

NUMISMATIC NOTES AND MONOGRAPHS

No. 164

THE COINAGE OF METAPONTUM
PART 3

BY ANN JOHNSTON



THE AMERICAN NUMISMATIC SOCIETY

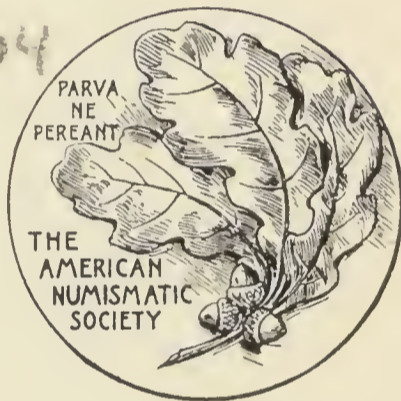
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Introduction

It is over 60 years since Sydney Noe published Part 1 of his *Coinage of Metapontum* (1927). Part 2 appeared four years later and in the Preface Noe referred to Part 3 as if work were well in hand. Kubitschek, in the *Numismatische Zeitschrift* for 1931, noted the publication of Parts 1 and 2 and promised “ein Paar Worte zu dem ganzen bedeutenden Werk” — but Part 3 never materialized. Given that it is now 20 years since I took over Noe’s notes and casts with the aim of completing the last part of his study, I am inclined to be sympathetic rather than critical. He never entirely abandoned Metapontum, however, and by his death in the early 1960s he had done a great deal of work on the remaining material, arranging the coinage into groups and identifying dies, and even writing sections of the text on subjects such as magistrates’ names, the gold issues, and the coinage of Alexander the Molossian. Originally I hoped that it would be possible simply to put his catalogue in order and update it, pull together his various drafts and provide whatever was still needed for the introduction. Part 3 would be published under Noe’s name, and I would do little more than act as midwife. Naturally it was not so easy.

One major practical problem was that Noe had learned a peculiar system of shorthand which he used to annotate notes, text and casts, so that there was no way of knowing what his comments and second thoughts were. I showed examples to older secretaries, but nobody could decipher the hieroglyphs and I had to accept that they were impenetrable. Even the material that I could read was not without problems. Noe had changed his mind about some things, like the gold, and left several conflicting versions. He had also never written down explicitly the sequence in which he thought the issues had been struck, though it was possible to piece together roughly what he had in mind.

He had left nothing on important topics such as hoards and overstrikes, where in any case there was a substantial amount of new information to be considered. Gradually and reluctantly I came to the conclusion that I had to make a completely fresh start.

Like Noe, I would pick up the project from time to time, only to be distracted by other things just when I was making progress. One of these distractions was the updating of Parts 1 and 2, an idea that had been mooted early on and actually reached publication in 1984 largely thanks to the encouragement and practical support of Dr. Athos Moretti.¹ Inevitably the work of updating turned into a far larger undertaking than was envisaged at the outset. Nevertheless, although it meant a further delay, the revision of the earlier periods was a very valuable exercise and I feel that ultimately Part 3 has benefitted from it. Another useful diversion was a renewed attempt by Michael Crawford, Keith Rutter and myself to finish the Italy fascicule of the third edition of *Historia Numorum*; this forced me into a thorough study of the other coinages of S. Italy, which has helped to put Metapontum in context. All in all, it is perhaps just as well that Part 3 has taken 20 years to mature.

The final version differs in one important regard from Noe’s (and my own) original intention: the plan was to produce a full die study along the same lines as Parts 1 and 2, listing all the known examples. Noe had left me the basis for producing a catalogue of this type, but in the end I decided that it was not worth the time involved in tracking the pieces in private hands through the sales catalogues of the last 50 years, or the space to print a very detailed listing. Instead, I have tried to identify as many *dies and die-combinations* as possible, listing in the catalogue an illustrated reference piece and providing a concordance between the

¹ Sydney P. Noe, *The Coinage of Metapontum, Parts 1 and 2*, revised ed. by Ann Johnston (New York,

1984). All references herein are to this edition, cited for convenience as Noe-Johnston.

catalogue and the relevant volumes of the *Sylloge Nummorum Graecorum*.

