, we should expect them to have the names of known coins upon them; whereas, the inscriptions that actually occur are: נֶזֶפֶף *Neseph*, פִּיִּם *Payam*, בִּקְעָ *Beka'*, and the unexplained mark Q. The probability is that they were used for weighing the precious metals; just as in the Old Testament we continually read about the weighing of shekels of silver when any payment has to be made.

It is somewhat surprising that no weights have yet been found in Palestine with the name of "*Shekel*" inscribed upon them. They may exist, but so far they have escaped notice. It is also curious that, although in the Hebrew Bible this unit of weight is usually referred to as a matter of common knowledge, yet in four places in the Pentateuch an attempt is made to define it; for we are informed that the shekel is made up of twenty gerahs. It may be that these passages are later glosses, but in any case it is noteworthy that the editor or editors thought it necessary to give some explanation of the term. In Ezekiel lxxv, 12, it is also laid down that the shekel should contain twenty gerahs, as though there might be some doubt in the matter; and when we come to Chronicles, Ezra, and Nehemiah, the shekel fades almost out of sight. In the Books of Samuel and Kings, shekels are always being mentioned; but in Chronicles, which were largely compiled from Samuel and Kings, the word "shekel" only occurs in two passages (1 Chronicles xxi, 25, and 2 Chronicles iii, 9). Ezra does not use

the word at all, and in Nehemiah it is only mentioned twice. Once, where it is stated that former governors demanded forty shekels of silver (v, 15), and once in prescribing a poll-tax. Instead of the old familiar shekel we now have *darkemonim* and *adarkemonim*, which are translated in the Revised Version as "darics," although there is little doubt that the Greek *drachma* is really intended; for **דרכמן** is the common and usual form of that word in known Phoenician inscriptions.¹ From this disuse of the word "shekel" in the later books of the Old Testament, we may draw the inference that the shekel itself went out of use during some period of the history of Israel, and therefore it required to be explained to a later generation of readers. This inference is supported by the evidence of Archaeology; because no weights have yet been discovered that are marked in alphabetic characters with the word "shekel," but instead of this we have the *Neseph*, the *Payam*, the *Beka*, and the Ω (whatever the latter may be).

Ancient weights have come down to us in fairly large numbers, but it is by no means easy to identify and classify them, even when they do have inscriptions upon them for our guidance, and many are uninscribed. Ancient weights vary very much even when they profess to belong to the same standard. Dr. Petrie tells us that there are two in the British Museum certified as correct by the Roman Prefect Q. Junius Rusticus, yet one of them yields a pound of 4,362 grains, and the other a pound of 5,625 grains. In the *Z.D.M.G.*, 1909, pp. 704-5, Herr Regling gives a list of Babylonian weights which indicate a mina, or Babylonian pound, ranging from 456 grammes to 569.8 grammes; so that it will be seen that the differences are very great. It must not be supposed that the metrologists of antiquity were incompetent; we have many evidences of their care and accuracy, and ancient weights would be even more discordant than they are if the old Wardens of the Standards had been habitually careless or inaccurate. Some of these discrepancies are due to the accidents of time. Stone weights are apt to get chipped and fractured and so lose part of their substance, while metal weights become oxidized and therefore tend to become heavier. Nevertheless, there are many cases where these excuses cannot be made, and it seems that some of the old weights never were accurate, and were not intended to be; but they

¹ *A Text-book of North Semitic Inscriptions*, by the Rev. G. A. Cooke (Oxford, 1903), p. 96.

