

Phanes: A Die Study*

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Although the staters bear the most elaborate inscription of any electrum coins, the Phanes series is still shrouded in mystery. Signed by a certain Phanes, these coins have been attributed to a wide range of issuers: a city (Ephesus or Phanai), a temple (the Artemision of Ephesus), the community of a deity (the god Phanes known from Orphic sources), a leader of mercenaries hired by the Persian king Cambyses (a certain Phanes mentioned by Herodotus¹), and persons of that name who are not attested in written sources: dynasts, merchants, owners of gold mines, bankers, and officials of various authorities.² While some proposals are more plausible than others, there is not much hope that the problem can be solved without more—and better—evidence. The aim of this chapter is to arrange the evidence known so far by providing a die study of all the relevant coins. Minor questions such as the spelling of the issuer's name can be settled this way, and the overall picture becomes clearer.

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1. Hdt. III.4 and 11.

2. Furtwängler 1982: 5 gives an overview of earlier suggestions. See also Boardman 1980: 101 f. (Phanes a merchant); Münsterberg 1912: 23 and R.-Alföldi 1982: 4 (a tyrant); Kastner 1986 (the town Phanai on the island of Chios); and Rebuffat 2000 (the Orphic deity Φάνης).

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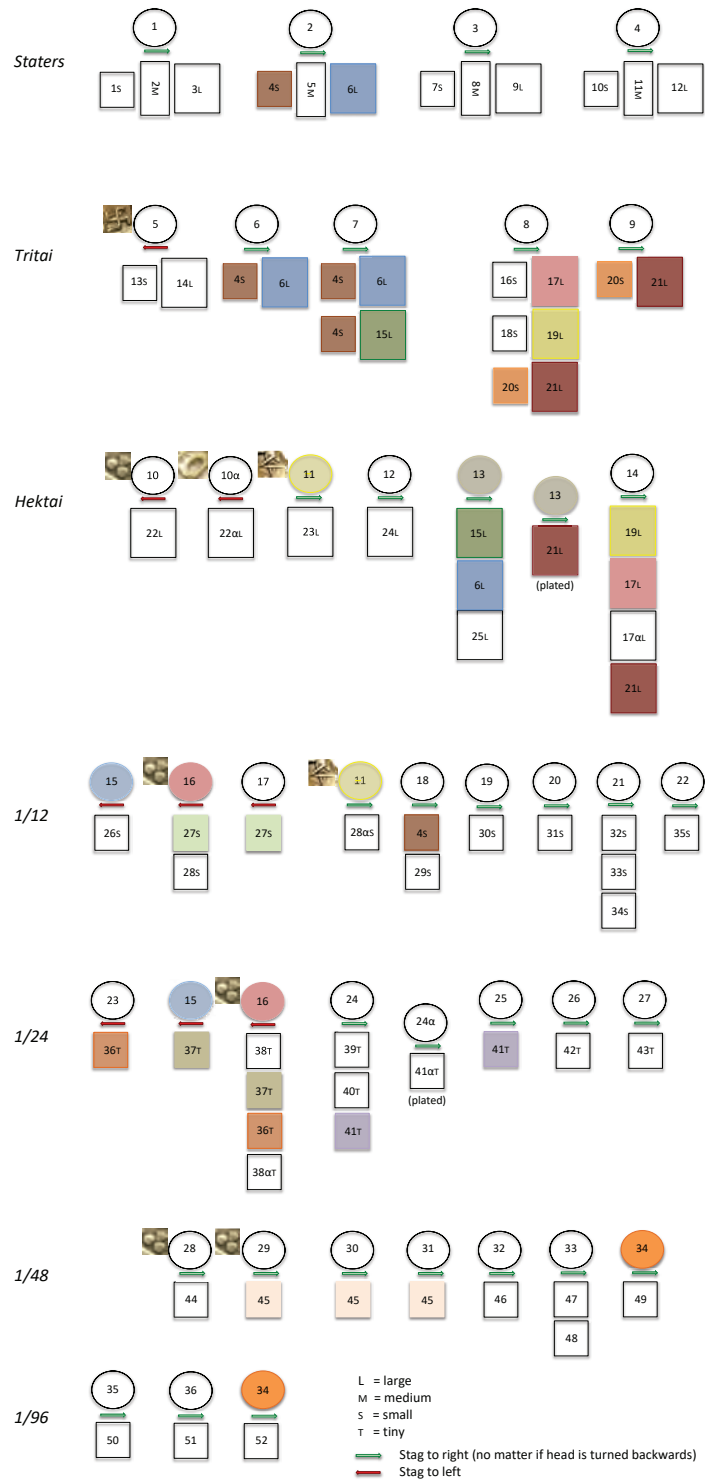


Figure 1. Phanes series, diagram.

1. THE STRUCTURE OF THE SERIES

The series falls into seven denominations, from staters down to ninety-sixths, according with the usual divisions of the Milesian standard.³ The two highest denominations are signed, while the smaller ones are anepigraphic. The coherence of the series has always been recognized from the uniformity of both style and fabric, and from the deliberate changes in the obverse type: a walking stag for staters and tritai, the protome of a stag for hektai, twelfths and twenty-fourths, the head of a stag for forty-eighths and ninety-sixths. The die study reveals that this pattern is mirrored by differences in the size, and combinations, of the reverse punches.

For the staters three different reverse punches were applied: a large square punch and a small square punch at the sides, and a medium-sized rectangular punch in between. The way these punches were used and further questions of the fabric will soon be dealt with; what matters here is the disposition of the reverse punches according to denomination. For the second largest denomination, the tritê, the medium-sized oblong punch was omitted (it was used only for staters). For the third largest denomination, the hektê, only the large square punch was used. For the twelfths the small square punch was used. Given that staters were struck by applying three different punches side by side, the pattern seems to follow from itself. Since it was impossible to continue this procedure for minor denominations, smaller punches were produced for twenty-fourths, forty-eighths, and ninety-sixths. There is no reverse crosslinking among the three smallest denominations. The system of decreasing both the number and size of the reverse punches applied is strictly maintained down to tiny dimensions. Though the punches look rough and random, there is method in them. The mint in charge was well-organized and experienced (Fig. 1).⁴

Among the medium denominations, there is also some crosslinking of obverse dies. One die (obv. 11) was used for both hektai and twelfths, two others (obv. 15 and 16) were in use for both twelfths and twenty-fourths, and a fourth one (obv. 34) was used for both forty-eighths and ninety-sixths. None of the four dies differs in size or style from its counterparts (as mentioned above, the same kind of image was used for hektai, twelfths and twenty-fourths), but it is noteworthy that two of them (obv. 11 and 16) have symbols in the field: obv. 11 has a pentagram in front of the stag protome; obv. 16 has three pellets at the same position. There are more dies of this kind: obv. 5 which is used for tritai has a swastika beneath the stag; three pellets also occur in front of the stag protome/stag's head on obv. 10 (hektê) and obv. 28 and 29 (forty-eighths). The circular ornaments on obv. 10a may be of the same kind. It is not clear whether these symbols should be interpreted like the symbols on later Greek coins, i.e., as markers for tranches of metal or the responsibility of mint-officials.⁵

The Phanes coins with supplementary symbols stand apart: they are not linked to the main group of the series. Perhaps they form a side-group which was produced later or at a different place, and it may be that the mint-master(s) did not always use the obverse dies in accordance with the original plan. This is, of course, speculation, particularly since the side-group in question cannot be defined as strictly as would be desirable. Dies with symbols are linked to many more dies without symbol (obv. 15, 17, 23, 30, and 31), and while it is true that several dies with symbol (obv. 5, 10, 10a, 16) and two of the linked dies without symbol (obv. 15 and 17) share another special feature (the stag faces left instead of right), it must be added that further three dies with symbol (obv. 11, 28, and 29) and two linked dies without symbol (obv. 30 and 31) keep to the usual direction. So we must not jump to conclusions. Suffice it to say that a certain part of the series follows rules of its own without being very consistent.

3. There are no half-staters.

4. Denominational cross-linking among the reverse punches has already been established for other electrum series by Weidauer 1975: 54 f.; Fischer-Bossert 2016a: 4; Hilbert 2018: 33–36.

5. Grazing stags in contemporary East Greek vase-painting are frequently surrounded by floating ornaments such as swastikas, rosettes, croix pattées, quatrefoils, and the like.



Figure 2. Ephesus tetradrachm. Berlin, Imhoof-Blumer (obj. no. 18216505, 15.12 g, 24 mm). Image enlarged.

In the other parts of the series, a major die chain crystallizes: this is what I have called the “main group.” The chain falls into two parts, a larger and a smaller connected by a plated singleton (22a). Both its dies being worn out, the coin in question may well be struck by a contemporary counterfeiter who stole the dies but it at least proves that both parts of the chain were produced not far apart from one another.⁶ The first part of the main group contains staters (obv. 2), tritai (obv. 6 and 7), hektai (obv. 13) and twelfths (obv. 18); the second part consists of tritai (obv. 8 and 9) and hektai (obv. 14). Some minor denominations (like the twenty-fourths of obv. 24 and 25) may belong to the main group, but no die link can of course be made.

The main group forms something like a core of the series. This will be important for questions of authenticity and for judging the hoard evidence. However, defining a main group and a side-group does not mean that the rest of the series is not integrated into one of them. Quite the opposite. There are numerous obverse dies which are isolated, at least for the present. Some of them are linked to more than one reverse punch (obv. 21 and 33), and since the relevant die combinations are attested by several specimens we would expect further linkages. Furthermore, the style of these isolated obverse dies, and the fabric of the coins which they struck, do not differ from those of the main group. It is the side-group that is somewhat special, but even here style and fabric do not diverge.

2. DIES AND PUNCHES

The obverse dies of the Phanes series bear the image of a male fallow deer, the shape of the antlers showing that it is a member of the European subspecies (*Cervus dama dama*).⁷ Staters and tritai depict the stag sniffing at an ornamented blossom growing out of the groundline. On the minor denominations the image of tranquility changes to one of agitation: hektai, twelfths, and twenty-fourths show the protome of a running stag looking backwards, and forty-eighths and ninety-sixths have simply the stag’s head on an upstretched neck (not the lowered head of the staters and tritai). Scholars advocating an attribution of the series to the Ephesian mint refer to the reverse image of the late Classical and Hellenistic coins of Ephesus (Fig. 2).⁸ The resemblance is striking, but only in the

6. It should be mentioned that fourrée coins are a common feature of the Phanes series. Besides 22a, there are 13e, 24i, 27a (if so), 31c, 39c, 43aa, 45a, 45b, and 45c.

7. Tietz 2001: 194–196. Karwiese 2014: 320 connects Phanes’ stag with the one displayed by some reverse punches of Miletus (such as Weidauer 1975: 29 no. 126). However, the Milesian stag appears to be a red deer (*Cervus elaphus*) or a roebuck (*Capreolus capreolus*) rather than a fallow deer; see Hilbert 2018: 77–79.

8. For the early bee/stag tetradrachms of Ephesus, see Kinns 2002a; Kinns 2002b. For the stag as Artemis’ sacred animal, see Bodson 1978: 127 f.; Bevan 1986: 108. For the alleged Ephesian symbolism of Phanes’ stag, see Newton 1870: 238; Babelon 1895: 330 f.; Robinson 1958: 587; Guarducci 1967: 262–64; R.-Alföldi 1981: 20. *Contra*: Gardner 1918: 71; Spier 1990: 117 f.; Karwiese 1995: 121. Weidauer 1975: 68, agrees with the traditional attribution to Ephesus, but for a different reason: Phanes’



Figure 3. Phanes stater. Lanz 158, 2014, 252 (14.10 g). Reverse only illustrated. Image enlarged.

case of Phanes' medium denominations. The $\sigma\eta\mu\alpha$ of Phanes, i.e., the image of the staters and tritai, looks different.

Although varying greatly in size and shape, all reverse punches share the same basic pattern. The surface consists of a multiplicity of ridges which merge with and cross each other. With the larger punches (e.g., rev. 2M) the pattern can resemble a streetmap, but as a rule regularity seems to be avoided. In many cases the ridges are flattened at the upper surface. Sometimes the pattern is embellished by one or two square dots (rev. 9L, 31S, and 41T). Regular-looking details such as right angles (e.g., rev. 25L) and triangles (rev. 14L, 21L, 22L, 24L, and 25L) occur, but they are not a prominent feature. While the patterns often look as though a device like a screwdriver had been used for creating the ridges, the ridges are not very uniform. In a few cases they are not straight but angled (for instance, rev. 6L and 36T).

3. FABRIC

Liselotte Weidauer has shown that the multiple reverse punches of electrum staters and tritai were not applied simultaneously to the flan in order to achieve the best results for the obverse image, but one after the other.⁹ The three or two punches were not mechanically connected to each other; hence the varying spaces between the punch imprints. In a few cases, an imprint was partially destroyed by another which was applied afterwards: on the stater 1g the mark of the small punch (rev. 1S) overlaps the imprint of the oblong punch (rev. 2M) (Fig. 3). As a result of this procedure, the obverse image was not produced in one blow; rather it was achieved successively. It comes as no surprise that areas of "shifted strikes" on the obverse can be found at those spots under the place where the strikes of two reverse punches adjoin.¹⁰ A crucial spot is the turned-back foreleg of the stag; this leg is hardly ever sharply struck. The London stater (1h) shows another type of error: after the first or second punch strike, the flan was turned around a little, resulting in a doublestrike. However, this doublestrike is hard to recognize unless die matches are compared, and so it puzzled generations of numismatists. The body of the stag and the legend are elongated; the third letter *nu* appears twice, a "clerical error" once leading to bold ideas about Archaic Ionic declension and Phanes' gender (see below).¹¹

reverse punches were reminiscent of those of the Ephesian bee electrum coins. Likewise Kroll 1981: 5. Another view is held by Spier 1990: 117. For the argument that the personal name rules out an attribution to the city of Ephesus, see MacDonald 1905: 52; Furtwängler 1982: 23 f. For the 'counsel of stags' as metaphor for a community of rulers in Aššurbanipal's annals, see Borger 1996: 205, B §2, I 9.

9. Weidauer 1975: 55 f.

10. Weidauer 1975: 56 is wrong when she writes, "es ist erstaunlich, daß die Vorderseiten der Münzen bei diesem Prägevorgang keinen Doppelschlag davongetragen haben."

11. Newton 1870: 239, "the third letter of the first word is so blurred that it may be either E or I, or possibly N." Gardner 1878: 263 had it nearly right: "the space between those letters appearing to result from some accident to the die."

