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THE  
ROMAN MONETARY SYSTEM

PART I

BY

E. A. SYDENHAM

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# THE ROYAL NUMISMATIC SOCIETY

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## THE ROMAN MONETARY SYSTEM.<sup>1</sup>

### PART I.

#### § 1. *Origin of the System.*

THE Roman system of calculating monetary values dates from a period considerably anterior to that of the issue of the earliest Roman coins. Not until some years after the break up of the Latin League, when Rome was well on the high road towards gaining the supremacy over Italy, did she adopt a regular bronze coinage (*aes grave*) which was destined to form the basis of her monetary system while the Republic lasted, and with certain modifications and additions continued throughout imperial times.

It is now generally agreed that this initial step occurred about the year 335 B.C. But the institution of a coinage was a novelty only in so far as it dispensed with the use of weights and scales, and the sudden

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<sup>1</sup> I intended this paper originally to form an introduction to the article on the Augustan Sestertius by my respected friend, the late Canon Beanlands, although his conclusions differed somewhat from my own. But owing to his sudden death last September I was unable to ascertain his opinion with respect to it. I found, however, that a study of the Roman Monetary System could not stop at the reign of Augustus; consequently the treatment of the subject has developed into a far greater compass than I originally contemplated. Thus, my aim is to trace the growth of the Monetary System from its inception down to the final stage reached in the fourth century A. D.



appearance of a series of coins consisting of six clearly determined denominations suggests the pre-existence of a definite metric system.

The names borne by the different denominations point back, as Dr. Ridgeway has shown, to a more primitive order of things when metal was measured by length, and not by weight.<sup>2</sup> The terms *as* and *uncia* were originally linear measures corresponding with foot and inch; the Roman foot of 296 millimetres being subdivided into twelve *unciae*, or inches—a natural primitive arrangement common to most of the Greek, Italian, and Teutonic races. In corroboration of this the suggestion that the word *as* is derived from *asser*, a rod, and *uncia* from *unguis*, a (thumb) nail, is certainly both ingenious and interesting.

Further, the terms *Triens*, *Quadrans*, and *Sextans* mean literally not the third, fourth, or sixth part of anything, but that which divides the whole into three, four, or six parts, such as a cut or notch made across a bar of metal. Similarly, scruple (*scriptulum*, *scripulum*) denotes a little scratch, by which the inch (*uncia*) was divided into twenty-four parts, thus corresponding with the Greek γραμμή (a line).

## § 2. *The Bronze Coinage of Period I, 335–286 B.C.*

It has now been proved conclusively that Rome's earliest coinage (335 B.C.) was based on the standard of the Osco-Latin *libra*; <sup>3</sup> that is to say, the normal weight of the *as* was 273 grammes.

However, in Campania and other parts of Italy, there

<sup>2</sup> W. Ridgeway, *Origin of Metallic Currency*, Camb., 1892, pp. 351 ff.

<sup>3</sup> Haeberlin, *Aes Grave*, p. 36.

existed a different measurement of the foot; consequently there was a different standard of pound. Thus, within a few years after the first issue of the *as libralis* at Rome, coins of a similar character were issued in other districts not infrequently based on different standards of weight. During the half-century that follows we find, as is only natural, a conflict of local weights and monetary systems until the coinage of Rome, either through the absorption or supersession of other systems, was able to develop from a local into a national coinage.

The denominations of the libral series are as follows:

As	= 12 unciae	= 273	grammes	= 4212.39	grains.
Semis	= 6	„	= 136.5	„	= 2106.19 „
Triens	= 4	„	= 91	„	= 1404.13 „
Quadrans	= 3	„	= 68.25	„	= 1053.10 „
Sextans	= 2	„	= 45.5	„	= 702.06 „
Uncia		= 22.75	„	= 351.03	„

(These weights are given by Dr. Haeberlin, but it may be pointed out that the great variation in the weights of the earlier cast pieces prevents their being assigned to anything more than an approximate standard.)

This system, though intelligible enough in itself and doubtless the outcome of long usage, nevertheless possessed certain obvious disadvantages. For example, the existence of a heavier pound of 327.45 grammes in the neighbouring district of Campania necessarily complicated interprovincial exchange; and the tendency on the part of the Roman coiners to diminish the weight of the coins must have caused further difficulties in this direction. This diminution of weight becomes specially noticeable after about the year 312 B.C., at which date the *uncia* disappears temporarily from the Roman system. The coins of 312 B.C. are distinguish-

able from those of the earliest period by the prow on the reverse being turned to the left. Their average weights are computed by Haeberlin thus: *As*, 258 grammes; *Semis*, 125.8; *Triens*, 83.45; *Quadrans*, 62.87; *Sextans*, 41.91.

The metal of which these coins are composed is copper alloyed with lead and tin in about the following proportions: copper 68 %, tin 8 %, lead 24 %.<sup>4</sup> This compound, yellow in appearance and of remarkable durability, may be correctly designated *bronze*, as distinguished from pure, or almost pure, copper, which does not appear to have been employed by the Roman mint until a much later period. Yellow bronze, externally indistinguishable from *orichalcum*, may be regarded as the traditional metal of Rome, and was used as the standard for reckoning money values down to the end of the Republican period.

### § 3. *The Relative Value of Silver and Bronze during Period I.*

Since somewhat divergent theories have been advanced as to the value of the *aes grave* relative to silver the question calls for some consideration in detail.

At the time of the introduction of the libral *as* no silver coins were actually struck in Central Italy except in the district of Etruria, although within a few years (*circa* 330 B.C.) *didrachms* were issued in Campania. There can be little doubt, however, that the silver of

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<sup>4</sup> J. Hammer, in *Zeitschrift für Numismatik*, 1907-8, p. 127, gives copper 67.98 %, tin 7.33 %, lead 23.56 %. However, analysis shows that there is a good deal of variation in the composition of the metal.



Southern Italy and Sicily obtained currency in Latium and Campania, and was commonly used for reckoning large sums of money and also for international commerce.

The silver coins of Etruria date from some period anterior to 350 B.C., and fall into two series, which appear to have been used contemporaneously, although probably not in the same towns.