intentionally vary owing to some trade or local custom. These variations occur in every system, and are greatly complicated by the fact that the same name is applied to very different units. Thus, even in our own country, there were at one time three recognized pounds, the Troy pound, the Tower pound, and the Avoirdupois pound. The two first have been abolished, and the third, with a slight modification, is now the only accepted unit. It is called the British Imperial pound and weighs 7,000 grains. The same thing has gone on in all countries, and various weights with the same names have been used side by side, to the sore confusion of the metrologist. And yet the users of these weights found that they were useful and convenient, for a rigid system of weight has its disadvantages. For instance, a shopkeeper who bought seven pounds of sweets, which he had to sell by the ounce, might calculate that he would be able to sell 112 separate ounces over the counter; but, as a matter of fact, in actual practice he would find himself short of that number. The custom of giving the purchaser the "turn of the scale," and the inevitable wastage in a series of small transactions, would soon reach an appreciable figure, so that he would require to make a liberal allowance for contingencies. Various plans have been tried to meet such cases as this; one of the most common being to have two different standards, one for buying and one for selling; a method which still survives among English druggists, who buy by avoirdupois and sell by apothecaries' weight. Such instances may help us to realize why traders adopted such varying standards, but in antiquity there was another complication, for, previous to the invention of coinage, payments had to be made in bullion, that is to say, by a given weight of silver. In our own day and practice, certain stamped pieces of metal pass from hand to hand and are everywhere given and taken at a fixed value. The niceties of commercial exchange are adjusted by systems of rebate and discount, which are matters of calculation, and we find certain discounts customary in certain trades. If we were dependent on weighed silver, a different method would be open to us; and, instead of a fixed and known discount or percentage, we could adjust our business transactions by means of weights of silver having a fixed and known variation from one another. To understand how this would work out in practice, we cannot do better than glance at the actual state of affairs in China, where they still carry on their commerce by weighing out bullion,

just as was done in the rest of the world before the adoption of coinage.

“China has never had a government coin of other metal than copper; other than copper, the currency of the country is not a coin, but a weight. This weight is the ‘tael,’ as it is called by foreigners, the Chinese name for it being *liang*; and when an operation in international trade, a wholesale purchase, Government indebtedness, or Customs’ duties have to be liquidated, payment is effected by weighing out the required number of ‘taels’ of the stipulated quality of silver. A century ago Germany was the paradise of the money-changer with its numerous coinages, each circulating in its own principality, but that was simplicity itself when compared with China. In China every one of the hundreds of commercial centres not only has its own tael weight, but in many cases has several standards side by side, and these taels of money will be weighed out in silver which, even in one place, will be of several degrees of fineness.

“One town may be taken to typify many, the town of Chungking, in the province of Szechwan, in the far west of China. Here the standard weight of the tael for silver transactions is 555·6 grains, and this is the standard for all transactions in which the scale is not specified. Frequently, however, a modification of the scale is provided for, depending in some cases upon the place from which the merchant comes, or with which he trades, and in others upon the goods in which he deals. A merchant coming from Kweichow, or trading with that place, will probably, but not certainly, use a scale on which the tael weighs 548·9 grains, and between these two extremes are at least ten topical weights of tael, all ‘current’ at Chungking. In addition to these twelve topical ‘currencies’ there are others connected with commodities. One of the most important products of Szechwan is salt, and dealings in this are settled by a tael of 556·4 grains, unless it is salt from the Tze-liu well, in which case the standard is 557·7 grains. A transaction in cotton cloth is settled with a tael of 555·0 grains, but for cotton yarn the tael is 556·0 grains, and for raw cotton the tael is 546·7 grains.

“This seems confusion, but we are not yet at the end. Up to this point we have dealt only with the weight on the scale, but now comes in the question of the fineness of the silver with which payment is made. At Chungking three qualities of silver are in

common use—'fine silver' 1,000 fine current throughout the empire, 'old silver' about 995 fine, and 'trade silver' between 960 and 970 fine: and payment may be stipulated in any one of these three qualities. Taking the score of current tael weights in combination with the three grades of silver, we have at least sixty currencies possible in this one town.

"This is characteristic of the Empire. The traveller, even a private individual, journeying from place to place in China, will be careful to take with him a small steel-yard and a string of a few selected 'cash,' the exact weight of which on his home scale is known to him. His first step in cashing a draft, or exchanging the silver he brought with him, is to ascertain the weight of his string of cash on the scales of the strange bank in the strange place, and, having done this, he is able to work out the parity of exchange between his home and the place of his temporary sojourn. Even then, however, he is dependent on the banker in the matter of the quality of the silver.

"Another element of variation, even in this currency, is the difference between the receiving and paying rates in force in all Government treasuries, all banks, and with those merchants of sufficiently strong standing to make their own counting-house rules; this difference, usually between a quarter and a half per cent., is made not by charging a commission but by boldly using two sets of weights, one for receiving and one for paying, and is intended to compensate for the labour of weighing ingots and lumps of silver of no fixed weight, and for the risk incurred and expert knowledge requisite for taking in silver of unknown degrees of fineness. The practice is defended on the same ground as that of the foreign exchange banks in quoting different buying and selling rates for bills of exchange."