Otherwise the fabric of the Phanes series is fairly uniform. The flans of the staters and tritai are elongated and sometimes ovoid. Edge cracks from cold striking occur rarely, and while the obverse image is usually larger than the flan, the specimens of all denominations are well-centered.

4. ALLOY

No authoritative metal analysis across all denominations of the Phanes series has been made; thus a few individual analyses must remedy this lack of systematic study. The data are somewhat impaired by the fact that two different methods were applied, and in two cases the results raise the suspicion that the relevant specimen is a modern fake rather than an ancient coin.

First, in the early 1980s Emmerich Pászthory made an X-ray fluorescence (XRF) analysis of the Frankfurt stater (4a).¹² Second, two fractions kept by the Paris Cabinet (32d, 51h) have now been analyzed by Maryse Blet-Lemarquand and Frédérique Duyrat by using laser ablation (LA-ICP-MS).¹³ Third, a stater now kept by a European business group (2d) has been recently analyzed by using XRF.¹⁴ These data are supplemented by recent XRF analyses of a hektê and four fractions in a private collection (17g, 28f, 39a, 40†, and 44a); spots on both sides were tested in each case.¹⁵ Last, eleven coins in another private collection—two staters (1a, 3a), three tritai (5b, 6g, 11a), three hektai (13b, 14a, 19b), and three minor fractions (34 [not in the catalogue], 36c, and 51e)—have been analyzed during an exhibition of electrum coins organized by the Israel Museum, Jerusalem (see Gitler et al., this volume). These analyses have been done by using a handheld XRF device the margin of error of which is greater than with other XRF devices. The results can be found in Table 1.

Regardless of the analysis method, not less than 15 coins fall in a range of values that may be called one and the same alloy: the staters 1a and 3a, the tritai 5b, 6g, and 11a, the hektai 13b, 17g, and 19b, the twelfths 28f, 32d, and 34(-), the twenty-fourths 36c and 39a, and the forty-eighths 51e and 51h. The alloy in question is poorer in gold and also more variable than that of the royal Lydian coins.¹⁶ The gold content fluctuates between 40 and 47%, accordingly the silver content between 51 and 56.5%, and the copper content between 2 and 3.25%. Those specimens analyzed on both sides indicate that depending on the spot where the coin is tested the gold and silver percentages can vary by more than 1%.

Five other specimens show values different from the range that is defined by these figures. A stater (2d) and a twenty-fourth (44a) have a low gold percentage that is balanced by a high copper content. These are perhaps outliers.¹⁷ Another twenty-fourth (40†), however, produced values so unusual that it was closely inspected once again; it turned out to be a cast. The Frankfurt stater (4a) and a hektê (14a) do not fall into the range as well; in fact, the Frankfurt stater is suspicious for various reasons (see below).

Conclusively, a gold percentage of 40–47 % may be regarded as a specific for the minor fractions of the Phanes series. This appears invalid for some staters, however. Because of its questionable authenticity, the Frankfurt stater is unsuitable as evidence. What can be said is that the color varies: there is a tendency for the tritai to be darker than any other denomination. In contrast, the staters have

12. Pászthory 1982.

13. Blet-Lemarquand, Duyrat (this volume, nos. 40–41).

14. The analysis was done in 2018 with a FISCHERSCOPE X-RAY XAN 220. I am very indebted to the institution that now owns the coin for permission to publish the results here.

15. Personal communication. The XFR analyses were done in 2016–2017 with an Olympus Xpert SDD. I am very indebted to the collector for permission to publish his analyses here.

16. See Blet-Lemarquand, Duyrat (this volume), “Sardis Mint.” Furthermore, see Le Rider 2001: 91 f.; Cowell, Hyne 2000; Cowell et al. 1998.

17. The stater was tested at four spots on each side, and at my request, the twenty-fourth was tested twice to verify the unusual results.



Figure 4. Horse hektê. Triton 17, 2014, 317 (2.37 g, 10 mm). Image enlarged.



Figure 5. Pegasus hektê. Classical Numismatic Group 97, 2014, 217 (2.36 g, 10 mm). Image enlarged

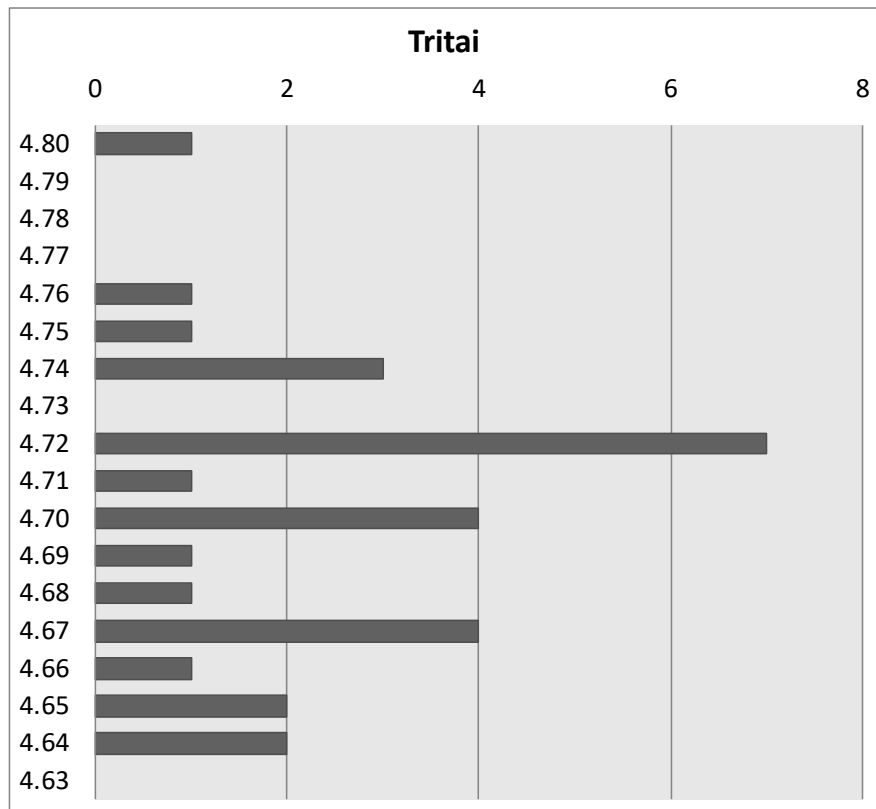
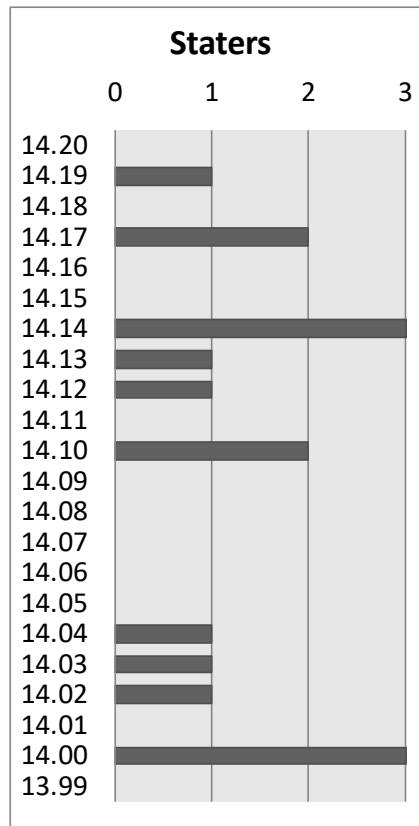
a silvery surface when worn. The appearance is corroborated by the most detailed XRF analysis of the stater 2d. The alloy in question is much poorer in gold than that of the minor denominations; the mean value is as low as 34.8%, counterbalanced by high silver and copper contents: 59.51% and 4.95% respectively (mean values as well). This is exactly the alloy already established for the twenty-fourth 44a. Obviously there is some consistency, but at the time being it cannot be stated yet whether this applies for more staters. As it seems, the mixture was considerably altered at some point. In any case there is evidence of a metrological irregularity.¹⁸

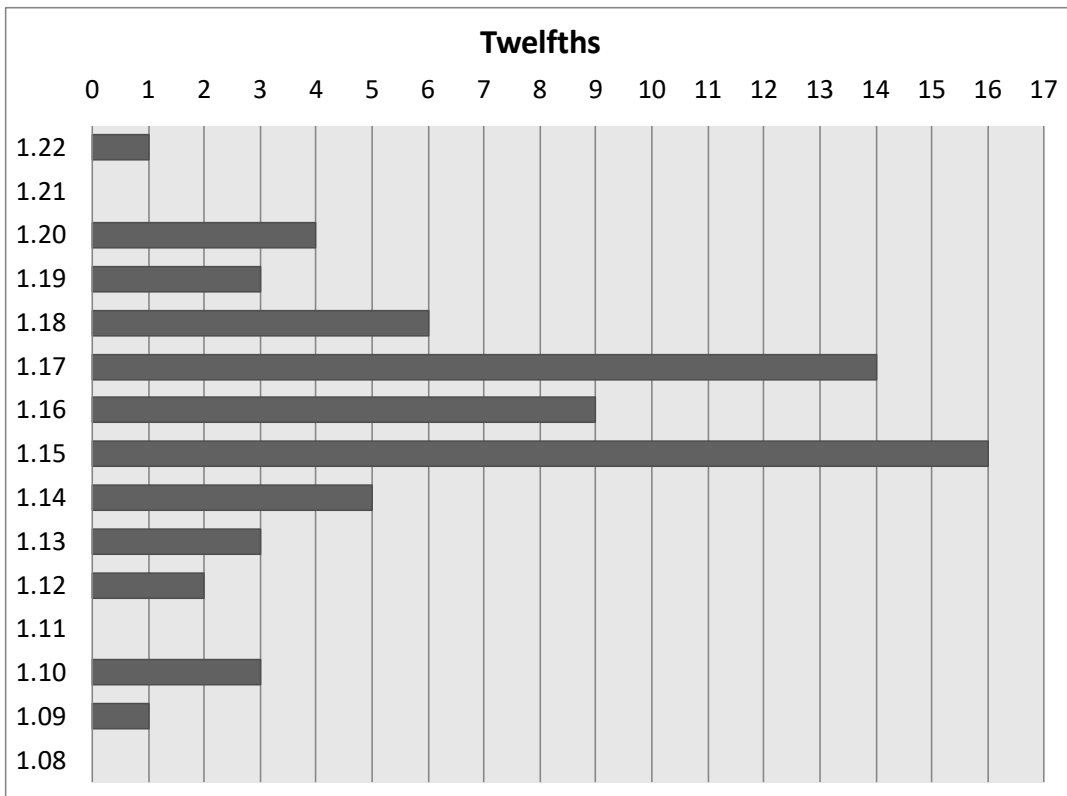
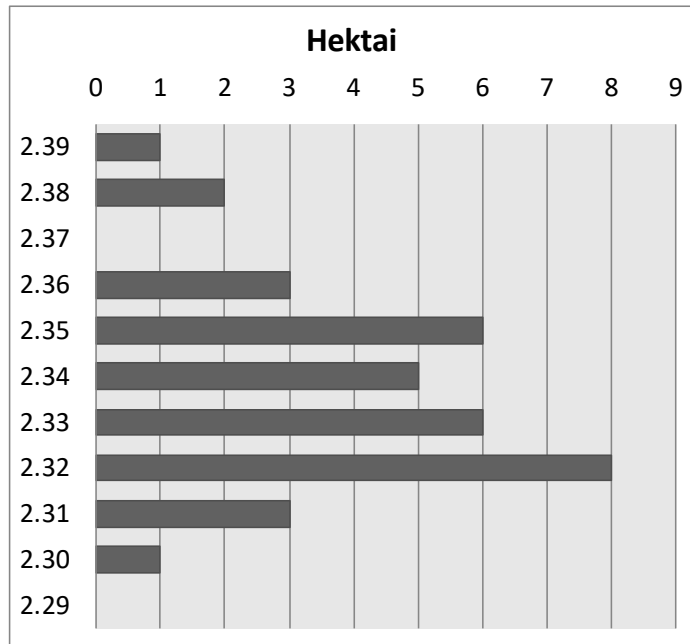
It may be added that the alloy of the minor fractions is similar to the averaged alloy of two other series of early electrum coins: the horse series (Fig. 4) and the Pegasus series (Fig. 5).¹⁹ Both these series were struck after the same weight standard as the Phanes coins. As to their fabric they are close as well, however the punch dies are embellished differently. Unlike the Phanes staters, the horse staters have side punches of exactly the same size, but as related tritai are missing it cannot be demonstrated by die links that the horse staters and the horse fractions are products of one and the same mint.²⁰ Without further metal analyses, those of trace elements in particular, it is hard to say how to interpret such equivalences.

18. Among the electrum coins of Cyzicus, staters appear to contain less gold than fractions: Guépin 1965; Cairns, Hutchinson 2001: 51, 53. The same imbalance is true for the electrum coins of Miletus; see Hilbert 2018: 100–06. Bodenstein's figures for the Phocaeian electrum staters are computed rather than detected; see Bodenstein 1976: 58 f. tab. 11. As to royal Lydian electrum coins the situation is not clear; cf. Cowell, Hyne 2000: 170, tab. 7.1. The only stater examined in this sample (Oxford, inv. HCR 6316, à la Babelon 1907: pl. II, 3) is not unequivocally part of the royal Lydian series.

19. Fischer-Bossert 2016a: 5 f. The data are supplemented and confirmed by three more specimens: Blet-Lemarquand, Duyrat (this volume, nos. 37–39). Similar figures were produced for a long run of "Ionian" electrum coins by Das, Zonderhuis 1964; cf. Keyser, Clark 2001: 111 tab. 7.3.

20. Blet-Lemarquand, Duyrat (this volume) note that the stater in Paris, Fonds général 39 (= Fischer-Bossert 2016a: 7, no. H4a) matches the alloy of the fractions.