(a) Coins based on the Euboic-Syracusan standard :

<i>Denomination.</i>	<i>Mark of value.</i>	<i>Normal weight.</i>
10 units	X	135 grains.
5 "	Λ	67.5 "
2½ "	'	33.75 "
1 unit	I	13.5 (= <i>litra</i> ).

(b) Coins based on the two scruple standard :

<i>Denomination.</i>	<i>Mark of value.</i>	<i>Normal weight.</i>
5 units	Λ	175.0 grains.
2½ "	—	87.5 "
1 unit	—	35.12 (= 2 <i>scripula</i> ).

It will be seen that the largest coin of group (a) corresponds in weight with the widely circulated Corinthian *stater*, and that the smallest, or unit, is identical with the Sicilian *litra*, which exchanged for  $\frac{1}{5}$  of the Attic *drachma*.

Dr. Ridgeway maintains that the Roman *as libralis* was equal in value to the Etruscan silver unit of 13.5 grains, and consequently weighed the same as the bronze equivalent of the Sicilian *litra*. In support of this he urges that Greek writers translate the word *libra* as λίτρα. We may hesitate, however, to accept this conclusion. In the first place, while it is impossible to discover the exact weight of the Sicilian bronze *litra*,

the coins make it quite evident that by the year 335 B.C. it had fallen considerably below the weight of a Roman *libra* (273 grammes). Secondly, an equation between the Roman *as libralis* and the silver *litra* involves the extraordinary ratio between silver and bronze of over 300 to 1.

The same writer urges elsewhere that as the *scripulum* (scruple) of silver was equivalent to a pound of bronze, and as the *libra* contained 288 *scripula*, therefore the ratio between the metals was 288 to 1.<sup>5</sup>

Here, again, the statement cannot pass unchallenged. It is clear that by the year 286 B.C. the pound of bronze was equal in value to two *scripula* (*vid. infra*), which gives the ratio between silver and bronze as 120 to 1. These appear, moreover, to have been everywhere the accepted relative values of the two metals, and, although not impossible, it is very unlikely that within the space of fifty years so radical a change could have taken place as that indicated by the drop from 288 to 120.

Assuming then that in 335 B.C. the *as libralis* was equal to two silver *scripula*, we see that it would have been interchanged exactly for the Etruscan silver unit of group (b), which weighed two *scripula*, and almost exactly for the coin of group (a) with mark of value  $\Lambda$ II.

There is, however, a remarkable feature to be noticed in connexion with these two groups of Etruscan coins, inasmuch as at some date subsequent to 350 B.C. the values of the coins were doubled, i.e. their weights were reduced by a half.

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<sup>5</sup> It may be pointed out, however, that the libral *as* weighed not 288 but 240 *scripula*.

Thus we find coins corresponding to those of group (a) with their values changed as follows:

<i>Denomination.</i>	<i>Mark of value.</i>	<i>Normal weight.</i>
20 units	XX	135.0 grains.
10 „	X	67.5 „
5 „	Λ	33.75 „
2½ „	ΛII	16.8 „
1 unit	—	6.75 „

Similarly coins corresponding with group (b), based on the one scruple unit (17.5 grs.):

<i>Denomination.</i>	<i>Mark of value.</i>	<i>Normal weight.</i>
20 units	XX	350.0 grains.
10 „	X	175.0 „
5 „	Λ	87.5 „

This sudden halving of the weights can only imply one thing, namely, that a corresponding reduction was made in the weight of the bronze money of Central Italy. This is exactly what took place in the year 286 B.C., when the libral *as* was superseded by the semi-libral.

It is important to notice in connexion with these Etruscan silver coins that the weight of the denomination in the first group, marked ΛII, is practically identical with that of the unit of the second group, *i.e.* one scruple, which is the weight of the silver *sestertius* introduced at Rome in 268 B.C.

The Campanian *didrachm* weighed originally seven scruples, and was consequently equal approximately to 3½ libral *asses*, or 10 *asses* to 3 *didrachms*.

After the year 312 B.C. the weight of the *didrachm* fell to six scruples, when the simpler relation of 3 *asses* to 1 *didrachm* was obtained.



§ 4. *Period II*, 286-268 B.C.

The first of a series of reforms of the bronze coinage took place about the year 286 B.C., and is known as the semi-libral reduction. The coins were reduced to about half their original weight, the *uncia* reappeared, and two smaller denominations, the *semuncia* and *quartuncia*, were added to the series. Henceforth the smaller pieces from the *sextans* downwards were struck instead of cast.

The normal weights of the various denominations are estimated as follows:

As	= 136.5 grms.	= 2106.19 grs.	= 120 scripula.
Semis	= 81.6 „	= 1259.0 „	= 72 „
Triens	= 54.5 „	= 842.0 „	= 48 „
Quadrans	= 40.8 „	= 629.5 „	= 36 „
Sextans	= 27.25 „	= 421.0 „	= 24 „
Uncia	= 13.6 „	= 210.5 „	= 12 „
Semuncia	= 6.82 „	= 105.25 „	= 6 „
Quartuncia	= 3.41 „	= 52.6 „	= 3 „

Some writers have assumed that the semi-libral *as* was issued on the Neo-Roman standard, *i.e.* 163.725 grammes. However, that this is not the case seems to have been proved by Dr. Haeberlin's analysis deduced from the weight of actual specimens.

In one point only I venture to differ from Dr. Haeberlin's conclusions. He gives the normal weight of the semi-libral *semis* as 68.22 grammes, or half that of the *as*, whereas there seems good reason to believe that it weighed normally 81.6 grammes, or six times that of the *uncia*. That is to say, the *as* is the only piece in which the Osco-Latin standard was retained.

The result of weighing specimens certainly goes to confirm this, and on referring to Dr. Haeberlin's list <sup>6</sup> it

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<sup>6</sup> Haeberlin, *Aes Grave*, p. 105.

will be seen that the average weight, in all cases with the exception of the *semis*, falls somewhat below the normal. Specimens of the *semis*, however, range from 89.5 to 61.6 grammes, giving as the average weight 72.82 grammes; and since it may be taken as a general rule that the normal weight approaches more nearly to the maximum than the minimum, and is almost invariably in excess of the average, it is reasonable to infer that the normal weight of the *semis* is certainly greater than 68.22 grammes, and should in all probability be fixed at 81.6 grammes.