If, therefore, the civilization of China had perished, the investigator would learn from literature that the chief unit in use was called a "tael"; but when he came to study the various objects marked "tael" he would find considerable differences between them, and would be puzzled to know what was the real standard weight, or what was the reason for such extraordinary discrepancies. Consequently, we must not be surprised if we find that the study of ancient metrology is surrounded with similar difficulties, for the conditions in antiquity were very like those that now obtain in China. We can only applaud the skill and ability with which our

modern scholars have grappled with all those difficulties, and we must be grateful to them for what they have accomplished in solving so large a part of the problems of the past.

2. *The Phoenician Standard.*

We are now learning that the Eastern Mediterranean possessed a very early and a very brilliant civilization, and as one of the first necessities of civilization is a metric system of some kind, it is only natural that we should find evidences of systems of weight. Dr. Schliemann disinterred a number of stone weights from among the ruins of Troy, and others have been discovered in early seats of Greek culture, one of the most important being the standard talent which Dr. Evans brought from the Palace of Minos at Knossos¹; but the relations of these early weights have still to be determined. We can only say that at the dawn of Greek history, the different states were in possession of standards, which varied very much among themselves but were all tabulated on the same plan, which may be expressed as—

50 staters make one mina,

60 minas make one talent,

so that if we know the value of the stater we can readily arrive at the weight of the talent. But the difficulty is that the standard varied in different localities, so that a mina of Aegina weighed 9,700 grains, while a mina of Athens was only 6,750 grains, and of course the stater and the talent varied in the same proportion. The basis of the whole system of Greek metrology was originally the stater—the mina and the talent being mere multiples of it. But as time went on the half-stater, or drachma, became the unit of most importance; and instead of reckoning 50 staters to the mina, they preferred to reckon 100 drachmas, and when these terms were applied to coinage (for it must be remembered that the names of the weights were habitually transferred to the coins), a piece of two drachmas was styled a didrachma, instead of stater, and a piece of four drachmas was styled a tetradrachm. The consequence was that in the later periods the term "stater" lost much of its original significance, and the word was applied, in a loose kind of way, to any familiar or customary piece of money, so that in the Gospels a coin of the value of a tetradrachm is referred to as a stater, and

¹ *Annals of the British School of Athens*, VII, p. 42, fig. 7.

similar instances occur in other Greek literature. The particular drachma which is most familiar to us is of course the Attic, but we must not forget that the same names were in use in all the other systems.

One of the most widely diffused of these ancient systems was the Phoenician. It may be thought surprising that a Phoenician unit should be associated with the standards of Greece, but the fact remains that many of the earliest Greek coins were struck on this Phoenician standard, showing that the States which issued them were habituated to the system of weight that was the peculiar property of the "Seafaring Sidonians," as Homer calls them. How old the Phoenician standard may be we cannot tell. In Dr. Petrie's collection there is an Egyptian weight which Mr. Weigall attributes to the IVth dynasty on account of the inscription "The Judge and District Superintendent Nefer Maat." He says "it comes from Quft and weighs 451·8 grains, *i.e.*, two 225·9-grain shekels." But, although this looks very inviting, we hesitate to accept any such antiquity for the Phoenician standard. Dr. Petrie's weight is far more likely to represent three Egyptian *kedets* of 150·6 grains each, and though this is a somewhat high value for the *kedet*, as well as a high antiquity, yet an attribution to the Phoenician would involve equal if not greater difficulties. The Phoenician system was founded on the stater, which in this case is best known by its Semitic name of shekel, and weighed 224·5 grains. *Coins* of this standard, when in first-class condition, generally average about 220 grains; although occasional specimens are met with as high as 229·5 grains. Such variations were almost inevitable under ancient methods of coinage. In the first place it was a common practice to issue the coin a little below the theoretic weight, the difference being considered a kind of *seignewage*, or allowance, for the labour of refining and coining the metal. Thus, the staters of Athens, which are extremely uniform and careful in workmanship, were issued at 133 grains Troy, instead of the real norm, which was 135 grains. In other cases the differences arise through the imperfections of ancient methods; for the industrial resources of antiquity were seldom equal to the task of turning out large quantities of money of a perfectly uniform grade. A certain quantity of silver would be made into so many coins and then sent out of the mint, so that some specimens would be very much above the standard, and others correspondingly below. The result was