5. METROLOGY

The results of the frequency table are consistent for all denominations but one (Tables 2–8). Among the 29 tritai included in the analysis, there is a clear peak at 4.72 g.²¹ Since nearly all ancient coins are more or less worn, it is as a rule desirable to set the weight norm either slightly above the mean value (for example, when the distribution pattern resembles the Gaussian distribution) or in line with the most prominent peak. In this case the norm suggested by the peak proves correct when the minor denominations are calibrated: the method produces a sequence from tritai to ninety-sixths of 4.72 g : 2.36 g : 1.18 g : 0.59 g : 0.295 g : 0.1475 g, which is in agreement to what can be said about the so-called Lydo-Milesian standard.²² It is the staters that do not keep in line. A glance at the frequency table (Table 2) reveals a very varied distribution. Rather than a continuous curve there are two clusters: a higher one comprising the weights between 14.10 g and 14.19 g, and a lower covering the weights between 14.00 g and 14.04 g (the latter with a tendency to its lowest weight).²³ Given the above sequence of norm weights for the lower denominations, the stater weight should be c. 14.16 g. This figure is well within the span of the higher cluster; ten specimens clearly conform with that standard. Six specimens, however, form a lower standard at c.14.02 g which is characteristic of the much later “Ionian Revolt Coinage” (see Wartenberg, this volume).²⁴ The coins concerned do not concentrate in one die combination but occur in both of the most important die combinations (for the somewhat erratic distribution of the stater specimens to four die combinations, see below). This may suggest that the Phanes series was struck over a short period of time, but one has to wonder why it is the highest denomination only that was reduced in weight. Were the staters struck at the end of the issue? It is noteworthy that the stater 2d the gold content of which is so much lower than that of the average small change coin of the same series belongs to the low-weight cluster (14.00 g). Possibly, the reduction of the norm weight for the staters went along with a readjustment of the alloy. For the time being, the evidence is insufficient; we need metal analyses of more Phanes staters, heavy ones in particular. In the end the pattern of the Phanes series may prove to be as deliberately deceptive as it was sophisticated.

6. PROBLEMS OF AUTHENTICITY

The 17 staters of Phanes known so far are products of four obverse dies, the distribution being quite uneven. The lion’s share—15 specimens—originate from two dies, while the other two dies (obv. 3 and 4) are represented by singletons. This alone would be a reason to become suspicious of the two single specimens. In addition, neither of them is crosslinked to a minor denomination, that is to say, their reverse punches are as unique as their obverse dies. However, the same goes for the 10 specimens struck from obv. 1, including the British Museum stater.

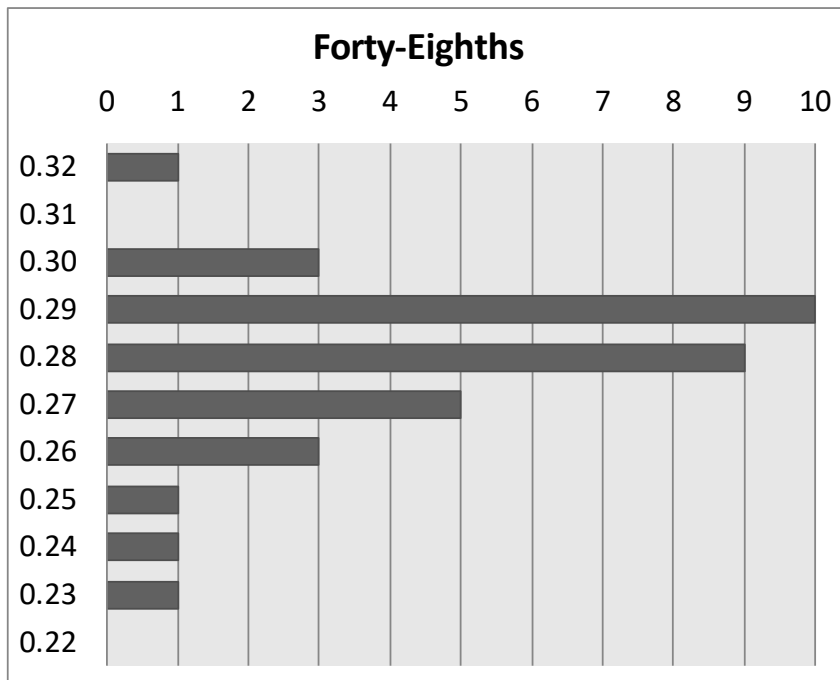
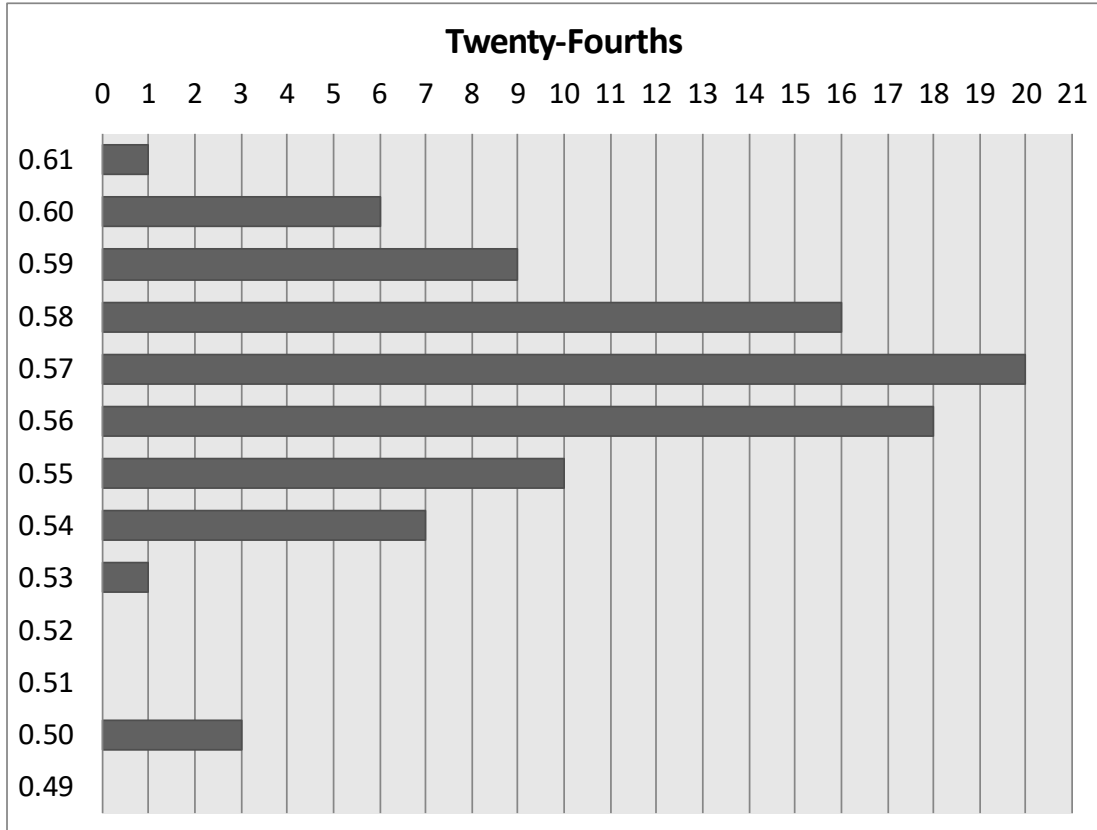
The first of the two singletons (3a) does not look suspicious in itself, for its style and details of depiction, legend, and reverse punches are well within the limits of variance, as well as its alloy. While the specimen is a little overcleaned (traces of the reddish gold patina occur only in the field around

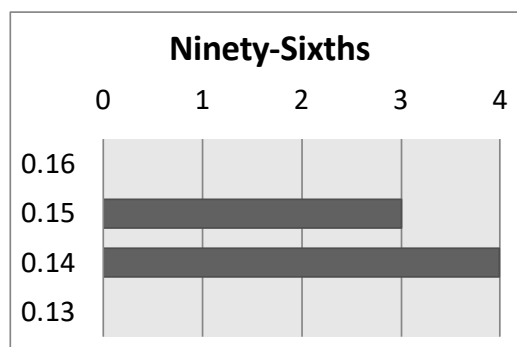
21. Plated and suspect specimens are omitted from the frequency tables. If a recorded weight is between two round figures (such as 0.545 g), the lower one (i.e., 0.54 g) is preferred.

22. For the Lydo-Milesian standard, see von Schrötter 1930: 390 s.v. “Milesischer Münzfuß” (K. Regling); *RE* XV, 2 (Stuttgart 1932), col. 1582 s.v. “Milesischer Münzfuß” (K. Regling); Cahn 1970: 183 f.; Kraay 1976: 27, 31, 330 (giving the figure of 14.1 g as well as 14.2 g). Interpreting the slight divergencies as development: Fischer-Bossert 2016b: 25.

23. One stater weighing 14.30 g is omitted here; for the reasons, see below.

24. Hitzl 1996: 151–53, has suggested that the astragalus weight from Susa (now in the Louvre, cf. Jeffery 1961: 343, no. 30; Stročka 2002: 95 f., fig. 10) weighing 93.070g is equivalent to 6,600 Milesian staters, or 220 Milesian minae. The stater weighed 14.015 g. The bronze astragalus was produced soon after the middle, or in the second half, of the sixth century, and is thus closer in time to the “Ionian Revolt Coinage” than the Phanes series.





the image),²⁵ the details of the shifting strike along the turned-back foreleg are fairly convincing. The shape of the flan looks more regular than with most specimens (but compare the Tkalec coin, 2b), but this is the only reservation one can have. The specimen may pass as genuine.

The second specimen (4a), at the Geldmuseum of the Deutsche Bundesbank (Frankfurt) raised doubts from the moment it first appeared in a Munich sale in 1973. The grounds for suspicion are obvious and have only increased since 1973, so that today the case is even more serious than it was over forty years ago.²⁶ First, there is a certain awkwardness of style, although condemning Archaic electrum coins on grounds of style alone can be a risky business. Second, the weight is very high (14.30 g) for this series.²⁷ Thirdly, there are two edge cracks, one of them large. More important, unlike all the other sixteen staters this one has square punches (rev. 10s and 12L) of more or less equal size:²⁸ given the system of graduated punch sizes this looks still more ominous. Finally, the pattern of the reverse punches (rev. 10s, 11M, and 12L) is reminiscent of that on the London stater (1g, i.e., rev. 1s, 2M and 3L), the only other Phanes stater known in 1973. The punch patterns of the third specimen to emerge, the Tkalec coin (2b), are different. A detail of the stag image that was eventually corroborated by staters that emerged only later is the blossom the stag is sniffing at,²⁹ although this detail was already known from the London tritè (10a). To sum up, the die study does not dispel the doubts about the Frankfurt stater. The metallurgical analysis published by Emmerich Pászthory in 1982 made him think that its alloy was natural electrum rather than an artificial mixture.³⁰ In the light of recent metallurgical research (see Gitler et al. this volume) this is unlikely to be the case with the Phanes series as a whole.

Two groups of unquestionable fakes, in both cases twenty-fourths, have been exposed in the course of the die study. First, three specimens of die combination 40 look very alike; two must be cast

25. The reddish gold patina, which is notorious for the Roman aurei found at Boscoreale in 1895, must not be accepted as an indication of authenticity when it comes to coins that have emerged recently for the first time. According to rumors, this patina can be fabricated today.

26. An absurd forgery based on the London and Frankfurt staters was seen on the market in the early 1990s: Hurter 1992–93: 11, fig. 1a (14.21 g). Like the Frankfurt stater, the legend reads ΦΑΝΟΣ ΕΜΙ ΣΗΜΑ.

27. R.-Alföldi 1981: 19, accepts this as the norm weight and thinks the much lower weight of the London stater (14.03 g) may be the result of wear.

28. The staters of the abovementioned series with the image of a horse (Fig. 4) have two side punch dies of equal size: Weidauer 1975: 31, nos. 138–140, pl. 16; Fischer-Bossert 2016a: 17, figs. H1–H4. 26 specimens from four obverse dies are known at present. All have the same pattern of reverse punches. It seems unlikely that a single stater of the Phanes series would adopt the reverse pattern of another coinage. Furthermore, it is unclear whether the horse series is accompanied by any minor denominations; this reverse pattern of the staters with two side punches of equal size could suggest that there was no intention to produce tritai and hektaï.

29. This is a detail not attested in the animal friezes of East Greek vase-painting.

30. Pászthory 1982. For natural electrum, see Ramage, Craddock 2000: 11. The hektè 14a has more or less the same alloy. This hektè and the die-linked twelfths (27a and 27b), all of them marked by a pentagram which is otherwise not attested in the series, share some features with the Frankfurt stater: an awkward style (note the clumsy legs and the smiling animal head), weird reverse punches and a glossy surface. All these coins need more research, reliable metal analyses in particular.

forgeries based on the third. As mentioned above, one of them (40†) was analysed for its alloy; the mixture proved to be highly unusual (Table 1). Once one is aware of the duplicates, the cast forgeries unmask themselves by their high weights and dull surfaces. The same goes for the second case, three specimens of die combination 46 which appear to be counterfeit cast copies of another coin that turned out to be genuine when inspected in 2013 (46b).

7. THE COIN LEGENDS

Although the legend of the British Museum stater (1h) is completely on the flan, it was hard to understand for a long time.³¹ Nearly half a century after the coin was brought to Britain Charles Newton decrypted the meaning of the sentence.³² The name of the issuer remained a problem, particularly since it was not obvious that the alleged third letter was the result of a double-strike.³³ Φαενώ “the bright one,” a female name that was thought to be an epiclesis of Artemis, was then deduced, and even when the alleged third letter was interpreted as a *nu* it seemed possible that the issuer was female.³⁴ Then the British Museum acquired a tritè of the series with the unequivocal legend ΦΑΝΕΟΣ (10a). The misleading evidence of the stater was gladly dismissed, and this was seemingly corroborated when the second stater that was to end up in Frankfurt appeared on the market (4a).³⁵ Everyone was ready to accept ΦΑΝΕΟΣ as the genitive form of the (male) name Φάνης, although it was believed initially that the alternative version ΦΑΝΟΣ³⁶ created a problem: according to sound laws established by modern philologists, the Archaic Ionic dialect, unlike the Greek *koinè*, does not easily turn the genitive ending –εος into –ους.³⁷ At the same time it was agreed that the name Φάνης does not obey the usual rules of declension, for it was then thought that the regular genitive would read Φάνητος.³⁸ In fact, Herodotus has the dative Φάνη rather than Φάνητι.³⁹ Disyllabic names like Φάνης seem to follow rules of their own. Günther Dunst pointed out that the genitive Κράτους is known for the similar name Κράτης, and he suggested the form Φάνο(υ)ς/Κράτους might even preserve the original declension.⁴⁰ Without knowledge of Dunst’s article, Wolfgang Kastner added that, while ΦΑΝΕΟΣ looked like the genitive of an *s*-stem of the third declension, non-Greek names of the same syllabic structure such as Μάνης, Γύγης, and Θάλης are not subject to the usual rules of declension.⁴¹ Be that as it may, the view that ΦΑΝΕΟΣ/ΦΑΝΟΣ must be interpreted as the genitive of a man’s name prevailed.