In the third column of weights I have given the equivalents in *scripula*, which is more compatible with the Roman method of reckoning than our modern grammes or grains inasmuch as the *scripulum* was a Roman weight. Also the adoption of this standard enables us more readily to appreciate the value of the bronze in relation to silver.

It will be seen that, although the relative values of the coins remained unchanged, their weight introduced a decimal as well as a duodecimal principle. That is to say, the *uncia* was issued at  $\frac{1}{16}$  the weight of the *as*, and the denominations from the *semis* to the *sextans* were not fractions of the *as* but multiples of the *uncia*.

This readjustment of weights was in reality an interesting compromise between the two prevailing metric standards of Central Italy, arrived at, obviously, in order to harmonize the bronze coinage of Rome with that of her near neighbours. The *as*, reduced to 136.5 grammes, still retained the Osco-Latin standard of the previous period, whereas the denominations from the *semis* downwards were based on the standard

of the heavy pound (327.45 grammes = 288 *scripula*), henceforth known as the Neo-Roman.

The reason for the semi-libral reduction is not difficult to discover. We may dismiss the theory, formerly held by numismatists, that it was an expedient resorted to in consequence of state bankruptcy. Indeed, it is unnecessary to connect it with any internal financial crisis. Quite adequate explanation lies in the fact that the semi-libral reduction enormously facilitated interprovincial and international commerce, and from this point of view it may be regarded as not merely a useful but a perfectly logical reform.

The adoption of a decimal weight system brought the Roman coinage into a more exact relation with the coinages of Campania and Etruria. In Campania the scruple of silver was equivalent to ten bronze *libellae*. Thus the semi-libral *as* was now made equal to the silver *scripulum*, on the ratio of 120 to 1,<sup>7</sup> while the *uncia*, *sextans*, *quadrans*, and *triens* were respectively equal to 1, 2, 3, and 4 *libellae*.<sup>8</sup>

We pointed out above that in the reduced silver coins of Etruria the lowest denomination of group (a) bearing the mark of value  $\Lambda II$ , and the unit of group (b), were almost of equal weight, *i.e.* one *scripulum*. Thus they would each be equivalent to the semi-libral *as* of bronze.

It may be noted in passing that since it is clear that in 286 B.C. the Roman *as* of 136.5 grammes was equal to the Etruscan coin marked  $\Lambda II$ , it is reasonable to conclude that in 335 B.C. the same denominational

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<sup>7</sup> Scruple or *scripulum* = 1.137 grammes (17.5 grains). Thus  $1.137 \times 120 = 136.5$ .

<sup>8</sup> Hill, *Historical Roman Coins*, p. 22.



values corresponded when both coins were twice as heavy.

Although important results were undoubtedly secured by the semi-libral reform, the evidence of the coins shows that it was short-lived in consequence of two serious defects that militated against its efficient working as a monetary system.

(1) Since it involved a compromise between two weight standards, the Osco-Latin and the Neo-Roman, the strict relation between the *as* and its fractions was obscured. Thus, for example, two *semisses*, or three *trientes*, were intrinsically of more value than an *as*.

(2) It may be laid down as a general principle that a monometallic currency is only practical for international exchange when the metal adopted is of a precious nature, *e.g.* gold, silver, or electrum. Since Rome had hitherto clung to her bronze coinage exclusively, it followed as a natural result that in foreign commerce her own coins tended to pass at a discount; and, further, without some balancing factor such as gold or silver, it was practically impossible to maintain the value of her bronze money at home.

It may be conjectured too that in the manufacture of coins the advantages of striking instead of casting were becoming increasingly patent to the Roman mind; hence the tendency to reduce the clumsy fabric of the *aes grave* to a more convenient form.

During the eighteen years that followed the institution of the semi-libral standard the Roman coinage passed through successive stages of transition, more or less chaotic, in which the only constant factor is the tendency towards reducing the weight of the coins.

Such terms as *triental* or *quadrantal* reduction,

occasionally used to describe the coinage of this period, are purely arbitrary, and there appears to have been no official recognition of any standard other than the semi-libral, although the weight of the *as* was subject to considerable variation, and specimens frequently weigh no more than a libral *triens*, *quadrans*, or even *sextans*.

It is to this period that the multiples of the *as*, namely, the *decussis*, *tressis*, and *dupondius*, are assigned.

### § 5. *Period III, 268–217 B.C. The Sextantal Reform.*

By far the most important reform made in the earlier Roman coinage is that known as the sextantal reduction. It is not without significance that Pliny makes no mention of any change in the coinage before this date, which he enables us to fix in the year 268 B.C.<sup>9</sup>

The confusion of the preceding decade now gave place to an ordered and intelligible monetary system, established not only in Rome and the surrounding districts but in all parts of the world where the power of Rome made itself felt.

The reform comprised two main features. (1) The weight of the *as* was reduced to  $\frac{1}{6}$  of a pound (Neo-Roman), and of the lesser denominations in proportion; all the bronze coins being struck instead of cast. (2) The silver currency was inaugurated.

(1) The normal weights of the sextantal bronze are:

As	= 54.5	grammes	= 842.0	grains	= 48	scripula.
Semis	= 27.25	„	= 421.0	„	= 24	„
Triens	= 18.16	„	= 280.7	„	= 16	„
Quadrans	= 13.6	„	= 210.5	„	= 12	„
Sextans	= 9.08	„	= 140.3	„	= 8	„
Uncia	= 4.5	„	= 70.15	„	= 4	„

<sup>9</sup> Pliny, *N. H.* xxxiii. 3, 13; also cf. Hill, *op. cit.*, p. 28 f. Cf. *Zeit. für Num.* xxvi, p. 238.

We are probably right in assuming that this standard received some sort of official recognition in 269-268 B.C., and it is certain that for a period of about half a century it was adhered to approximately. But, as is well known, Roman bronze coins down to the middle of the third century A.D. present a bewildering variation in the matter of weight; so that, during this period of over five hundred years, it may be regarded as an axiom that, although certain weight standards were adopted nominally, in actual practice only a mere approximation was aimed at.