that the heavy coins speedily found their way back to the melting pot, while the light ones remained in circulation. Hence it is rare to find examples of such a coinage of the standard weight, and still more rare to find any that exceed it. Nevertheless, the Phoenician weight standard is so distinctive that it is easy to identify it from the others, and it was upon this standard that some of the earliest known coins were minted. Coinage, however, was a Greek invention. The Semitic peoples were slow to adopt it; so, that, although pieces of money of the Phoenician weight were issued by the cities and states of Asia Minor as early as 650 or 700 B.C., it was not until about 450 B.C. that the Phoenicians themselves struck any. When they did so, however, their issues continued down to the time of Alexander, and when Ptolemy Lagus assumed the title of king in 325 B.C. he commenced to strike both gold and silver money on the Phoenician standard, which implies that that standard was the most acceptable one to his new subjects. At this period, and for many years afterwards, Palestine was a bone of contention between the kings of Egypt and the kings of Syria, and the result was that in 125 B.C. the city of Tyre took advantage of the dynastic troubles of the Seleucids to declare itself independent, and the Tyrians signalized their liberty by resuming the issue of silver shekels on the old native standard. This series of shekels is fairly well known. On one side of the coin is the laureated head of Melkarth, and on the other an eagle, with the Greek inscription "of Tyre holy and free." It was issued in large quantities for nearly two hundred years; the latest bearing a date corresponding with A.D. 69. But a still more famous shekel is one that was not issued at Tyre. It bears on one side a chalice, and on the other a triple lily. It did not circulate for such a lengthened period as the Tyrian, for the date letters upon the coins only range from year 1 to year 5, and instead of being inscribed in Greek, they bear legends in the Old Hebrew character, which inform us that they belong to "Jerusalem the Holy," just as the Tyrian shekels were *Τύρον Ἱεράς καὶ ἄσυλον*. In addition to this, they are marked "Shekel of Israel," and as they weigh on the average about 220 grains, there can be no doubt that this shekel of Israel was intended to be issued on the Phoenician standard. The exact date of these Jewish shekels has long been a matter of controversy, but the opinion is gaining ground that they belong to the time of the great revolt, and the siege of Jerusalem by Titus: that is to say,

the period reckoned from the 17th Iyyar 3826 to the 8th Elul 3831 Anno Mundi. The older theory relied on 1 Maccabees xv, 5, 6, and attributed the shekels to Simon Maccabeus, but even that brings us down to a time far removed from the period described in the books of the Old Testament, when the shekel of Israel was the unit of weight in sole use among the Hebrews. Nevertheless, these silver coins are sufficient to prove that the Jews themselves recognized that their ancient standard was identical with that of the Phoenicians, and when we remember that the Phoenician standard at the time of the invention of coinage in 700 B.C. was of such antiquity that it had had time to penetrate all over the Greek world, we have every ground for the opinion that this must have been the standard of the Biblical shekel from the earliest known period of Hebrew history. But still the fact remains that these silver coins are the only Judæan weights of this standard that we have yet been able to identify.

Phoenician weights are likewise very rare, but in the Ashmolean Museum at Oxford there is a small one in bronze, which was acquired from the Greg Collection in 1895. It has the form of a crouching bull, and on the bottom is the word שלשת "three," which we may compare with the רבע שלשת of the Marseilles inscription (*C.I.S.*, i, 165, lines 9 and 11). This would imply that the little animal represents "three quarters" of a Phoenician shekel. It is, however, somewhat light. Dr. Lidzbarski (*Ephem.*, I, p. 11) gave it as weighing 10·679 grammes, but Mr. D. G. Hogarth has recently been kind enough to have it reweighed, and reports that he cannot make it more than 10·3 grammes or 158·9 grains. Theoretically we should expect it to weigh about 168 grains, but the difference is probably due to bad preservation.

We have said that the Phoenician system is founded on the shekel, and it is generally accepted that the Jews and Phoenicians (like the Greeks) reckoned 50 shekels to the mina; because in Exodus xxxviii, 25, we are told that 603,550 men contributed half a shekel a-piece, and the total payment amounted to 100 talents and 1,775 shekels; thus showing that the writer took 3,000 shekels to the talent. Ezekiel xlv, 12, does not seem to support this, but the passage is obviously corrupt, and a better reading appears to be preserved in the *Codex Alexandrinus*, which runs "five shall be five, and ten shekels ten, and fifty shekels shall be your mina."

(To be concluded.)