The whole sentence Φάνεος εἰμι σῆμα (“I am the badge of Phanes”) occurs only on the staters. It is possible that the sentence is abridged on obv. 2 where the last word σῆμα cannot be found (but it may well have been in the exergue, and off the flans of the extant specimens). Bearing the same image as the staters, the tritai have the possessive Φάνεος only. The anepigraphic minor denominations share

31. Mionnet 1833: 213, no. 896 “ΦΑΝΝΟΖΕΜΙΖ ΕΡΥ.” Borrell 1845: 65, “the legend has hitherto remained indecipherable.”

32. Newton 1870: 237 “ΦΑΕΝΟΡ ΕΜΙ ΣΗΜΑ.”

33. The name Φαέννης is attested: see Robert 1963: 67, n. 1.

34. Φαενώ Newton 1870: 238; Fränkel 1879: 29; von Sallet 1883: 148 f.; Bechtel 1905: 679, no. 5607; Schwyzer 1923: 343, no. 706; Dobretsberger 1961: 63. Φαννώ Kastner 1986: 6.

35. Robinson 1941–50: 48; Robinson 1958: 587; Franke, Schmitt 1974: 3.

36. ΦΑΝΟΣ occurs only on obv. 1 (stater) and 5 (tritè). The main group has ΦΑΝΕΟΣ throughout: obv. 2 (stater) and 6–8 (tritai). The legend on obv. 9 (tritè) is partially off the flan.

37. Fränkel 1879: 28; Kastner 1986: 6, but see Bechtel 1924: 68; cf. Schwyzer 1938: 249–51, 545, 578–80. Aristoph. *equ.* 1256 Φανός is nominative. On the eastern Ionic dialect in general, see now Miller 2014: 163 ff.

38. Pape, Benseler 1863–70: 1598 s.v. Φάνης; Robinson 1958: 587; Dunst 1975: 22. The form Φανῆς (i.e., Φανέας) with its genitive Φανήους and Φανείους respectively was never regarded as an option: Dunst 1975: 22; Masson 1977: 87 f. (reprinted in Masson 2000: 5 f.); cf. Corsten 2010: 443 s.v. Φάνης; Leschhorn, Franke 2002: 860. The genitive Φανέω is attested in the fourth century BCE: May 1966: 280 f. For analogous Greek names such as Πυθῆς, Μιμνής and Ἰσχής, see Neumann 1996. Another fourth-century magistrate ΦΑΝΗΣ at Leukai: Kinns 2010: 490, no. 6.

39. Hdt. III.11, 1–2 (twice).

40. Dunst 1975: 22; cf. Guarducci 1967: 264 “ο vale omikron (Φάνεος) ε ου (Φάνος, per Φάνους).”

41. Kastner 1986: 7. Nevertheless, Φάνης is a Greek name.

the subject of the stag, but the images are different. The badge of Phanes (probably referring to his personal seal) must be the walking stag sniffing at a blossom; nothing else makes sense. It has often been noted that the formula is quite similar to that of Thersis' seal: Θέρσιος εἰμὶ σῆμα· μὴ με ἄνοιγε "I am the seal of Thersis, do not break me" (Fig. 6).⁴² This parallel makes it clear that the word σῆμα does not necessarily refer to the emblem alone; the seal which carries the image can also be intended, but in the case of mass-produced items like coins this is of course unlikely.

8. PROVENANCES

There is a long debate about the provenance of the London stater (1h), although (or just because) its previous owner, Henry Perigal Borrell, did not describe the circumstances of its acquisition. In a short article he simply noted, "this unique coin I brought to Europe from Smyrna, in 1825." This was misinterpreted as meaning that he had acquired the coin in Smyrna.⁴³ In challenging Newton's attribution to Ephesus, Percy Gardner eventually claimed to have seen "a manuscript note of Mr. Borrell, the original possessor of the coin, which states that the piece was found at Budrun (Halicarnassus)." Not everybody trusted Gardner's statement, particularly since Barclay Head, who was certainly very familiar with the relevant records, noted "[the coin] was acquired [my emphasis] at Budrun."⁴⁴ When discussing the Frankfurt stater, Peter Robert Franke followed Head, while Liselotte Weidauer kept to Gardner.⁴⁵ In fact, no manuscript note by Borrell has ever been found. Amelia Dowler of the British Museum was so kind as to verify the documents. According to her, "the coin came to the BM as part of the Bank of England's collection in 1877, and I have checked the original Bank register for its collection. This does indeed state that the coin was 'found at Boudraum (Halicarnassus)' (Fig. 7). There aren't any further details apart from a description of the coin. Although the Bank's collection was on loan to the BM from 1865, the donation of the collection only happened in 1877. I wonder therefore whether Gardner (writing in 1878) was prompted by the arrival in the department of the Bank's own register?"⁴⁶

This is quite possible. One can imagine that Gardner was captivated by the coincidence between the supposed findspot and the native city of the *condottiere* Phanes mentioned by Herodotus.⁴⁷

42. Babelon 1895: 329; Seltman 1955: 28, fig. 5; Weidauer 1975: 63, n. 56; Spier 1990: 116, pl. 5F. For the seal, see *IG IV* 179; Furtwängler 1900: 36, pl. 7, 66; Jeffery 1961: 113, no. 7; Boardman 1968: no. 176. There is a seal with the Lydian inscription *es šadmēs mitratālīš*, "this (is) the sign of Mitratas," see Gusmani 1986: 153; Payne, Wintjes 2016: 92. Another Lydian seal inscription reads *manelim*, usually translated "I (am) of Manes," see Barnett 1950: 101; Gusmani 1964: 268, no. 56; Heubeck 1983: 66. Furthermore, there is a Lydian seal with the inscription *upnadtolim*, see Boardman 1998: 3, pl. I, 1. For the seventh-century coin legend *kukalim*, "I (am) of Kukaš," see now Dale 2015; Yakubovich 2017: 274–80. Various silver coins bearing the Lydian inscription *ifelim*, "I (am) of Ifes," might have been struck c. 400 BCE or even later; see Egetmeyer 2012. Most recently, a hemiobol of Sardis from the fifth century BC with the legend *m̄lim*[.]iš *qlādn̄lim* was published; see *SNG Turkey 10: The Yavuz Tatiş Collection* (Istanbul 2016) no. 725; Yakubovich 2017: 290; Payne forthcoming: 223–25; Schür, Tekin forthcoming (disputing the meaning of *-lim* as "I (am) of"). For artifact inscriptions reading in the first person singular, see Rumscheid 1999: 31 f.; Heubeck 1979: 110 f.; Philipp 1968: 21 ff.; Raubitschek 1968; Schweitzer 1963: 126 ff.; Burzachechi 1962. The concept of the 'speaking artifact' harks back to Bronze Age texts such as stories about rebellious artifacts (Isaiah 29, 16; 45, 9–10), see Neu 1988: 27 f.; Ünal 1994: 863.

43. Borrell 1845: 65; cf. Newton 1870: 237, "obtained by Borrell at Smyrna"; von Sallet 1874: 280, "welche [*scil.* Münze] Borrell in Smyrna erworben [...] hat." A watch dealer and collector of coins, H. P. Borrell (1795–1851) was a resident of Smyrna from 1818; see Mørkholm 1979–80: 15; Whitehead 1999; Kagan 2015: 83 f. Part of his collection entered the British Museum as early as 1833; Walker 1953: 76.

44. Gardner 1878: 263; Gardner 1879: 184 "[...] the electrum coin which I gave to Phanes was found at Halicarnassus (Budrun). This I find stated in Mr. Borrell's own handwriting in the Catalogue which he deposited at the Bank of England with his coins"; Babelon 1895: 329; Head 1911: 572; cf. Jeffery 1961: 351, "if the well-known elektron coin [...] was in fact found at Halikarnassus, as claimed [...]."

45. Franke, Schmitt 1974: 1, "[die Münze] wurde in Halikarnass angekauft, nicht gefunden"; Weidauer 1975: 19, "Fundort: Halikarnass." R.-Alföldi 1978: 76, "in Halikarnassos [...] gefunden."

46. *Per litteras*.

47. See above, n. 1. Gardner's attribution to Phanes, a leader of mercenaries in Caria, soon turned out to be irreconcilable



Figure 6. Thersis seal. Present whereabouts unknown. After Spier 1990: pl. 5f.

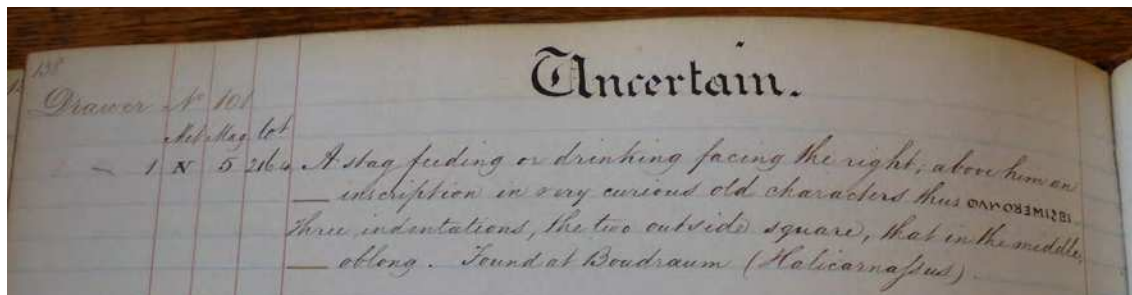


Figure 7. British Museum, Bank Collection, inventory book. Photo: Amelia Dowler.

Considering that Borrell was the first person to publish this stater when it formed part of his collection, it is highly unlikely that he would not have mentioned a findspot if he indeed had known it.⁴⁸ From the evidence available, it appears that there is no reliable evidence for the actual findspot of this coin and that the connection with Bodrum/Halicarnassus is based on some erroneous information added at a later stage in the inventory of the Bank of England.⁴⁹

As to findspots, the only fixed point is provided by a twelfth (26d) which was among the coin finds from the Artemision of Ephesus.⁵⁰ Another twelfth, the identity of which remains uncertain, is reported in a small hoard of otherwise Lydian electrum coins found at Ephesus in 1970 (CH IX 337).⁵¹ All remaining provenances are either imprecise or just rumors. According to a paper once delivered by Herbert Cahn, the tritê that ended up with the British Museum (10a) was originally acquired in Istanbul.⁵² A recent hoard of electrum coins found on Berezan island, Ukraine, is said to have contained another tritê (6g), but this seems unlikely.⁵³ More reliable is a note in *SNG von Aulock*

with the overall chronology; see Fränkel 1879: 28 f.; Babelon 1895: 329; cf. Kraay 1976: 23. Only by suggesting an impossibly low chronology for the stater, was Vickers able to return to Gardner's attribution (Vickers 1985: 19). A certain Phanes, possibly the mercenary leader, donated an Attic black-glaze *dinos* (dated to c. 550–525 BCE) to the sanctuary of Apollon Milesios at Naukratis: Flinders Petrie 1886: 18 pl. XXXIII, 218 Φάνης με ἀνέθηκε τῶπόλλων[ι τῶι Μι]λησίῳι ὁ Γλαύφο; Bernand 1970: 661, no. 179, 673, no. 323, pl. 28, 1; Möller 2000: 179, no. 6; Schlotzhauer 2006: 294–301, figs. 1–4; Herda 2008: 40, n. 215; Schlotzhauer 2012: 189, no. Nau 167, pl. 37 f–g.

48. Borrell used findspots known to him for mint attributions, for example *BMC Ionia*, p. 117, no. 5, pl. 3, 13, “Bank Collection” = Borrell 1845: 64, no. 1, “I have ventured to assign this anepigraphic and very primitive gold coin to Erythrae, firstly, on account of its having procured by myself from a peasant, who found it in cultivating a vineyard on the actual site of the ancient city; and, secondly, because the figure of a full-blown rose is seen on some of the silver coins of a later period of Erythrae.”

49. It is unlikely that Borrell received any information of the findspot after he published the coin in 1844/45. In the unpublished manuscript of his brother Maximilian Borrell, the Phanes stater, unlike many other Borrell coins, is listed without any further provenance or place of purchase (information from Ute Wartenberg; on M. Borrell and the manuscript, see Kagan 2015).

50. Head 1908: 85, no. 74.

51. Spier 1998: 330; Meadows, Wartenberg 2002: 35, no. 337.

52. See Lafaurie 1948: 5. According to R.-Alföldi 1978: 76, this tritê was found “in Ephesos selbst.”

53. Butkevych 2016: 55, but cf. Butkevych 2016: 40, “possibly attributed to Berezan complex by mistake.”



Figure 8. Frieze from Temple A at Prinias. Heraklion, Archaeological Museum. Photo: Hans Rupprecht Goette.

reporting that minor denominations of the Phanes series are usually found at Colophon.⁵⁴ Recently, Koray Konuk wrote the Tkalec stater (2b) had come “to light near the modern town of Torbalı (not far from Ephesus).”⁵⁵ Finally, hearsay: a stater (1c) and a tritê (12a) are said to have been found at Bayraklı (Smyrna).⁵⁶ If we assume that all of this is true, the Phanes series was circulating in central and northern Ionia.

9. HOARD EVIDENCE

Of the roughly 290 coins known from the Phanes series, only one came from an archaeological context: the twelfth that is usually listed among the coins from the “foundation deposit” (*IGCH* 1153) discovered by British archaeologists in the Artemision of Ephesus (26d). It turns out that the listing is not entirely correct. The “foundation deposit” of coins and jewelry underwent a long and controversial discussion, an account of which is given by Michael Kerschner and Koray Konuk (this volume). Thanks to the laborious research of Kerschner and Michael Weißl who re-investigated the material from both the old British and the more recent Austrian excavations, it has become clear that the “foundation deposit” (comprising various groups scattered in the Artemision cella) belongs to a stage of the sanctuary that is much earlier than the first dipteral temple which was constructed from c. 580–570 BCE onwards (i.e., the Artemision partly financed by the king of Lydia Croesus who is traditionally dated to 560–546).⁵⁷ This correlation had already been pointed out by the British excavators but was disputed by Anton Bammer from the late 1980s onwards.⁵⁸ Under the influence of Bammer’s work, the “foundation deposit” was for a while dated to the first half of the sixth rather than to the second half of the seventh century.⁵⁹ That period of confusion is over; the “foundation deposit” is now convincingly attributed to the context of the so-called *naos* II, a secondary phase of the earliest temple building. *Naos* II can be dated to the third quarter of the seventh century.⁶⁰

54. *SNG von Aulock* 7773, “Diese dem Typ nach in Ephesos geprägten Münzen werden regelmäßig in Kolophon gefunden.”