Two explanations may be given for this. (1) The bronze was simply token money bearing either its mark of value or some distinctive type whereby its exchange value was guaranteed. Thus precision of weight became relatively unimportant. (2) The method employed in the manufacture of bronze coins rendered the attaining of accuracy in weight very difficult. That is to say, the flans or blanks, before being struck, were cast in moulds, and any inaccuracy or shifting of one half of the mould would naturally produce an unequal thickness in the casting or a badly formed edge, both of which features are often observed in actual specimens, and produce variation in the weight of the coins.

Although the bronze coins of 268 B.C. were smaller and lighter than those of the preceding period, the relation of silver to bronze was still maintained at the ratio of 120 to 1. This was effected by the introduction of a silver currency as a balancing force.

(2) The advent of the *denarius* together with its fractions, the *quinarius* and *sestertius*, may be regarded as the really monumental achievement of the reform



of 268 B.C. The *denarius* assimilated the existing silver standards of the Greek world and in course of time superseded them. In spite of the fact that bronze was, and continued to be, the standard by which values were reckoned, for the space of five hundred years the *denarius* forms the link of continuity in the monetary system of Rome.

The weights of the silver coins, as originally issued, are :

Den.	= 10 ass.	[X]	= 4.55	grms.	= 70.0	grs.	= 4 scrip.
Quin.	= 5	„	[V]	= 2.275	„	= 35.0	„ = 2 „
Ses.	= 2½	„	[IIS]	= 1.137	„	= 17.5	„ = 1 „

The ratio of silver to bronze may be expressed thus :

$$\begin{array}{cc} \text{Grammes.} & \text{Scripula.} \\ \frac{54.5 \times 10}{4.55} = 120 & \text{or } \frac{48 \times 10}{4} = 120. \end{array}$$

The basis of the Roman coin weights from this time onwards appears to be the *scripulum* or scruple.

With the introduction of the Roman *denarius* the silver coinage of Etruria and Campania ceased. But it will be seen that the new Roman silver coins almost exactly correspond in weight with the reduced Etruscan coins bearing the value marks X, Λ, and ΛII, and also that the Campanian *quadrigatus* of the period *circa* 290–268 B.C., weighing six *scripula*, is equal to a *denarius* and a half.<sup>10</sup> Further, the weight of the *denarius* is practically identical with that of the Attic *drachma*.

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<sup>10</sup> A further link between the coinages of Rome and the local mints is seen in the *Victoriatus*, which was originally half the value of the *Quadrigatus* (i.e.  $\frac{3}{4}$  of a *denarius*), but was ultimately reduced to the value of a *quinarius*.

Thus the existing monetary systems were united in the Roman silver coinage of 268 B.C.

§ 6. *Period IV, 217–88 B.C. The Uncial Reduction.*

The next change to be noticed occurred in the year 217 B.C., when the weight of the *as* was reduced to an *uncia*. Pliny states that “when Hannibal was pressing the Romans hard, in the dictatorship of Q. Fabius Maximus, the *as* was made uncial, and it was decided that the *denarius* should exchange for 16 *asses*, the *quinarius* for 8, and the *sestertius* for 4. Thus the State made a gain of a half; but, in paying military wages, 1 *denarius* was always given for 10 *asses*.”<sup>11</sup>

Mr. Hill’s lucid comments on the monetary change of 217 B.C., and the causes that brought it about, leave little to be added to the question.<sup>12</sup> One point, however, seems to require some further elucidation, namely, the exact extent to which the weights of the silver coins were reduced. It has been stated that the *denarius*, which previous to the year 217 B.C. had weighed 4.55 grammes (4 scruples), henceforth weighed about 3.90 grammes ( $3\frac{1}{3}$  scruples) or  $\frac{1}{84}$  instead of  $\frac{1}{72}$  of a pound.

Although this statement is approximately correct, it seems worth while to point out that the exact equivalent of  $3\frac{1}{3}$  scruples is 3.756 grammes (= 58.3 grains), and not 3.90 grammes (= 60.18 grains). If, therefore, the *denarius* was issued at the rate of eighty-four to the pound, its normal weight cannot be expressed simply in scruples, since  $\frac{1}{84}$  of a pound (3.90 grammes) falls midway between  $3\frac{1}{3}$  and  $3\frac{1}{2}$  scruples, or to be exact,  $3\frac{3}{7}$ .

<sup>11</sup> Pliny, *N. H.* xxxiii. 45.

<sup>12</sup> Hill, *op. cit.*, p. 47 f.

At this point we are led naturally to inquire which of these two methods of reckoning coin weights was generally employed by the Romans. That is to say, whether each separate coin conformed to a fixed standard, or whether the coins were struck at the rate of so many to the pound.

The former method would naturally result in a comparative uniformity in the weight of coins issued during the continuance of a particular standard, whereas the latter might be expected to lead to considerable variation, since, provided the requisite number of coins per pound was turned out, the weight of individual coins was a minor consideration.

Now, both these results are very clearly observed in Roman coins. From 217 B.C. to the time of Augustus the weight of the *denarius* remains remarkably steady, while the bronze coins exhibit extraordinary variation. Hence it would appear that the silver coins were weighed individually, probably according to a scrupular standard, and the bronze, although of nominally fixed weight, were, in actual practice, calculated at a given number to the pound.

Resuming our consideration of the weight standard adopted for the silver coinage of 217 B.C., it is quite certain that the *denarius* had fallen considerably below its original weight of four *scripula*. The result of weighing specimens is practically conclusive in showing (1) that the weight of the *denarius* fell several years before 217 B.C., and (2) that from this date onwards its normal weight was  $3\frac{1}{2}$  *scripula* (= 61.39 grs.).

Republican *denarii* in good, though not unusually fine, condition give the following average weights:



Before 217 B.C. from 79.9-60 grains.

B.C. 217-104 [19 coins] av. wt. 59.5 grains.

„ 104-89 [18 „] „ „ 60.2 „

„ 89-64 [19 „] „ „ 60.1 „

„ 64-49 [21 „] „ „ 60.5 „

Allowing a slight percentage for depreciation of weight caused by wear, a fair estimate of the normal weight would therefore be at least 61 grains.