Numerous people have contributed to this study over the many years of its preparation. Those who sent casts to Noe and corresponded with him are long dead; M.P. Vlasto and E.S.G. Robinson in particular appear to have shared their expertise very generously with him. Although the book does not after all carry Noe's name on the title page, it owes much to his efforts and I can only hope that he would have approved of the final result. In the course of the last 20 years curators past and present in all the major cabinets have patiently showed me coins and sent me casts and photographs. Two are sadly no longer here to receive my thanks: Colin Kraay and Nancy Waggoner, both of whom were unfailingly generous with their time. I have very happy memories of days spent in their company in Oxford and New York, and at international congresses. I am also extremely grateful to Andrew Burnett, Ian Carradice, Kenneth Jenkins and Martin Price (British Museum, London); Cathy King (Oxford); T.R. Volk (Cambridge); Anne Robertson and Donal Bateson (Glasgow); Anne Kromann (Copenhagen); J. Lallemand (Brussels); Michel Amandry, Dominique Gerin and H el ene Nicolet (Paris); D. Klose and H. Kuthmann (Munich); H.-D. and S. Schultz (Berlin); B. Kaposy (Bern); H. Bloesch (Winterthur); F. Glaser (Klagenfurt); G. Dembski (Vienna); A. Arslan (Milan); E. Pozzi (Naples); M.A. Gorgoglione (Taranto); E. Lattanzi and M. Mastelloni (Reggio di Calabria). They have taken great trouble to help me in all kinds of ways, often well beyond the call of duty. Andrew Burnett, Kenneth Jenkins and Keith Rutter have taught me a great deal about S. Italian coinage, in conversation and through their publications.

The staff of the American Numismatic Society made me welcome on visits to New York and they have done all in their power to bring the book to publication; I mention especially Candace Carter, who brought order to my text and hunted up illustrations for me.

Finally, I must acknowledge three special debts. First to the Fellows of Clare Hall, Cambridge, who renewed my Research Fellowship so that I might complete the study of Metapontum. This formal statement does not convey the immense benefits conferred by three years' membership of that congenial society. For someone like myself, working outside the museum world and the traditional university system, it was of inestimable value to have the stimulus and support that comes through daily contact with others engaged in research. It was also an extraordinary privilege to encounter people from all over the world, working in all manner of disciplines, in the friendly atmosphere that a Cambridge college at its best provides. Secondly, I must again express my gratitude to Dr. Athos Moretti for his continuing encouragement and practical help in this long-drawn-out enterprise, which might well have foundered without his patient insistence and willing generosity. Lastly, my greatest debt is to Ted Buttrey, who introduced me to numismatics in the first place and has been my most valued teacher, guide and critic ever since. I do not know how I would have managed without him.

Obviously I alone am responsible for all the errors, omissions and deficiencies that remain despite the efforts of so many colleagues and friends. In particular, I apologize for the quality of the plates, which through no fault of the printer are well below the standard that I would have wished.

Note on Terminology and Catalogue Numbering

A word of explanation is in order regarding the division of the coinage into classes, groups and issues, and the numbering system based upon it used in the catalogue. The aim was to provide an indication of relative chronology by means of the lettered classes A-D, so that references would be more immediately comprehensible than if Noe's numbering had simply been continued from N.549 onward. Class B is thus later than Class A and earlier than Class C. Within the classes, however, it has not been possible to establish the chronological sequence of issues with any certainty, and the numbered subdivisions within the lettered classes are not intended to convey that, for instance, C4 is *necessarily* earlier than C5, although some attempt has obviously been made to put the issues into a plausible order.

The term "issue" is used to describe coins with the same types and (normally) the same subsidiary symbols and/or signatures; a distinctive obverse type or reverse symbol may be

used as a shorthand reference ("the plough issue": C1; "the facing head issue": C2).

The smaller issues have been amalgamated into groups where they share some common feature(s) suggesting that they belong together, although symbols or even obverse types may vary (e.g. D3, all with the reverse signature FA ; or D4, all with reverse signature Φ). In Class A, this logic is slightly stretched, so that the issues signed KAA/API/ONA have been given a single group number (A6), as have those signed ΓPO or Γ (A7), and Φ or Φ (A8). The first number after the letter thus indicates the group/issue; the second number registers the different die combinations within it (thus A6.5 refers to one die pair within group A6).

The silver fractions have been given the prefix F and the gold the prefix G; here again it must be stressed that the numbers are not intended to have any necessary chronological significance.

Historical Background

The narrative of historical events that formed the backdrop to the later coinage of Metapontum has been set out lucidly by several historians who have worked almost exclusively from the literary sources.² The first significant event that touched the city in this period was the expedition of Timoleon to Sicily in 344:³ according to Diodorus,⁴ Timoleon's fleet called in at Metapontum en route to Sicily and left hurriedly for Rhegium after having been tracked down by a Carthaginian trireme carrying ambassadors who hoped to dissuade him from the venture. Clearly Metapontum was a natural port-of-call for ships traveling from western Greece to S. Italy and Sicily.