55. Konuk 2012: 45 f.

56. Personal communication. Such stories are not always to be trusted. The suspect Frankfurt stater (4a) is said to have been found near Ephesus; see R.-Alföldi 1978: 76.

57. Kerschner 1997: 175–82; Weißl 2002; Weißl 2005; Kerschner 2005: 134–42; Kerschner, Prochaska 2011; Kerschner 2015; Kerschner 2017: 46–48. For the dipteros, see now Ohnesorg 2007. It is widely agreed that the construction of the dipteral temple began at least a decade earlier than the traditional date of Croesus’ accession to power; cf. Kerschner, Prochaska 2011: 107, n. 236. The traditional dates of Croesus’ reign and the capture of Sardis have recently been challenged, and slightly modified, by Cahill, Kroll 2005: 605–608; Kalaitzoglou 2008: 46–53; cf. Kerschner, Prochaska 2011: 107, n. 234. Another, more drastic, revision is suggested by Wallace 2016.

58. Bammer 1988; Bammer 1990; Bammer 2004a; Bammer 2004b: 31; Bammer 2005: 205 ff., 211 ff.

59. For instance, see Le Rider 2001: 59 ff., especially 64, “il est vrai qu’une date trop proche de 550 n’est peut-être pas recommandable.” Even before Bammer’s contributions, Martin J. Price in the course of his research on the Asyut hoard had been advocating a general lowering of the dates for the early electrum coinages; see Price, Waggoner 1975: 122 f.; Price 1976: 274 f.; Price 1983: 4.

60. The contextual dating is that of Kerschner, Prochaska 2011: 82, n. 53. Kerschner states *contra* Bammer that the ‘foundation deposit’ was intentionally put into the ground; Bammer thought the layer in question had been submerged. The

Usually listed among the coins from the “foundation deposit,” the Phanes twelfth belongs to a group of four coins that were not found within, or around, the central basis in the eastern half of the temple cella. According to Barclay Head, these four coins were found “in the filling of the western basis.”⁶¹ Hence, these coins do not form a part of the “foundation deposit,” for their stratigraphic context is different. The “western basis,” “western platform,” or “western rectangle” is a structure in the entrance area of the temple cella, most likely the substructure of an altar constructed later than the central basis. According to Weißl and Kerschner, the western basis belongs to the third or fourth stage of the temple building, that is, the hypæthral *sekoï* C1 and C2 (the latter being the immediate predecessor of the dipteral temple).⁶² Thus, the burial of the four coins in question occurred in the fourth rather than the third quarter of the seventh century. This date suits the Archaic character of the Phanes legend well.⁶³

10. STYLE

The numismatic dating evidence can be corroborated by comparisons with East Greek vase-painting. The seventh-century “early Orientalizing” and “wild goat” styles are famous for animal friezes depicting grazing ungulates, notably goats, surrounded by hares, ducks, lurking lions, and other wildlife. Although less numerous than the wild goats, grazing stags are common and fortunately show a stylistic development. Examples from the early orientalizzing period (c. 675–650 BCE) have long legs and compact bodies; their appearance is a little stiff.⁶⁴ More reminiscent of the stag on Phanes’ stater and tritai are examples from the early wild goat style (c. 650–630): the body is elongated and slim, and the legs are further apart, producing a vivid appearance.⁶⁵ More or less contemporary with the early wild goat style vases are the stags on the frieze of temple A at Prinias, Crete (Fig. 8).⁶⁶

Even closer are stags of the middle wild goat style on vases from the last quarter of the seventh century (Figs. 9–10).⁶⁷ Thanks to the stratigraphy of findspots in Israel where a destruction layer caused by a raid of the Babylonian king Nebukadrezzar provides a benchmark, the chronology of the middle wild goat style is reliable.⁶⁸ This does not yet apply to the North Ionian production where the closest parallel can be found (Figs. 11–12).⁶⁹ Nevertheless, the stag of the Phanes series can sufficiently be compared with animals of the middle wild goat style (c. 630–600). Thus dating in the last quarter of the seventh century is confirmed.

The coin from the Artemision (26d) belongs to the side-group of the series. There is no need to be concerned about this, for there are no grounds for separating the side-group from the core of the series. Even if so, the side-group would imply the existence of the main group. Stylistically speaking, the images of the Phanes series are quite uniform.⁷⁰

revised date meets Dyfri Williams’ dating of the “pot hoard” pot, a vessel that contained a small part of the deposit (*IGCH* 1154); see Williams 1991.

61. Head 1908: 75; cf. Robinson 1951: 157 (no. II).

62. Weißl 2002: 327–33; Kerschner, Prochaska 2011: 88–91.

63. For the dating of the London stater to the late seventh century by its letter forms, see Newton 1870: 237; Fränkel 1879: 29; cf. Guarducci 1967: 262–264. For the chronological value of the closed *heta*, cf. Jeffery 1961: 64 f.

64. Amphora from Miletus: Cook 1998: 30, fig. 7.2; Kerschner, Schlotzhauer 2005: 10, no. 8, fig. 5.

65. Levy oenochoe in Paris: CVA *Louvre* II Dc pl. 6, 1–4; Käufler unpublished: 72 f., no. 1, fig. 23; Kerschner, Schlotzhauer 2005: 25, no. 37; Coulié 2014: 68–71, no. 2. Jug fragments from Miletus: Käufler unpublished: 81, no. 265, fig. 25. Stemmed dish from Miletus: Kerschner, Schlotzhauer 2005: 18, no. 33, fig. 18.

66. Beyer 1976: 33, pls. 21, 24, 28.1, 29.2, and 30.2; Adams 1978: 65–78, esp. 69, pl. 17 b; Rolley 1994: 139 f.; Mazarakis Ainian 1997: 225; d’Acunto 1995: 38; Lapatin 2002: 157–60; Pautasso 2013: 84. The dating is controversial; while a date in the last quarter of the seventh century is often preferred, I agree with d’Acunto’s suggestion (650–640 BCE).

67. Oenochoe in Zurich: Kerschner, Schlotzhauer 2005: 26, no. 49, fig. 23.

68. See Waldbaum, Magness 1997; cf. Schlotzhauer 2001: 299–301; Kerschner, Schlotzhauer 2005: 7, n. 24.

69. Dinos from Cerveteri, in Paris: Coulié 2014: 164–67, no. 41 (dated to 600–590 BCE); Schiering 1957: 49 f., pl. 12, 8.

70. Only a few dies of fractional denominations diverge: obv. 11, 22, 27, 31, and 34.

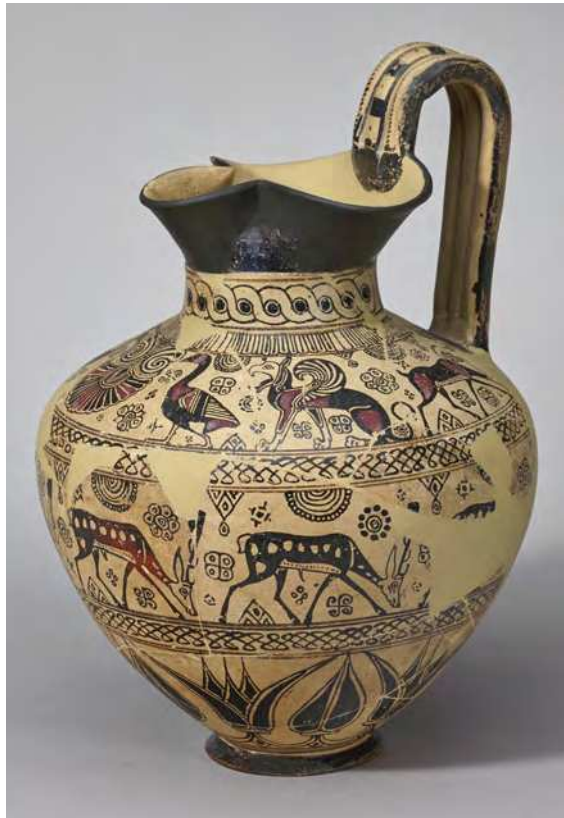


Figure 9. Oinochoe, ETH Zurich. Depositum in der Archäologischen Sammlung der Universität Zürich inv. L 376 (ETH 2). Photo: Frank Tomio.

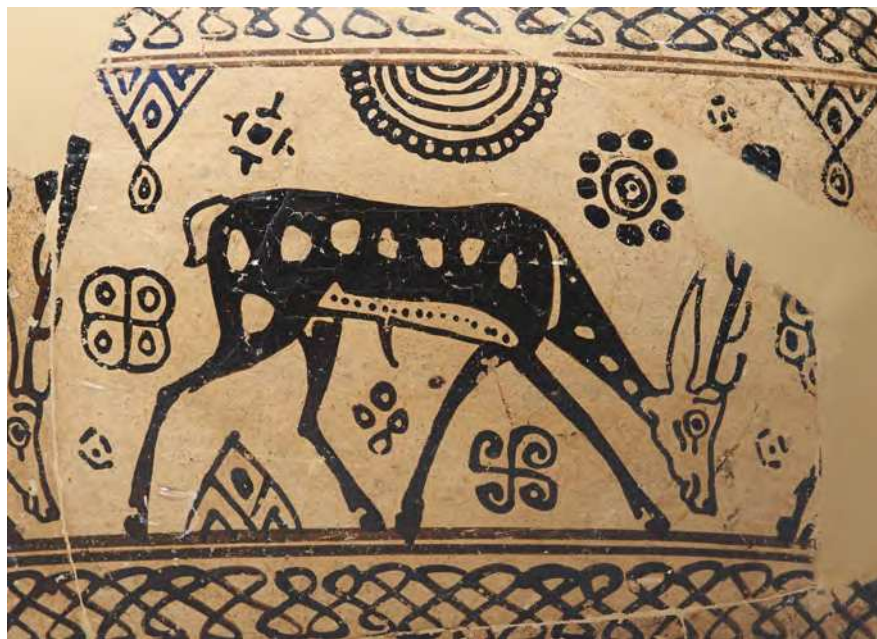


Figure 10. Detail of Fig. 9.



Figure 11. Paris, Louvre, inv. E659. Dinos from Cerveteri. After Coulié 2014: 165 fig.



Figure 12. Detail of Fig. 11..



Figure 13. Orthostate relief, Alaca Höyük. Photo: German Archaeological Institute, Istanbul (D-DAI-IST-4669).

Addendum: A small detail of the image of the Phanes staters and tritai cannot be found in contemporary vase-painting: the blossom the stag is sniffing at. Curiously, this detail is anticipated by an orthostate relief from the city-wall of Alaca Höyük (Fig. 13).⁷¹ This stag is part of a hunting scene; being tied, it serves as a decoy for other wild animals an archer is lurking on.⁷² Along with the city-gates of Alaca Höyük, the relief can be dated to the period of the Hittite Empire (Late Bronze Age, 15th–13th century BC).⁷³ For the place was abandoned when the Hittite Empire collapsed, the orthostates of the city-wall were long since buried by mud-brick debris when the earliest electrum coins were struck. So it is hard to say whether this is a mere coincidence, or whether the idea was passed on through the Dark Ages.

11. CONCLUSION

The Phanes series was issued in the last quarter of the seventh century when coinage was no longer a novelty. The legends of Phanes' staters and tritai show that the issuer thought that a distinctive type would not be enough. The abundance of types on coins in the "foundation deposit" gives us a glimpse into the markets of Ionia and Lydia, where numerous issuers were clearly competing with each other. Old and new metal analyses (cf. Blet-Lemarquand and Duyrat, this volume) have established that the royal Lydian series set high standards for weight and fineness.⁷⁴ Not everyone kept up with them. The metrological irregularities of the Phanes staters suggest that the issuer was experimenting in search of a more profitable standard. Whoever Phanes was, the coin legend was meant to call attention to him, to create something like a trademark. For the moment it cannot be said whether Phanes was a local ruler, a banker or a magistrate, nor where exactly his series was produced. In my view, none of the proposals to associate the Phanes series with other series is conclusive.⁷⁵ All that can be said for sure is that the Phanes coinage is one of the larger issues of early electrum coinage, and likely to be from central or northern Ionia.

71. Makridy-Bey 1908: 18, fig. 23; Bittel 1937: 49; Bossert 1942: 53, f. fig. 521; Barnett 1956: 221, f. pl. 19, 1; Akurgal 1961: 85, pl. 94; Bittel 1976: 197, fig. 225; Fornasier 2001: 201, fig. 78; Collins 2003: 75.

72. Wiesner 1942: 426, fig. 12; Helck 1968: 21, pl. 11; Mellink 1970: 18–20.

73. A date in the latest period (13th century BC) was suggested by Neve 1994. His approach is now criticised, and his datings modified, by J. Seeher (commentary in Neve 2018: 84–87).

74. See n. 16 above. Note that the "foundation deposit" contained four specimens of the Lydian "Walwet group"; Head 1908: nos. 43, 71–73 = Weidauer 1975: nos. 93, 99, 111, and 112.

75. See n. 8 above.

Catalogue

Preliminary Remarks: The catalogue is organized by denominations, from staters down to ninety-sixths. To indicate size and application of the reverse punches, four abbreviations are used (L = large, M = medium, S = small, and T = tiny). As there is no reverse crosslinking among the three smallest denominations, the reverse punches of forty-eighths and ninety-sixths do not employ these abbreviations.

Due to specimens that emerged after the catalogue was written, there are two new dies and five punches with additional numbers (obv. 10α and 24α; rev. 17αL, 22αL, 28αS, 38αT, and 41αT).