The monetary system as revised in 217 B.C. may be tabulated thus:

Denarius = 16 asses = 61.3 grains =  $3\frac{1}{2}$  scrupula.

Quinarius = 8 „ = 30.6 „ =  $1\frac{3}{4}$  „

Sestertius = 4 „ = 15.2 „ =  $\frac{7}{8}$  „

As = 421.0 „ = 24 „

and fractions of the *as* in proportion;

the ratio of silver to bronze being as 110 : 1.

#### § 7. *Period V, 88-82 B.C. The Semuncial Reduction.*

The final stage in the diminution of the *as* under the Republic was reached in 89-88 B.C., when, according to the provisions of the *Lex Papiria*, its weight was reduced to half an ounce (210.5 grains or 13.64 grammes) and its fractional denominations in proportion. Mommsen has shown that in taking this step Rome merely brought her bronze standard into line with that which had been adopted for some time previously by many Italian cities where the right of coinage still lingered.<sup>13</sup> Rome was thus enabled to suppress the local coinages and substitute her own in the allied cities.

By this reduction the relation of silver to bronze was changed to the ratio of 55 to 1.

<sup>13</sup> Cf. Hill, *op. cit.*, p. 90.

Within a decade of the semuncial reduction the regular issue of bronze coins from the Roman mint ceased until the reorganization of the coinage by Augustus between the years 20 and 15 B.C. During this period of sixty years the only coin issued regularly was the *denarius*. The gold and lesser silver pieces only occur sporadically and in comparatively small quantities.

§ 8. *Bronze Coins issued between 46 and 20 B.C.*<sup>14</sup>

During this period there occur certain collateral issues of bronze coins, which lead up more or less directly to the imperial system ultimately established by Augustus; and, owing to the wideness of their circulation, these coins must have gone some way towards filling the gap caused by the absence of a regular bronze currency in the capital itself.

They may be grouped as follows:

(1) Coins of Cn. and Sextus Pompey. 46-44 B.C.

(2) Coins of the moneyers C. Clovius and Q. Oppius. 45-44 B.C.

(3) Gallic issues of Lugdunum and Vienna. 40-circ. 29 B.C.

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<sup>14</sup> In the course of this section frequent reference will be made to an important article by Mr. Grueber, published in the *Numismatic Chronicle*, 1904, on "The Roman Bronze Coinage, 45-3 B.C." Mr. Grueber has here amassed much useful information respecting the coinage of this period generally, and in particular has thrown great light on the question of the composition of the coins, ascertained by analysis of the metal. There are, however, certain points on which I find it impossible to accept Mr. Grueber's conclusions; notably his view as to the value of copper relative to bronze or orichalcum, and his determination of the particular standard, either semuncial or quartuncial, in force during the period. I shall endeavour to deal at length with these and kindred questions as they arise.

- (4) Coins of M. Antonius. 39–35 B.C.
- (5) Coins struck in Asia Minor. 29–20 B.C.
- (6) Coins of P. Carisius (Spain). 23–22 B.C.

(1) The bronze coins of the Pompeys are uniform in type, viz. *obv.* Janiform head; *rev.* prow of ship, with three varieties of legend:

(a) *Rev.*—**CN·AAG**  
**IMP** (weights, 451, 296 grains).

(b) *Rev.*—**AAGN**  
**PIVS** (weights, 404, 480 (?), 347, 322, 298,  
**IMP** 263, 259, 223, 341, 274, 246 grains).

(c) *Obv.*—**MAGNVS** . *Rev.*—**EPPIVS** (weights, 375,  
**PIVS·IMP·F** **LEG** 270·5, 207·5,  
199, 190·5 grs.).

The coins of group (a) have on the obverse the mark of value I, thereby leaving no doubt as to their denomination. "These coins", says Mr. Grueber,<sup>15</sup> "were issued by Cn. Pompey during his campaign in Spain, 46–45 B.C. They were probably struck in the province of Baetica, a region specially rich in copper, the most famous mines being at Cotinae in the Sierra Morena. . . . They are of the *uncial* standard, a standard which had long been superseded at Rome by a *semuncial* one under the provisions of the *Lex Papiria*, 89 B.C. The plentiful supply of metal in the above-mentioned districts may have been the cause of so little care being exercised in adjusting the coin to the right standard. In adopting the old type of the *as*, however, the current value of the piece became at once apparent."

The coins of groups (b) and (c) were struck by Sex. Pompey and his legate, Eppius, in 45–44 B.C., and appear to conform to the same standard as those of

<sup>15</sup> *Coins of the Roman Republic*, iii, and *Num. Chron.*, 1904, p. 220.



Cnaeus. Although they are without marks of value the greater variation in their weight suggests that they fall into at least three denominations. The analysis of the metal of which they are composed shows 71 % copper, 9.7 % tin, and 19.3 % lead.<sup>16</sup>

Mommsen maintains that none of the coins were struck actually during the life of Cn. Pompey, the Great, but were issued by his younger son, Sextus, since Pompey the Great never placed his praenomen on the coins. To assign the coins of group (a) to a date anterior to the passing of the *Lex Papiria* (*vide* Cohen and Babelon) on account of their *uncial* weight is historically impossible.

It may be doubted, however, whether so large an issue of coins can be restricted to a single place of mintage (Baetica), and to so short a period as that assigned by Mr. Grueber.

The coins are by no means uniform in style or fabric. Those of group (a) are generally flat and coarsely executed, while those of group (b) are thick, compact, and usually in fairly good style. Clearly the coins obtained a very wide circulation, and we know, for example, that they were current in Southern Gaul.<sup>17</sup>

The adoption of the *uncial* standard, although in itself a retrogressive step, may possibly have been an attempt on the part of Pompey to resuscitate the dignified proportions of the older Roman bronze and to arrest the dwindling tendency of which the *Lex Papiria* was the last authoritative expression.

(2) In 45-44 B.C. an attempt was made by the

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<sup>16</sup> *Num. Chron.*, 1904, pp. 220-4.

<sup>17</sup> *Num. Chron.*, 1917, p. 61.

moneyers C. Clovius and Q. Oppius to revive the bronze coinage at Rome.<sup>13</sup> The attempt, however, was not successful, although there arise in connexion with it several interesting points, which foreshadow the greater monetary reform that was carried out twenty-five years later.