The three major episodes that directly affected S. Italy in the second half of the fourth century were the successive interventions of Archidamus of Sparta, Alexander the Molossian and Kleonymos of Sparta, all invited by Taras to defend the Greek cities against the Lucanians and the other barbarians of the interior. Metapontum was presumably active in the first alliance as a member of the Italiote League and as what might now be called a "front-line state," though the city is not mentioned by name in the sources. Giannelli dates the start of the expedition to 344 (a year earlier than proposed by Beloch). The campaign,

which ended with Archidamus' death in 338, seems to have been defensive and inconclusive: there are no accounts of major battles, of territories reconquered or treaties signed. The fact that Alexander the Molossian was invited to attempt the same task shortly afterward indicates that Archidamus had had little success against the barbarians during his five years in Italy.

Metapontum figures in several accounts of Alexander's campaign, from its second phase onward. Alexander arrived in late summer 334 and started by acquiring a firm base in Apulia, partly by military means and partly by diplomacy (spring/summer 333); once this was achieved he was able to turn his attention to Lucania without fear of attack from the rear (autumn 333/spring 332). An alliance was made with Metapontum⁵ as a necessary preliminary to this second phase of the campaign; Giannelli thinks that such an alliance would have been welcomed by the Metapontines since it reduced their dependence on Taras.⁶ The commentators generally agree that from this point onward Alexander increasingly revealed his underlying ambition of establishing an empire for himself in the West to match Alexander the Great's achievements in the East. Holloway dates the S. Italian coinage in his own name to this and

² For an extremely useful account, with detailed bibliography, see particularly two articles by C. A. Giannelli: "L'intervento di Archidamo e di Alessandro il Molosso in Magna Grecia," *Critica storica* 8 (1969), pp. 1–22; "Gli interventi di Cleonimo e di Agatocle in Magna Grecia," *Critica storica* 11 (1974), pp. 353–80. He takes the story down to the beginning of the third century, evaluating sensibly the alternative chronologies and explanations of earlier commentators. On Kleonymos, see P. Meloni, "L'intervento di Cleonimo in Magna Grecia," *Giornale italiana di filologia* 3 (1950), pp. 103–21. On the Pyrrhic period, see P. Lévêque, *Pyrrhos* (Paris, 1957). E. Lepore, "Problemi di storia metapontina," in *Atti XIII Convegno di Studi sulla Magna Grecia* (Naples, 1974), pp. 307–25, concentrates on the earlier phases, down to 350, but devotes a few pages (321–24) to our period. M. Giannotta, *Metaponto ellenistico romana* (Galatina, 1980), basically follows Giannelli in her

account of the history in Ch. 1. For the numismatic angle, see on Alexander: M. P. Vlasto, "Alexander, Son of Neoptolemos, of Epirus," *NC* 1926, pp. 154–231; P. R. Franke, *All-Epirus und das Königtum der Molosser* (Erlangen, 1954), pp. 90ff.; R. Ross Holloway, "Alexander the Molossian and the Attic Standard in Magna Graecia," *AJN* 12–14 *Suppl.* (Rome, 1969), pp. 131–38. A. J. Evans, "The Horsemen of Tarentum," *NC* 1889, pp. 1–228, still provides useful insights.

³ See R. J. A. Talbert, *Timoleon and the Revival of Greek Sicily 344–317 B.C.* (Cambridge, 1974), Ch.3 on chronology; C. M. Kraay, "Timoleon and the Corinthian Coinage in Sicily," in *Actes du 8ème Congrès International de Numismatique*, New York-Washington, September 1973 (Paris/Basle, 1976), pp. 99–104.

⁴ Diod. 16.66.5.

⁵ See Just. 12.2.12.

⁶ "L'intervento...Alessandro" (above, n. 2), p. 11.

the later phases of the campaign, after his transition from mercenary captain to effective ruler of the league of Greek cities.