STATERS

- 1** Obv. 1 Fallow deer walking on horizontal line to right and lowering head to sniff at an ornamental blossom growing at the end of the line. Above, ΦΑΝΟΣ EMI ΣΗΜΑ (retrograde).
- Rev. 1S, 2M, 3L Three punches side by side: a rectangular one vertically in the center, two squarish ones at the sides. The sizes of the square punches are slightly different. The punches are individually applied as shown by varying distances between them, changing orientation, and sometimes tiny overlaps. However, the basic orientation is always the same; not even the square punches are turned (by 90° or 180°). The surface of the punches consists of numerous crossing and overlapping lines. In the course of minting the line pattern wears into an irregular surface consisting of dots and slim ridges. – Rev. 1S resembles rev. 36T, which is used for twenty-fourths (see below), but it is not the same die.
- a) 14.17 American Private Coll. III, 1 (seen June 2012)
- b) 14.14 Heritage 3061, 2018, 32049 (Acar 2018)
- c) 14.14 * Berk 169, 2010, 10 = Gorny & Mosch 185, 2010, 146 (Konuk 2012: 45 fig. 3.11; Karwiese 2014: 320 fig. 2; Wartenberg 2016: 48 fig. 2; Mittag 2016: 49, fig. 16) = Gorny & Mosch 159, 2007, 188 (van Alfen 2012: 26 pl. 3, 15; Linzalone 2011: 188 no. LN1074; Berk 2008: 10, fig.; said to have been found at or near Bayraklı)
- d) 14.14 Seen in commerce, Nov. 2013
- e) 14.12 Seen in commerce, 2012 (713)
- f) 14.10 Swiss Private Coll. I, 108
- g) 14.10 * Lanz 158, 2014, 252
- h) 14.03 * London, British Museum, inv. BNK,G.950 (*BMC Ionia*, p. 47, 1 pl. 3, 8; Mionnet 1833: 213 no. 896 [ΦΑΝΝΟZEMIZ EPY]; Borrell 1845: 65; Newton 1870: 237–239 [ΦΑΕΝΟΡ EMI ΣΗΜΑ]; von Sallet 1874: 280 f.; Head 1875: 264 no. 217 pl. VII, 4 [ΦΑΕΝΟΚ EMI ΣΗΜΑ]; Gardner 1878: 262–265 [ΦΑΝΟΣ EMI ΣΗΜΑ]; Fränkel 1879: 27 fig.; Head 1881: 2 f. pl. I, 9 [ΦΑΝΝΟΣ EMI ΣΗΜΑ “retrograde in Archaic letters, the third of which may be ε not ν”]; Gardner 1883: 25, 83 pl. IV, 8 [ΦΑΝΟΣ EMI ΣΗΜΑ]; von Sallet 1883: 149 [ΦΑΕΝΟΡ EMI ΣΗΜΑ]; Ridgeway 1892: 320 fig. 35 [ΦΑΝΟΣ EMI ΣΗΜΑ]; Babelon 1895: 327 f. pl. VI, 19 [ΦΑΝΝΟΣ EMI ΣΗΜΑ, “la troisième lettre demeure incertaine”]; Bechtel 1905: 679 no. 5607 [ΦΑΕΝΟΣ EMI ΣΗΜΑ]; MacDonald 1905: 50–52 pl. I, 3 [ΦΑΕΝΟΣ EMI ΣΗΜΑ]; Babelon 1907: cols. 57–66 no. 64 pl. II, 19; Head 1911: 571 f.

- fig. 294 [ΦΑΕΝΟΣ ΕΜΙ ΣΗΜΑ]; Münsterberg 1912: 23 [Φάνος ἐμὶ σῆμα]; Gardner 1918: 69 pl. I, 2; Schwyzer 1923: 343 no. 706 [ΦΑΕΝΟΣ ΕΜΙ ΣΗΜΑ]; Regling 1924: 20, pl. 1, 21; von Schrötter 1930: pl. 2, 14; Giesecke 1938: 45, pl. II, 3; Seltman 1955: 27 f. pl. 1, 19 [ΦΑΕΝΟΣ ΕΜΙ ΣΗΜΑ]; Robinson 1958: 587 pl. XXXIX, 3A [ΦΑ[?]ΝΟΣ ΕΜΙ ΣΗΜΑ]; Jeffery 1961: 353 [ΦΑΕΝΟΣ ΕΜΙ ΣΗΜΑ]; Guarducci 1967: 262–264 no. 4 fig. 116 [ΦΑΝΟΣ ΕΜΙ ΣΗΜΑ]; Bernareggi 1973: 28 pl. II, 6; Franke, Schmitt 1974: pl. 1, 1; Weidauer 1975: 18 f. no. 39 pl. 5; Kraay 1976: 23 pl. 3, 53; R.-Alföldi 1978: 76 fig. 3 [ΦΑΝΝΟΣ ΕΜΙ ΣΗΜΑ]; Boardman 1980: 101 f. fig. 118; Price 1983: 2 pl. 1, 5; Kastner 1986: 5–10 pl. 1, 1; Spier 1990: 117 f. pl. 5j; Howgego 1995: 4 fig. 1; Le Rider 2001: 25, 45, 56, pl. III, 5; Mitchiner 2004: 265, no. 230 [ΦΑΕΝΟΣ ΕΜΙ ΣΗΜΑ]; Nicolet-Pierre 2005: 120 fig. 73A; Karwiese 2014: 320 fig. 1 [ΦΑΝΝΟΣ or ΦΑΗΝΟΣ]) *ex* Bank of England Coll. (1877, according to the Bank's register "found at Baudroum [Halicarnassus]") *ex* H. P. Borrell (bought 1825 at Bodrum) [name ΦΑΝΝΟΣ resulting from double-strike]
- i) 14.02 Berk 209, 2019, 1 = Berk FPL 9, 2019, 51 = Berk 206, 2018, 1 = Berk 203, 2018, 1 = Seen in commerce, 2012 (715) [blossom visible]
- j) 14.00 Gemini 13, 2017, 64 (Picard 2018: 117 pl. XIII, 2) *ex* J. Rosen = Seen in commerce, 2012 (714)
- 2 Obv. 2 Fallow deer as before, its nose closer to the groundline. Above, ΦΑΝΕΟΣ ΕΙΜΙ [ΣΗΜΑ] (retrograde, letter forms similar to obv. 1. If it were included, the word ΣΗΜΑ must have been placed below the groundline).
- Rev. 4s, 5M, 6L Three punches side by side, as before. The ridges are much less worn than those on rev. 1s, and resemble basketwork (as rev. 15L). – Rev. 4s resembles rev. 1s above, but is a different die, not an earlier stage of rev. 1s.
- a) 14.19 Seen in commerce, 2014
- b) 14.17 * Chinese Private Coll. (Meadows and Kan 2004: no. 7) = Tkalec 29 Feb. 2000, 114 (Mitchiner 2004: 265 no. 231; Karwiese 2014: 321 fig. 4; Fischer-Bossert 2018: 20 fig. 6), "[this stater] reportedly came to light near the modern town of Torbalı (not far from Ephesus)" (Konuk 2012: 45 f.)
- c) 14.04 * Seen in commerce, 2012 (717)
- d) 14.00 Seen in commerce, 2012 (716)
- e) 14.00 * American Private Coll. II = Seen in commerce, 2012 (718)
- 3 Obv. 3 Fallow deer as before, its nose close to the groundline. Above, ΦΑΝΕΟΣ ΕΙ[Μ]Ι ΣΗΜ[?] (retrograde, letter forms similar to obsvs. 1–2, but the vertical stroke of the Φ extends beyond the circle. The last letter A appears to be missing).
- Rev. 7s, 8M, 9L Three punches side by side, as before. The pattern of the ridges is similar to revs. 4s–6L.
- a) 14.13 * American Private Coll. III, 2 (Konuk and Lorber 2012: 18 fig. 19, 1) [double-struck]
- 4 Obv. 4 Fallow deer as before, its nose close to the groundline. Above, ΦΑΝΟΣ ΕΜΙ ΣΗΜΑ (retrograde, letter forms similar to obv. 1, but the vertical stroke of the Φ extends beyond the circle).
- Rev. 10s, 11M, 12L Three punches side by side, as before. The rack pattern (and its stage of wear) is similar to revs. 1s–3L.

- a) 14.30 * Frankfurt, Bundesbank, inv. 0346/74 (Franke and Schmitt 1974: pl. 1, 3–4; Weidauer 1975: 63 n. 55; Göbl 1978: 59 fig. 1011; R.-Alföldi 1978: 76 [“an der kleinasiatischen Küste unweit Ephesos gefunden”]; R.-Alföldi 1980: pl. 1; R.-Alföldi 1981: 27 fig. 3; R.-Alföldi 1982: 1 fig.; Kastner 1986: pl. 1, 2; Göbl 1987: 99 fig. 31; Moesta and Franke 1995: 84, fig. 42; Rebuffat 2000: 226 pl. XXXVII, 1-2; Nicolet-Pierre 2005: 120 [“Malheureusement, les avis sont partagés sur l’authenticité de cet exemplaire remarqué”]) = Kastner 4, 1973, 89 [double-struck]

TRITAI

- 5 Obv. 5 Fallow deer as before, but to left. Below, swastika. Above, ΦANO[Σ] (from left to right).
Rev. 13s, 14L Two punches side by side.
- a) 4.72 * Seen in commerce, 2012 (720)
b) 4.68 American Private Coll. III (Konuk and Lorber 2012: 18, fig. 19, 2; Karwiese 2014: 320 fig. 3)
- 6 Obv. 6 Fallow deer as before, to right. Above, ΦANEOΣ retrograde. The spots on the body have usually been recut once or twice.
Rev. 4s, 6L
- a) 4.80 Swiss Private Coll. I, 16 [spots recut twice. Weight as noted may be too high because the balance used weighed only to one decimal point]
b) 4.74 * Berk 196, 2015, 3 = Seen in commerce, 2012 (719) [spots recut twice]
c) 4.72 Seen in commerce, 2012 (723) [spots recut twice]
d) 4.72 Gemini 12, 2015, 151 (Hilbert 2018: 79 fig. 229) = Seen in commerce, 2012 (726) [spots recut twice]
e) 4.72 * Seen in commerce, 2012 (722) [spots recut once]
f) 4.72 Berk 203, 2018, 2 = Seen in commerce, 2012 (728) [spots recut twice]
g) 4.72 American Private Coll. III = Classical Numismatic Group 66, 2004, 446 (Linzone 2011: 188 no. LN1075; Mittag 2016: 49 fig. 17), allegedly from the Berezan 2000 hoard, but most likely attributed by mistake (Butkevych 2016: 55) [spots recut twice]
h) 4.70 Gemini 13, 2017, 65 ex J. Rosen = Seen in commerce, 2012 (725)
i) 4.70 Swiss Private Coll. I, 17 [spots recut twice]
j) 4.70 Swiss Private Coll. I, 82
k) 4.69 Berk 156, 2007, 3 [spots recut twice]
l) 4.67 Classical Numismatic Group 91, 2012, 271 [spots recut twice]
m) 4.67 * Nomos 17, 2018, 168 = Triton 19, 2016, 2056 ex Classical Numismatic Group, stock 922163
n) 4.67 Gemini 5, 2009, 619 [spots recut twice]
o) 4.66 Roma Numismatics 17, 2019, 440
p) 4.65 Classical Numismatic Group 105, 2017, 290
q) 4.65 Chinese Private Coll. (Meadows and Kan 2004: no. 8) = Tkalec 19 Feb. 2001, 116 (Mitchiner 2004: 265 no. 232) [spots recut once]
- 7 Obv. 7 Fallow deer as before. Above, ΦANEOΣ retrograde.
Rev. 4s, 6L
- a) 4.64 * Lanz 158, 2014, 253 = Seen in commerce, 2012 (721)

- 8** Obv. 7.
Rev. 4s, 15L Two punches side by side.
- a) 4.70 Berk 192, 2014, 8 = Seen in commerce, 2012 (727)
b) 4.67 * Seen in commerce, 2007 (lost afterwards)
c) 4.64 * *SNG München* (20) 14 (Stumpf 1993: 214, no. 2; Karwiese 2014: 321, fig. 5) = Aufhäuser 8, 1991, 140
- 9** Obv. 8 Fallow deer as before. Above, ΦΑΝΕΟΣ retrograde.
Rev. 16s, 17L Two punches side by side.
- a) 4.76 * Berk 204, 2018, 1 = Berk 199, 2016, 5 = Seen in commerce, 2012 (724)
- 10** Obv. 8
Rev. 18s, 19L Two punches side by side.
- a) 4.75 * London, British Museum, inv. 1948,0705.1 (H. A. Cahn, lecture mentioned in Lafaurie 1948: 5 [“acquire à Constantinople”]; Robinson 1941–50: 48 pl. XIX, 4; Robinson 1958: 586 f. pl. XXXIX, 3; Walker and Jenkins 1959: 98 pl. 51, 3; Jeffery 1961: 378; Kraay and Hirmer 1966: 355, no. 585, pl. 177; Guarducci 1967: 262–64, no. 5, fig. 117; Franke and Schmitt 1974: pl. 1, 2; Weidauer 1975: 19 no. 40 pl. 5; Kraay 1976: 23, pl. 3, 54; R.-Alföldi 1978: 76 [“in Ephesos selbst gefunden”]; R.-Alföldi 1981: 27, fig. 11; Furtwängler 1982: pl. 1, 1; Price 1983: 2, pl. 1, 6; Kastner 1986: 7 f. [ΦΑΝΕΟΝ] pl. 1, 3; Jenkins 1990: 14 f. fig. C4; Le Rider 2001: 45 pl. III, 6; Mitchiner 2004: 265, no. 233)
b) 4.74 * Berk 194, 2014, 5 = Seen in commerce, 2012
- 11** Obv. 8
Rev. 20s, 21L Two punches side by side. Rev. 20s is similar to rev. 32s below, but is not the same die.
- a) 4.74 * American Private Coll. III
b) 4.71 * Berk 159, 2008, 1
- 12** Obv. 9 Fallow deer as before. Above, ΦΑ[...]Σ retrograde.
Rev. 20s, 21L
- a) 4.72 * Gorny & Mosch 175, 2009, 130 = Gorny & Mosch 159, 2007, 189 (Karwiese 2014: 321, fig. 7; said to have been found at or near Bayraklı)

HEKTAI

- 13** Obv. 10 Protome of fallow deer to left, head reverted. Above foreleg, three dots arranged as triangle.
Rev. 22L Square punch.
- a) 2.39 Heritage 3054, 2017, 30082
b) 2.36 * American Private Coll. III (Konuk and Lorber 2012: 18, fig. 19, 3) = Hauck & Aufhäuser 18, 2004, 190
c) 2.35 American Private Coll. III = Triton 8, 2005, 401
d) 2.33 * London, British Museum, inv. 1853,0512.92 (*BMC Ionia*, p. 47, 4, pl. III, 11; Head 1880: 99, no. 4; Babelon 1895: 328; Babelon 1907: col. 58, no. 65, pl. II, 18; Robinson 1958: 586 f., pl. XXXIX, 3B; Weidauer 1975: 18, no. 35, pl. 4; Mitchiner 2004: 266, no. 241) ex Pierre-Justin Sabatier