The coins may be described thus :

*C. Clovius.* 45 B.C.

*Obv.*—Bust of Victory r., draped ; her hair drawn to the back of her head, and tied with a band ; before,  
**CAESAR·DIC·TER.**

*Rev.*—Minerva standing l. ; she carries a trophy over her r. shoulder, and oval shield on l. arm ; in front, a serpent erect. **C·CLOVI·PRAEF.**  
(Wts. 268, 236, 231, 226, 212 grains.)

*Q. Oppius.* 44 B.C.

*Obv.*—Head of Venus r., diademed ; her hair collected into a knot, and falling in locks down her neck ; behind, a capricorn.

*Rev.*—Victory walking l. and looking back ; she bears a palm-branch in r., and a dish with fruit in l. ; before, **Q·OPPIVS·PR.**  
(Wts. 197, 178, 171 grains.)

(Babelon mentions a variety with head of Venus l. Cf. ii, p. 277, No. 2.)

Mr. Grueber ascribes to a third moneyer, L. Plancus, a coin with *obv.* similar to that of Clovius and *rev.* a sacrificial jug. It has been shown since, however, that the coin is undoubtedly false.

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<sup>13</sup> *Num. Chron.*, 1904, p. 235. These coins have been variously assigned to Spain, Gaul, or Sicily (cf. Bab., ii, p. 276). Rome is however, their probable place of mintage.

The coins of these two moneyers are closely related as regards style and date, and are, moreover, component factors of a somewhat novel monetary system. Their chief interest lies in the fact that in them we see the inception of a principle that was entirely new to the Roman coinage.

The coins of the moneyer Clovius are composed of yellow bronze. Those of Q. Oppius, on the other hand, are decidedly lighter and are struck in almost pure copper, this being the first instance of the use of the unalloyed metal by the Roman mint. Yellow bronze, like orichalcum, was considered more valuable than copper; the ratio between the metals being, as we shall see, about as  $1\frac{2}{3}$  is to 1.

The two moneyers of 45-44 B.C. seem to have adopted this principle as the basis of their system. Thus, we find, Clovius struck *dupondii* of yellow bronze and Oppius struck *asses*, not of the same metal but of its equivalent in copper. Theoretically, then, the *as* of Q. Oppius should be  $1\frac{2}{3}$  times the weight of half a *dupondius*. Taking the average weight of the *dupondius* as 231.4 grs. (shown by the coins of Clovius), the *as* of yellow bronze would weigh 115.7 grs., which multiplied by  $1\frac{2}{3}$  gives 192.7 as its equivalent value of copper. This weight corresponds pretty closely with the actual weights of the coins of Oppius given above.

It seems probable that, in spite of the fact that in 88 B.C. the *as* had been authoritatively fixed at half an ounce, its dwindling tendency had not really been arrested; indeed, it is practically certain that by the year 35 B.C. it had fallen to about a quarter of an ounce. This is evident from the bronze coinage of M. Antonius (*vid. infra* (4)).



Whether the *as* had fallen quite as low as a quarter of an ounce in the years 45–44 B.C. may be questioned. There is no doubt, however, that the *dupondii* of Clovius and the *asses* of Q. Oppius fall considerably below the semuncial standard, to which Mr. Grueber maintains that they belong.

This attempt to inaugurate a bimetallic system of bronze and copper on the ratio of  $1\frac{1}{2}$  to 1, although supremely interesting in itself, appears to have met with small success. Nevertheless it foreshadows the principle which was to become, within thirty years, the very essence of the imperial bronze coinage.

(3) The bronze coins of Lugdunum and Vienna (Gaul)<sup>19</sup> fall into two groups:

(a) Coins with the heads of Caesar and Octavius back to back, and *rev.* a ship's prow with the legend **COPIA** (Lugdunum), or **C.I.V** (Colonia Julia Vienna)—average weight 350 grs. These coins may probably be assigned to the years 40–38 B.C. In style and fabric they are allied to the bronze struck by Sextus Pompey, and, like them, may perhaps be regarded as *asses*. However, at a period when the standard of the bronze *as* had not only been officially reduced to half an ounce, but, as a matter of fact, appears to have fallen even lower, we may be cautious in adopting the hypothesis that in certain districts of Spain and Gaul a return was made to a standard that had been superseded elsewhere for half a century.

(b) Coins of flatter style and low relief with head of Octavius on obverse and head of Caesar on reverse (Coh. 3)—weights, 408, 360.4, 282, 265, 250, 128.5 grs.;

<sup>19</sup> For a fuller account of this series see "The Mint of Lugdunum", *Num. Chron.*, 1917.

or with *rev.* **DIVOSIVLIVS** within laurel-wreath (Coh. 95, 96)—weights, 384, 373.5, 359, 352, 333, 316.5, 301, 300, 292, 253.5, 211, 209, 207, 256.5, 211 grs. These coins may be assigned to the period 38—*circ.* 29 B.C. Mr. Grueber suggests that they are probably of four denominations, viz. *sestertius* (approx. 400 grs.), *tripondius* (330 grs.), *dupondius* (250 grs.), and *as* (130 grs.). If this suggestion is correct the existence of an uncial standard in Gaul, 40–38 B.C., becomes even harder to explain, since the coins of group (b) belong approximately to a quarter-ounce standard. It is certainly unlikely that coins ranging in weight from 200 to upwards of 400 grains are all of the same denomination. At the same time the coins bear no marks of value or any distinguishing types whereby their denominations may be determined. In size and general appearance a coin of 330 grs. differs but little from one of 250 grs., and in actual practice it would have been extremely difficult to distinguish a *tripondius* from a *dupondius* without resorting to weights and scales. Further, the list given above shows so many intermediate weights that it is quite impossible, in the majority of cases, to say to what denomination a particular specimen belongs.

(4) The series of bronze coins of M. Antonius struck in the East 39–35 B.C., which is fully described by Mr. Grueber, marks a new departure from the coinage hitherto issued by the Romans.<sup>20</sup>

The coins bear the names of four of Antony's officers who appear to have held the position of moneyers: (1) L. Atratinus, who was *praefectus classis* in 38 B.C.