- e) 1.60 Whereabouts unknown (Forum Ancient Coins, 16 March 2007) [plated]
- 13a** Obv. 10a Protome of fallow deer to left, head reverted. In the field, various circular ornaments.
Rev. 22aL Square punch.
- a) 2.33 * Naumann 67, 2018, 204
- 14** Obv. 11 Protome of fallow deer to right, head reverted. Above leg, pentagram with central dot (obv. 11 was also in use for twelfths, see below).
Rev. 23L Square punch.
- a) 2.36 * American Private Coll. III = Triton 8, 2005, 399 (Karwiese 2014: 322, fig. 9)
- 15** Obv. 12 Protome of fallow deer to left, head reverted.
Rev. 24L Square punch.
- a) 2.38 German Private Coll. II, 5
b) 2.35 * Utrecht, Stichting Museum, inv. inv. GR-05666A (cast Winterthur, annotated “ΠΛ”, that is, *ex* Παύλος Λαμπρός)
c) 2.33 * Gemini 4, 2008, 178
- 16** Obv. 13 Protome of fallow deer to left, head reverted.
Rev. 15L
- a) 2.32 * Triton 9, 2006, 919
b) 2.30 * Swiss Private Coll. I, 153
- 17** Obv. 13
Rev. 6L
- a) 2.34 Künker 312, 2018, 2322 = Münzzentrum 142, 2008, 105
b) 2.33 Numismatica Ars Classica 84, 2015, 1536
c) 2.33 * Berk 158, 2008, 2
d) 2.32 Classical Numismatic Group 105, 2017, 291 (Hilbert 2018: 47, fig. 87)
e) 2.32 Classical Numismatic Group 76, 2007, 701
f) 2.31 Triton 11, 2008, 232 = Classical Numismatic Group 67, 2004, 670
g) 2.31 * German Private Coll. I, 25 *ex* Ceylan, 2007
h) 2.31 * Classical Numismatic Group 69, 2005, 385
- 18** Obv. 13
Rev. 25L Square punch.
- a) 2.35 * Gorny & Mosch 190, 2010, 255
b) 2.32 Classical Numismatic Group EA 377, 2016, 95
c) 2.32 Triton 11, 2008, 231
d) 2.32 * Berk 156, 2007, 4
e) 2.32 Classical Numismatic Group 72, 2006, 718
- 19** Obv. 14 Protome of fallow deer to left, head reverted.
Rev. 19L
- a) 2.35 * Frankfurt, Bundesbank, inv. 0051/82
b) 2.35 American Private Coll. III
c) 2.34 * Classical Numismatic Group 91, 2012, 272
d) 2.32 Classical Numismatic Group EA 423, 2018, 165

- 20** Obv. 14 [More cracks in the field].
Rev. 17L
- a) 2.34 * Classical Numismatic Group 100, 2015, 78 = Triton 16, 2012, 450 = Triton 10, 2007, 285
- b) 2.34 * Gemini 7, 2011, 499 = Berk 170, 2010, 2 = Berk 168, 2010, 2 = Gorny & Mosch 180, 2009, 173
- 20α** Obv. 14
Rev. 17αL Perhaps rev. 17L in modified stage.
- a) 2.35 * Classical Numismatic Group 103, 2016, 244
- 21** Obv. 14 [Crack in front of mouth].
Rev. 21L
- a) 2.38 American Private Coll. IV, O1058 (Linzaone 2011: 200, no. LN1103) [badly cleaned]
- b) 2.36 Roma Numismatics EA 18, 2015, 280 (Hilbert 2018: 79, fig. 230)
- c) 2.34 * American Private Coll. III = Triton 8, 2005, 400 (Karwiese 2014: 321 fig. 8)
- d) 2.33 * Numismatica Ars Classica 78, 2014, 306 = Pecunem 9, 2013, 248
- 22** Obv. 13 [Cracks all over the field].
Rev. 21L
- a) 1.89 * Tkalec 29 Feb. 2000, 115 (Mitchiner 2004: 266 no. 234) [plated]

TWELFTHS

- 23** Obv. 15 Protome of fallow deer to left, head reverted (obv. 15 was also used for twenty-fourths; see below).
Rev. 26s Square punch.
- a) 1.17 * Naumann 53, 2017, 234
- b) 1.12 * Classical Numismatic Group EA 294, 2013, 332
- c) 1.10 Classical Numismatic Group 72, 2006, 721 = Classical Numismatic Group 69, 2005, 387
- 24** Obv. 16 Protome of fallow deer to left, head reverted. Above foreleg, three dots arranged as triangle (obv. 16 was also be used for twenty-fourths; see below).
Rev. 27s Square punch, similar to rev. 22L.
- a) 1.22 * Tkalec 24 Oct. 2003, 111
- b) 1.17 Jacquier 39, 2014, 129
- c) 1.17 * Triton 10, 2007, 286 (Karwiese 2014: 322 fig. 10; Mittag 2016: 49, fig. 18)
- d) 1.16 American Private Coll. IV, O1059 (Linzaone 2011: 200, no. LN1104) = Triton 7, 2004, 229
- e) 1.16 Solidus EA 8, 2016, 142
- f) 1.15 German Private Coll. II, 4
- g) 1.15 German Private Coll. IV, 1 ex Athena GmbH
- h) 1.10 Pecunem 8, 2013, 145
- i) 0.88 Rauch 94/1, 2014, 331 [plated]
- 25** Obv. 16
Rev. 28s Square punch.

- a) 1.16 * Pecunem 30, 2015, 182
 b) 1.16 Roma Numismatics EA 1, 2013, 168 = Gorny & Mosch 211, 2013, 350
 c) 1.15 Classical Numismatic Group EA 390, 2017, 139 [graffito "X" on obverse]
 d) 1.15 * Naumann 50, 2017, 212
 e) 1.14 Triton 9, 2006, 921 (Karwiese 2014: 320 fig. 3A)
- 26** Obv. 17 Protome of fallow deer to left, head reverted (obv. 17 is similar to obv. 23 used for the twenty-fourths; see below).
 Rev. 27s
- a) 1.17 Heritage 3054, 2017, 30083
 b) 1.17 * Gorny & Mosch 199, 2011, 420
 c) 1.17 Classical Numismatic Group 70, 2005, 240
 d) 1.15 * Istanbul, Arkeoloji Müzeleri, inv. 5975, found in the Artemision of Ephesus in 1905 and often erroneously listed among the coins from the Artemision hoard *IGCH* 1153 (Head 1908: 85 no. 74 pl. 2; Robinson 1958: 587 pl. XXXIX, 3c; Weidauer 1975: 18 no. 38, pl. 4; Kraay 1976: 22 f.; Price 1983: 2, pl. 1, 4; Vickers 1985: 17; Mitchiner 2004: 266, no. 242 [not illustrated]; Karwiese 2008: 134, 147 figs. 110, 111; Kerschner and Konuk, this volume: no. 28)
- 27** Obv. 11 Square punch.
 Rev. 28as
- a) 1.19 * Classical Numismatic Group EA 399, 2017, 183 [allegedly plated. Reverse incrustated]
 b) 1.18 * Stack's, Bowers & Ponterio 12 Aug. 2015, 30055
- 28** Obv. 18 Protome of fallow deer to right, head reverted.
 Rev. 4s
- a) 1.20 Swiss Private Coll. I, 154
 b) 1.20 Swiss Private Coll. I, 157
 c) 1.20 Naumann 65, 2018, 170
 d) 1.19 New York, American Numismatic Society, inv. 1977.258.74
 e) 1.19 Naumann 62, 2018, 242
 f) 1.18 German Private Coll. I, 26 = Hirsch 281, 2012, 365
 g) 1.18 Gießener Münzhandlung 96, 1999, 167
 h) 1.17 Gemini 12, 2015, 152 = Helios 5, 2010, 101
 i) 1.17 * Classical Numismatic Group 88, 2011, 331
 j) 1.17 Gorny & Mosch 146, 2006, 233
 k) 1.17 American Private Coll. III = Lanz 58, 1991, 228
 l) 1.16 * Boston, Museum of Fine Arts (Brett 1955: 232 no. 1816; Weidauer 1975: 18, no. 37, pl. 4) = Warren Coll. (Regling 1906: no. 1731)
 m) 1.16 Classical Numismatic Group EA 425, 2018, 165
 n) 1.15 New York, American Numismatic Society, inv. 1944.100.45987 *ex* E. T. Newell
 o) 1.15 Classical Numismatic Group EA 440, 2019, 124
 p) 1.15 Lanz 157, 2013, 161
 q) 1.15 Gorny & Mosch 207, 2012, 927 *ex* Athena, 22 Nov. 2007
 r) 1.15 Triton 13, 2010, 1297
 s) 1.15 Classical Numismatic Group 73, 2006, 314
 t) 1.15 Triton 9, 2006, 920

- u) 1.14 Roma Numismatics EA 18, 2015, 278 = Classical Numismatic Group 91, 2012, 273
- v) 1.14 Classical Numismatic Group 75, 2007, 359 (Karwiese 2014: 321, fig. 6)
- w) 1.14 Gießener Münzhandlung 71, 1995, 308
- x) 1.13 Classical Numismatic Group 76, 2007, 702
- y) 1.13 Künker 312, 2018, 2323 = Gorny & Mosch 146, 2006, 234
- z) - Münzen & Medaillen FPL 221, 1962, 20
- 29** Obv. 18
Rev. 29s Square punch.
- a) 1.18 * Roma Numismatics 9, 2015, 275
- b) 1.14 * Classical Numismatic Group 72, 2006, 720
- c) 1.13 Classical Numismatic Group 75, 2007, 358
- d) 1.125 Münzen & Medaillen 72, 1987, 37 (Mitchiner 2004: 266 no. 235) *ex* J. Rosen
- 30** Obv. 19 Protome of fallow deer to right, head reverted.
Rev. 30s Square punch.
- a) 1.09 * Gemini 9, 2012, 127 = Rauch 84, 2009, 141
- 31** Obv. 20 Protome of fallow deer to right, head reverted.
Rev. 31s Square punch.
- a) 1.17 * Hauck & Aufhäuser 21, 2009, 128
- b) 1.17 * Triton 8, 2005, 402
- c) 0.94 Lanz 147, 2009, 131 [plated]
- 32** Obv. 21 Protome of fallow deer to right, head reverted.
Rev. 32s Square punch.
- a) 1.20 Swiss Private Coll. I, 155
- b) 1.18 Hirsch 306, 2015, 1795 = Nomos 9, 2014, 148
- c) 1.17 Pecunem 30, 2015, 183
- d) 1.17 * Paris, Cabinet des Médailles, Fonds général 15 (41764588: Brandis 1866: 393; Head 1880: 99, no. 5; Babelon 1895: 328, pl. VI, 20; Babelon 1907: col. 58, no. 66 pl. II, 20; Weidauer 1975: 18, no. 36 pl. 4; Blet-Lemarquand and Duyrat, this volume, no. 40)
- e) 1.16 * Frankfurt, Bundesbank, inv. 0038/00 = Hauck & Aufhäuser 15, 2000, 148
- f) 1.16 Gorny & Mosch 211, 2013, 351
- g) 1.15 Classical Numismatic Group 72, 2006, 719
- 33** Obv. 21
Rev. 33s Square punch.
- a) 1.16 * Tkalec 24 Oct. 2003, 110
- b) 1.15 American Private Coll. III, 3-2
- c) 1.15 Classical Numismatic Group 69, 2005, 386
- d) 1.10 Swiss Private Coll. I, 156
- e) 1.05 * Classical Numismatic Group EA 362, 2015, 137
- 34** Obv. 21
Rev. 34s Square punch.
- a) 1.15 * Classical Numismatic Group 70, 2005, 239
- b) - * American Private Coll. III

- 35** Obv. 22 Protome of fallow deer to right, head reverted.
Rev. 35s Square punch.
a) 1.18 * Hirsch 287, 2013, 1959 = Hess-Divo 321, 2012, 148

TWENTY-FOURTHS

- 36** Obv. 23 Protome of fallow deer left, head reverted (resembles obv. 17, but the stag's mouth is more raised).
Rev. 36T Square punch (early stage. Rev. 36T resembles rev. 1s used for the staters (see above), but is not the same die).
a) 0.60 Swiss Private Coll. I, 158
b) 0.59 * German Private Coll. IV, 3 = Hauck & Aufhäuser 21, 2009, 129
c) 0.55 * American Private Coll. III = Triton 8, 2005, 404
- 37** Obv. 15
Rev. 37T Square punch (early).
a) 0.58 Lanz 70, 1994, 111
b) 0.56 * Berk 157, 2007, 7
c) 0.55 Classical Numismatic Group EA 440, 2019, 126
d) 0.55 * Numismatica Ars Classica 54, 2010, 119
e) 0.54 New York, American Numismatic Society, inv. 1955.54.386
- 38** Obv. 16
Rev. 38T Square punch.
a) 0.58 * Classical Numismatic Group 42, 1997, 446
- 39** Obv. 16
Rev. 37T [late].
a) 0.58 * German Private Coll. I, 27 = Künker 182, 2011, 284
b) 0.57 American Private Coll. III = Classical Numismatic Group 69, 2005, 390
c) 0.54 * SNG *Kayhan* II 1219 = Classical Numismatic Group 67, 2004, 672 [plated]
- 40** Obv. 16
Rev. 36T [late stage of the die].
*) 0.70 Gorny & Mosch 186, 2010, 1375 [fake]
†) 0.61 German Private Coll. I, 3 = Gorny & Mosch 207, 2012, 322 = Münzen & Medaillen Deutschland 34, 2011, 100 [fake]
a) 0.59 Triton 10, 2007, 287
b) 0.58 Naumann 64, 2018, 166
c) 0.58 * Numismatica Ars Classica 78, 2014, 308
d) 0.58 Künker 236, 2013, 583
e) 0.57 Classical Numismatic Group EA 377, 2016, 97
f) 0.57 * Gorny & Mosch 207, 2012, 929 = Gorny & Mosch 200, 2011, 1751 = Triton 14, 2011, 279 = Classical Numismatic Group 84, 2010, 626 = Gemini 6, 2010, 170 [coin from which both fakes were made, i.e., the *madre*]
g) 0.56 German Private Coll. II, 3
h) 0.56 American Private Coll. III = Triton 11, 2008, 233
i) 0.56 Classical Numismatic Group EA 440, 2019, 125

- j) 0.56 Roma Numismatics 11, 2016, 299
k) 0.55 Triton 8, 2005, 405
l) 0.53 Classical Numismatic Group EA 249, 2011, 135
- 40a** Obv. 16
Rev. 38αT Square punch.
a) 0.41 * Künker 295, 2017, 296
- 41** Obv. 24 Protome of fallow deer to right, head reverted.
Rev. 39T Square punch.
a) 0.59 * Pecunem 30, 2015, 184
b) 0.58 * Gorny & Mosch 228, 2015, 143A = Gorny & Mosch 207, 2012, 321 = Gorny & Mosch 204, 2012, 219 = Gorny & Mosch 203, 2012, 219 = Gorny & Mosch 199, 2011, 422 = Helios 7, 2011, 391
- 42** Obv. 24
Rev. 40T Square punch.
a) 0.60 Pecunem EA 18, 2014, 220
b) 0.60 * Pecunem 9, 2013, 249
c) 0.59 * Naumann 57, 2017, 226
d) 0.59 Roma Numismatics EA 2, 2013, 236
e) 0.59 Lanz 52, 1990, 212
f) 0.58 Classical Numismatic Group 69, 2005, 388
g) 0.57 Gorny & Mosch 216, 2013, 2522 = Gorny & Mosch 181, 2009, 1454
h) 0.57 Hauck & Aufhäuser 14, 1998, 141
i) 0.56 Aureo & Calicó 265, 2015, 2017
j) 0.56 Classical Numismatic Group EA 115, 2005, 90
k) 0.56 Classical Numismatic Group EA 111, 2005, 22
l) 0.56 Classical Numismatic Group EA 101, 2004, 40
m) 0.50 Pecunem 12, 2014, 209
- 43** Obv. 24
Rev. 41T Square punch.
a) 0.61 Heritage 231846, 2018, 63043 [= v?]
b) 0.60 Hirsch 250, 2007, 2232
c) 0.59 Classical Numismatic Group EA 423, 2018, 166
d) 0.59 Künker 312, 2018, 2324 = Aufhäuser 13, 1997, 129
e) 0.58 Leu Numismatik EA 5, 2018, 239
f) 0.58 Roma Numismatics 16, 2018, 252
g) 0.58 Classical Numismatic Group EA 385, 2016, 218
h) 0.58 Classical Numismatic Group 72, 2006, 723
i) 0.57 Classical Numismatic Group EA 377, 2016, 96
j) 0.57 Pecunem EA 31, 2015, 176
k) 0.57 Gorny & Mosch 229, 2015, 1341 = Künker 143, 2008, 201 = Classical Numismatic Group EA 145, 2006, 84
l) 0.57 * Classical Numismatic Group 91, 2012, 274 = Triton 15, 2012, 1215 = Gorny & Mosch 113, 2001, 5218
m) 0.57 Classical Numismatic Group 70, 2005, 241
n) 0.57 Classical Numismatic Group EA 99, 2004, 16

- o) 0.57 * Oxford, Ashmolean Museum, phot. 11859 (Mitchiner 2004: 266 no. 236)
ex E. S. G. Robinson = Münzen & Medaillen FPL 212, 1961, 14
- p) 0.56 American Private Coll. III = Classical Numismatic Group 69, 2005, 389
- q) 0.56 Classical Numismatic Group EA 112, 2005, 42
- r) 0.56 Classical Numismatic Group EA 102, 2004, 17
- s) 0.56 Classical Numismatic Group EA 92, 2004, 31 [vast dig on reverse]
- t) 0.55 Classical Numismatic Group EA 105, 2005, 67
- u) 0.55 Classical Numismatic Group 60, 2002, 716
- v) 0.54 Roma Numismatics EA 12, 2014, 474 [=a?]
- w) 0.54 Classical Numismatic Group EA 225, 2010, 129
- 43a** Obv. 24a Protome of fallow deer to right, head reverted.
Rev. 41aT Square punch.
- a) 0.40 * Auctiones EA 50, 2016, 72 [plated]
- 44** Obv. 25 Protome of fallow deer to right, head reverted. Similar to obv. 24.
Rev. 41T
- a) 0.57 * German Private Coll. I, 1 = Classical Numismatic Group EA 249, 2011, 134
- b) 0.55 * Gorny & Mosch 200, 2011, 1749 = Fortuna Fine Arts FPL 2008, 47
- 45** Obv. 26 Protome of fallow deer to right, head reverted. Similar to obv. 24, but only
one spot on the body (obv. 24 has two spots).
Rev. 42T Square punch.
- a) 0.60 Naumann 67, 2018, 206
- b) 0.60 Peus 372, 2002, 508 = Peus 336, 1993, 85
- c) 0.59 Numismatica Ars Classica 78, 2014, 307
- d) 0.58 American Private Coll. IV, O1060 (Linzalone 2011: 200 no. LN1105)
- e) 0.58 * Classical Numismatic Group 72, 2006, 722
- f) 0.58 Peus 372, 2002, 507 = Peus 334, 1992, 424 = Sternberg 8, 1978, 109
- g) 0.57 *SNG von Aulock 7773* ["Diese dem Typ nach in Ephesos geprägten Münzen
werden regelmäßig in Kolophon gefunden."]
- h) 0.57 Roma Numismatics 17, 2019, 441 [dig on stag's head]
- i) 0.57 Triton 14, 2011, 278
- j) 0.57 Triton 13, 2010, 1298
- k) 0.57 * Numismatica Ars Classica 88, 2015, 45 = Tkalec 29 Feb. 2000, 116
- l) 0.57 Aufhäuser 10, 1993, 143
- m) 0.56 German Private Coll. II, 2
- n) 0.56 Classical Numismatic Group 76, 2007, 703
- o) 0.56 Classical Numismatic Group EA 150, 2006, 102
- p) 0.56 Berk 142, 2005, 2 = Triton 8, 2005, 403
- q) 0.56 Frankfurt, Bundesbank, inv. 0390/01 = Gorny & Mosch 112, 2001, 4135 =
Classical Numismatic Group 54, 2000, 664
- r) 0.55 Classical Numismatic Group EA 233, 2010, 216
- s) 0.55 Classical Numismatic Group 70, 2005, 242
- t) 0.55 Classical Numismatic Group 43, 1997, 531
- u) 0.54 Hannover, Kestner-Museum inv. 1987/125 (Berger 1991: no. 34) = Münzen
& Medaillen 72, 1987, 53 ex J. Rosen
- v) 0.54 Classical Numismatic Group EA 103, 2004, 67
- w) 0.54 German Private Coll. IV, 2 = Hirsch 201, 1998, 253

- x) 0.50 Naumann 69, 2018, 130 = Naumann 67, 2018, 207
 y) 0.50 Pecunem 10, 2013, 212
 z) 0.42 American Private Coll. I, 32 *ex* Gorny & Mosch
 a') 0.41 Gorny & Mosch 152, 2006, 1397 [plated]
 b') 0.41 SNG *Kayhan* II, 1218 = Classical Numismatic Group 67, 2004, 671 [plated]
 c') 0.38 German Private Coll. III = Rauch 94/1, 2014, 332 [plated]
- 46** Obv. 27 Protome of fallow deer to right, head reverted.
 Rev. 43T Square punch.
- *) 0.60 Swiss Private Coll. I, 160 [fake]
 a) 0.58 * Gorny & Mosch 211, 2013, 352
 †) 0.58 Gorny & Mosch 199, 2011, 421 [fake]
 b) 0.57 * vCoins, 2013 = Gorny & Mosch 207, 2012, 928 = Gorny & Mosch 200, 2011, 1750 [likely to be the *madre* of the fakes]
 ††) 0.56 Künker 193, 2011, 226 [fake]

FORTY-EIGHTHS

- 47** Obv. 28 Head of fallow deer to right. Behind, three dots arranged as triangle.
 Rev. 44 Square punch.
- a) 0.29 * Triton 9, 2006, 923
- 48** Obv. 29 Head of fallow deer to right. Behind, three dots arranged as triangle.
 Rev. 45 Square punch [early].
- a) 0.32 Classical Numismatic Group 102, 2016, 442 = American Private Coll. IV, O1062 (Linzalone 2011: 202 no. LN1107)
 b) 0.29 * Classical Numismatic Group 81, 2009, 512
 c) 0.28 * Pecunem 24, 2014, 201
- 49** Obv. 30 Head of fallow deer to right.
 Rev. 45 [middle stage of the die].
- a) 0.29 Hauck & Aufhäuser 21, 2009, 130
 b) 0.29 Classical Numismatic Group 72, 2006, 724
 c) 0.27 * Oxford, Ashmolean Museum, phot. 0011863 (Mitchiner 2004: 266, no. 237) *ex* E. S. G. Robinson, Nov. 1961 = Münzen & Medaillen FPL 212, 1961, 15
 d) 0.24 American Private Coll. IV, O1061 (Linzalone 2011: 202, no. LN1106) = Triton 9, 2006, 922
 e) 0.23 * Pecunem 26, 2014, 240 (Hilbert 2018: 79, fig. 231)
- 50** Obv. 31 Head of fallow deer to right.
 Rev. 45 [late stage of the die].
- a) 0.29 * American Private Coll. I, 40 = Triton 8, 2005, 406
 b) 0.26 * Heritage 3054, 2017, 30084
- 51** Obv. 32 Head of fallow deer to right (similar to obv. 30, but with narrower antler).
 Rev. 46 Square punch.
- a) 0.30 * New York, American Numismatic Society, inv. 1977.158.75 (Wartenberg 2016: 48, fig. 3; Troxell and Waggoner 1978: 2 no. 5 pl. I) *ex* Robert Kelley

- b) 0.30 Naumann 67, 2018, 205
 c) 0.29 * Gemini 7, 2011, 500
 d) 0.29 Classical Numismatic Group 70, 2005, 243
 e) 0.29 American Private Coll. III (Konuk and Lorber 2012: 18, fig. 19, 6) = Classical Numismatic Group 67, 2004, 673 (Karwiese 2014: 322, fig. 11)
 f) 0.28 Numismatica Ars Classica 78, 2014, 309
 g) 0.28 Lanz 138, 2007, 376
 h) 0.27 Paris, Cabinet des Médailles, inv. R 2978 (Blet-Lemarquand and Duyrat, this volume, no. 41)
 i) 0.27 Naumann 64, 2018, 167
- 52** Obv. 33 Head of fallow deer to right (similar to obv. 30, the antler being narrower).
 Rev. 47 Square punch.
- a) 0.29 Savoca 29, 2018, 77
 b) 0.28 * Oxford, phot. 0011860 (Mitchiner 2004: 266, no. 238) *ex* E.S.G. Robinson, June 1971 = SNG von Aulock 7788
 c) 0.28 Classical Numismatic Group 70, 2005, 244
 d) 0.28 Chinese Private Coll. (Meadows and Kan 2004: no. 10) = Classical Numismatic Group 60, 2002, 717
 e) 0.27 Naumann 61, 2018, 213
 f) 0.27 Classical Numismatic Group 72, 2006, 725 = Classical Numismatic Group 69, 2005, 391
 g) 0.26 Classical Numismatic Group EA 440, 2019, 127
 h) 0.26 Classical Numismatic Group EA 103, 2004, 68
 i) 0.25 * Roma Numismatics EA 21, 2015, 250
- 53** Obv. 33
 Rev. 48 Square punch.
- a) 0.28 * Leu Numismatik EA 5, 2018, 240
 b) 0.28 * Triton 10, 2007, 288
- 54** Obv. 34 Head of fallow deer to right.
 Rev. 49 Square punch (similar to rev. 46).
- a) 0.30 * Künker 304, 2018, 470 = Leipziger Münzhandlung 85, 2016, 1344
 b) 0.29 Hirsch 306, 2015, 1796
 c) 0.28 Baldwin's 70, 2011, 17 (reverse not illustrated, thus uncertain)

NINETY-SIXTHS

- 55** Obv. 35 Head of fallow deer to right (resembles obv. 30 used for the rev. 45).
 Rev. 50 Square punch.
- a) 0.15 * Gorny 46, 1989, 247
 b) 0.15 Münzen & Medaillen FPL 472, 1984, 74 [= e?]
 c) 0.15 Münzen & Medaillen FPL 212, 1961, 16
 d) 0.14 * Oxford, Ashmolean Museum, phot. 0011862 (Mitchiner 2004: 266 no. 240) *ex* E. S. G. Robinson, Nov. 1961 = Münzen & Medaillen FPL 212, 1961, 17
 e) 0.14 Classical Numismatic Group 70, 2005, 245 [= b?]

- 56 Obv. 36 Head of fallow deer to right (reminiscent of obv. 33).
Rev. 51 Square punch.
a) 0.14 * Oxford, Ashmolean Museum, phot. 0011861 (Mitchiner 2004: 266 no. 239)
ex E. S. G. Robinson, May 1966 = Münzen & Medaillen FPL 263, 1966, 13
- 57 Obv. 34
Rev. 52 Square punch.
a) 0.14 * Naumann 55, 2017, 226

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Abbreviations

- BMC* British Museum. *A Catalogue of Greek Coins*. London.
CH *Coin Hoards*, I ff. London.
CVA *Corpus vasorum antiquorum*.
EA Electronic auction sale.
FPL Fixed Price List.
IG *Inscriptiones Graecae*. Berlin.
IGCH Thompson, M., C. M. Kraay, and O. Mørholm. *An Inventory of Greek Coin Hoards*. New York 1973.
RE *Paulys Realencyclopädie der classischen Altertumswissenschaft*. Stuttgart.
SNG *Sylloge Nummorum Graecorum*.

Plates*

STATERS (1-4)



1c



1g



1h



2b

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March 24, 2020

*All images are 2:1 unless otherwise noted.



2c



2e



3a



4a

TRITAI (5-12)



5a

6a



6e

6m



7a

8b



8c

9a



10a

10b



11a

11b



12a

HEKTAI (13-22)



13b



13d



13aa



14a



15b



15c



16a



16b



17c



17g



17h





18a



18d



19a



19c



20a



20b



20aa



21c



21d



22a



ZWELFTHS (23-35)



23a



23b



24a



24c



25a



25d



26b



26d



27a



27b



28i



28i

TWENTY-FOURTHS (36-46)



36b



36c



37b



37c



38a



39a



39c



40c



40f



40aa





41a



41b



42b



42c



431



430



43aa



44a



44b



45e





45k



46a



46b



Forty-EIGHTHS (47-54)



47a



48a



48c



49c



49e



50a





50b



51a



51c



52b



52i



53a



53b



54a



NINETY-SIXTHS (55-57)



55a



55d



56a



57a