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<sup>20</sup> *Num. Chron.*, 1904, p. 192 f.

and consul in 34 B.C.; (2) L. Bibulus, stepson of M. Junius Brutus, whose party he joined after the murder of Caesar, but surrendered to Antony after the battle of Philippi and became *praetor designatus* probably of Syria; (3) M. Oppius Capito, whose identity is uncertain; and (4) C. Fonteius Capito, who was *consul suffectus* in 33 B.C.

For our present consideration the most important feature to be noticed is that the coins fall into six denominations each bearing its mark of value:  $\Delta$  (*sestertius* = 4 *asses*; sometimes in conjunction with the formula *II S*);  $\Gamma$  (*tripondius* = 3 *asses*); B (*dupondius* = 2 *asses*); A (*as*); S (*semis*); •• (*sextans*). Moreover, in addition to its mark of value, each denomination has its distinctive type. Thus, on the *sestertius* we have the heads of Antony and Octavia facing each other, with the reverse type, a quadriga of hippocamps; on the *tripondius*, or *tressis*, the jugate heads of Antony and Octavius facing that of Octavia, with *rev.* three sailing galleys in line; on the *dupondius*, the heads of Antony and Octavia facing each other, with *rev.* two sailing galleys; on the *as*, the jugate heads of Antony and Octavia, with *rev.* one sailing galley; on the *semis*, the head of Antony only, with *rev.* a galley without sail; and on the *sextans*, a janiform head, with *rev.* prow of galley.

In the matter of weight the coins exhibit considerable variation. The moneyers L. Atratinus and M. Oppius Capito seem to have struck coins on two weight standards; this however may be merely the result of accident, and it seems probable that since the coins bore clear indications of their current value very little attention was paid to their actual weight.

However, from the lengthy tabulation of weights compiled by M. Bahrfeldt,<sup>21</sup> it would appear that a definite standard was adopted as the basis of the system, although in practice it was only adhered to approximately.

	Average wts. (Bahrfeldt).	Average wts. (Grueber).	Normal wts. on quartuncial basis.
Sestertius	385 grs.	410-310 grs.	421 grs.
Tripundius	325 "	350-300 "	315.75 "
Dupondius	250 "	300-215 "	210.5 "
As	128 "	145-120 "	105.25 "
Semis(?)	65.5 "	105-50 "	52.6 "

"Reckoning the Roman pound at 5,040 grs.," says Mr. Grueber, "these weights would show a quarter-ounce standard; but if it be taken into consideration that the coins are not of pure copper, for the analysis of the metal shows it to be of 76.5 per cent. copper, 14.0 tin, and 8.3 lead, we have a mixed-metal coinage which, as in the case of that of orichalcum, in circulation was rated at a higher value than one of pure copper. Allowance being made for the irregularity of the weights, arising from carelessness in the casting of the flans, it would appear that it was intended that these coins should be issued on the half-ounce standard, such as was introduced into the Roman system in 88 B.C." <sup>22</sup>

The view stated in the last sentence is, I venture to think, quite untenable. The misstatement has frequently been made that bronze, or orichalcum, was *twice* as valuable as copper. But, as was suggested in the previous section, the ratio between bronze and

<sup>21</sup> M. Bahrfeldt, "Die Münzen der Flottenpräfekten des Marcus Antonius", in *Num. Zeit.*, 1905, pp. 9-56.

<sup>22</sup> *Num. Chron.*, 1904, p. 213.



copper appears to have been about  $1\frac{2}{3}$  to 1. It is therefore quite inaccurate to use the terms "quartuncial standard of bronze" or "semuncial of copper" as if they were convertible.

The metal of which Antony's coins are composed is practically identical with that of the Roman *as*. This compound, referred to as "bronze", and not pure copper, was the standard on which coin weights were estimated from the year 335 B.C. down to the time of Augustus. The semuncial *as* of 88 B.C. was, therefore, half an ounce of bronze. It is pretty certain that the constantly diminishing tendency of the *as* continued after 88 B.C., and that by the year 35 B.C. it had probably fallen to about  $\frac{1}{4}$  ounce. The standard of Antony's coins, therefore, can *only* be described correctly as "quartuncial".

(5) A series of bronze coins bearing on the obverse the bare head of Augustus, and on the reverse a laurel wreath encircling either the letters **CA** (*Commune Asiae* (?)) or the word **AVGVSTVS**, has been assigned by Mr. Grueber to Asia Minor, 29-20 B.C. He points out that the main interest in these coins arises from the fact that an analysis of the metal in which they are struck shows 78.7 % copper, 0.7 % lead, and 20.6 % zinc. This is very nearly the composition of the metal used a few years later for the earliest bronze *sestertii* and *dupondii* issued at Rome; and is in fact the *orichalcum*, or golden bronze, of which so many ancient writers speak.<sup>23</sup>

The coins consist of four denominations, viz. *sestertius* (394-301 grs.), *dupondius* (237-159 grs.), *as* (143-121 grs.), and *semis* (circ. 67 grs.). In spite of the

<sup>23</sup> Grueber, *op. cit.*, pp. 213 and 244.

variation in the weight of individual specimens these figures indicate pretty clearly a quartuncial standard of orichalcum.

(6) The coins of P. Carisius struck at Emerita in Spain (23 B.C.) are copper *asses*, examples of which give the following weights: 176, 174.4, 166.2, 164.5, 156, 137, 144.5, 152.2, 192 grs. We see then that their standard is not, as Mr. Grueber maintains, semuncial of copper, which would give a normal weight of 210.5 grs., but quartuncial of bronze (105.25 grs.) struck in its copper equivalent at a ratio of 1 to  $1\frac{2}{3}$ , giving the normal weight as 175.42 grs.

### § 9. *The Augustan Reform.*

From the foregoing survey of the bronze coins issued between the years 46 and 20 B.C. we see into how chaotic a state the currency had fallen. However, the six groups of coins just considered may be regarded as so many experiments providing the material from which Augustus succeeded in devising an intelligible system destined, in its essential features, to remain practically unchanged for two and a half centuries.

Thus, he adopted and made permanent the quartuncial standard, and upon it based a system, modified somewhat from that of Antony, consisting of *sestertius*, *dupondius*, *as*, and a small coin generally considered a *quadrans*. The two higher denominations had not previously been issued at the Roman mint, although they had already made their appearance in Gaul, Asia Minor, and the East. The metal, *orichalcum*, in which the new *sestertii* and *dupondii* were struck, was similar to that which had been introduced in the CA coins mentioned above. This compound of copper and zinc

henceforth takes the place of the traditional yellow bronze, *i. e.* copper alloyed with lead and tin. It does not appear that this newer metal was considered more valuable than the yellow bronze previously used, from which it was in its general appearance practically indistinguishable. Both metals were rated higher than pure copper at about the proportion of  $1\frac{2}{3}$  to 1. So that the adoption of orichalcum by Augustus was probably due to the fact that it possessed greater durability, and was more easily fused.

The *as* and *quadrans* were of almost pure copper, and, like the coins of Q. Oppius and P. Carisius, were struck at  $1\frac{2}{3}$  the weight of their theoretical bronze equivalents. We see therefore the introduction of the bimetallic principle into the Roman system.<sup>24</sup>

The reason for introducing copper, instead of issuing all the denominations in bronze or orichalcum, is not difficult to guess. In all his projects Augustus thought and acted "imperially". In many of the Greek-speaking parts of the Empire and in Spain, copper had become the medium for small change. The yellow bronze of Rome, being intrinsically of greater value, was not always readily interchanged with provincial copper; hence the obvious advantage of issuing the *as*, or unit of the Roman system, in copper, which in no degree complicated the money matters of the Roman, but enormously facilitated those of the provincial.

The date of the reform is given by Dr. Willers as

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<sup>24</sup> Canon Beanlands has worked out an interesting and ingenious theory with respect to the adoption of the bimetallic system of bronze and copper. See his paper on the "Origin of the Augustan Sestertius", pp. 187 ff. of this volume.

23 B.C., by Sig. Laffranchi as 19 B.C.,<sup>25</sup> and by Mr. Grueber as 15 B.C. Possibly Dr. Willers' date is to be preferred, although, as far as our present study is concerned, the precise date is unimportant compared with the far-reaching results of a reform which may justly be said to constitute the turning-point in the history of the Roman coinage.

The denominations and normal weights of the reformed bronze system are:

Sestertius	= 421	grs.	= 27.25	grs.	= 24	scripula
Dupondius	= 210.5	„	= 13.6	„	= 12	„
As	= 175	„	= 11.3	„	= 10	„
Quadrans (?)	= 44	„	= 2.9	„	= 2½	„

It is generally agreed that the *sestertius* was issued at one ounce (421 grs.), and the *dupondius* at half an ounce, although the latter shows considerable irregularity of weight.

The question of the weight of the *as* relative to that of the *dupondius* has been misunderstood by many writers, and consequently requires some further consideration. Mr. Grueber states, "It is clear from the evidence of these two coins (viz. *as* and *dupondius*) that in currency *orichalcum* was rated at nearly double the value of copper, and as the *as* weighed about 220 grains, the standard was semuncial, the same as was introduced in 88 B.C., so that in this respect there was no change".<sup>26</sup>

The three statements here made are obviously intimately connected together. But the evidence on which Mr. Grueber relies, namely, that derived from

<sup>25</sup> Willers, *Geschichte der Römischen Kupferprägung*, quoted by Laffranchi, *Riv. it.*, 1914, vol. xxvii, pp. 325-7.

<sup>26</sup> *Op. cit.*, p. 241.



the coins themselves, does not, I venture to maintain, corroborate the conclusions at which he has arrived.

(1) Fifty-six *asses* in good condition, struck by the moneyers of Augustus, give an average weight of 168.7 grs., and only in very exceptional cases is an example of the *as* found to approach as much as 200 grs.; 220 grs. appears, therefore, a disproportionately high estimate. Continuing this investigation from the Augustan down to the end of the Flavian period a similar result is obtained. Thus by weighing several hundreds of *asses*, struck between 17 B.C. and A.D. 96, we have conclusive evidence to show that during the first century of the Empire the normal weight of the *as* remained practically fixed, and that it was certainly considerably less than 200 grs. We cannot, therefore, regard it as being based on a semi-uncial standard.

(2) Since the *sestertius* was fixed at the normal weight of one ounce of *orichalcum* (421 grs.) it follows that the *as* would be worth 105.25 grs. of the same metal, of which the copper equivalent would be 175.5 grs., and this closely corresponds with the average weight as stated above.

(3) It is evident, moreover, that between 88 B.C. and 20 B.C. the normal weight of the *as* had fallen from  $\frac{1}{2}$  to  $\frac{1}{4}$  ounce.

I have so far referred to the smallest coin of the series as a *quadrans*, since it is so designated by Mr. Grueber.<sup>27</sup> It is evident from its metal and weight that it cannot be a *semis*; which was the view formerly held by numismatists. But the question has

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<sup>27</sup> *Num. Chron.*, 1904, p. 241.

been raised whether this little copper coin was intended to pass for a *quadrans* or a *triens*. Since the coins bear no marks of value we have only the consideration of weight to guide us; and this, particularly in the case of bronze and copper coins, only warrants deduction on somewhat broad lines.

The result of weighing eighteen well-preserved examples of these coins gives an average of 47.6 grs., which is rather above a quarter of the normal weight of the *as* (*i. e.* 43.9 grs.); and, since it may be taken as an axiom that the nominal weight is invariably greater than the average, we should naturally expect to find the nominal weight of these coins appreciably higher than 47.6 grs.

Theoretically a *triens*, or third of an *as*, should weigh 58.5 grs., and allowing for depreciation in weight through wear, which is generally greater in the case of copper coins, it seems by no means improbable that the average of 47.6 grs. implies a nominal weight of 58.5 grs.

Of the eighteen coins examined many specimens were found to weigh over 52 grs., and some as much as 57.8 grs.

Since, however, there appears to be no outside evidence for the existence of a *triens* under Augustus, and the mere variation in the weight of the coins counts for little, it is reasonable to regard these small copper pieces as *quadrantes*.

E. A. SYDENHAM.

(*To be continued.*)

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