Most scholars place next Alexander's expedition across Lucania to Campania, but Giannelli cogently argues that it would have been folly to attempt such a long-range campaign with insecure supply-lines and with the hostile Bruttians and only partially subdued Lueanians at his rear; it would have made much more sense to deal with the Bruttians first (summer/autumn 332), before tackling the Lucanians. From this period must date the beginnings of Alexander's rift with Taras, which manifested itself most clearly in his transfer of the seat of the Italiote League from Heraelea (a Tarentine colony) to the territory of Thurium (winter 332/1).⁷ Beloech built this incident up into a civil war between Taras and Heraelea on the one hand, and Metapontum, Thurium and Alexander on the other. Giannelli finds this exaggerated and unlikely, although the Tarentines would have been understandably vexed to watch the development of "their" tame commander into a powerful and independent operator beyond their control. Their disapproval is in fact unlikely to have gone beyond withdrawal of active support: as Giannelli points out, the Tarentines were in no position to challenge a man as successful and as well equipped as Alexander was by then, nor would Alexander have attempted further campaigns toward the west if he had had to contend with real hostility from Taras. The withdrawal of Taras would have meant a larger role for the cities that remained loyal to Alexander — especially Thurium, but presumably also Metapontum.

With S. Italy from Apulia to Bruttium reasonably under control, Alexander crossed Lucania, probably by land (spring-summer 331). Livy⁸ suggests that he reached Poseidonia and, according to Holloway,⁹ there is archaeological evidence that he destroyed various fortified towns between Thurium and Poseidonia. The treaty between Alexander and Rome probably dates from this final phase of the campaign in

the view of Giannelli, who sees it as a "non-aggression pact," intended by both parties as a way of neutralizing the threat of the Samnites; this cannot have been the occasion for the treaty between Taras and Rome.^{9bis} Eventually, however, Alexander was forced to turn back (autumn 331) as the Lueanians and Bruttians attacked from the rear; his troops were drawn back into Bruttium and Alexander himself was killed near Pandosia (November/December 331). Metapontum had clearly supported him to the end, given that his mutilated remains were sent back to Metapontum before ultimately being returned to Greece.¹⁰

The Molossian expedition appears to have had some short-term successes against the Lueanians and Bruttians, but in the longer run Alexander's campaign failed to achieve any lasting results. Strabo¹¹ records that shortly after Alexander's death the Tarentines were again engaged in a battle with the Lueanians near Heraelea; Croton, too, was attacked by the Bruttians.¹² The barbarian threat seems to have diminished in the last decades of the fourth century, but thanks to the diversion of the Samnite Wars rather than to the efforts of Alexander and the Greek cities.

The history of the period through to the Pyrrhic War is often confused and confusing. The sparseness of the literary account, where it even exists, has left the field open to speculation about precise chronologies, the motives for and the significance of the recorded events and treaties. Most historians emphasize that the various entities involved — Taras, Metapontum, the Bruttians and the Lucanians — were not homogeneous and unchanging groups of like-minded people, but rather were divided into factions; the views of one party might prevail for a while only to be reversed, sometimes within a very short space of time, when another gained the ascendancy. This is particularly true of attitudes toward Rome as Roman influence in S. Italy steadily increased during the last quarter of the fourth century, and — at a time when the final outcome was far from

⁷ Strab. 6.280.

⁸ Livy 8.17.

⁹ Above, n. 2, p. 133.

^{9bis} L. Braccisi, "Roma e Alessandro il Molosso," *Ren-*

diconti dell'Istituto Lombardo 108 (1974), pp. 196–202.

¹⁰ Livy 8.24.

¹¹ Strab. 6.280.

¹² Diod. 19.3.3.

certain — the Greeks and non-Greeks had to decide whether to resist or join in.¹³ It is also characteristic of the Lucanians: there were, for example, Lucanian exiles among the Molossian's troops in the expedition across their territory, one of whom ultimately killed Alexander.

The position of Metapontum through all the changing allegiances is far from clear. There is no mention of the city until the arrival of Kleonymos, again at the invitation of Taras, in 303. Taras had been managing to maintain her position for some time without external aid,¹⁴ but the Roman peace with the Samnites in 304 and the combined hostility (if not formal alliance) of the Romans and the Lucanians¹⁵ posed a sufficiently serious threat that help was again sought from Sparta. Kleonymos appeared with such massive forces that virtually all the Greeks found it prudent to support him. The fact that Metapontum alone remained aloof and refused to cooperate with Kleonymos suggests that the city did not feel threatened by the Lucanians and/or Romans, perhaps because it was protected by an earlier treaty or treaties.¹⁶ Faced with clearly superior forces, the Lucanians made peace with Kleonymos, who then used them against Metapontum, either by instructing them to attack or simply by allowing natural hostilities to develop, so that he could appear as a friend and force the city to accept his mediation.¹⁷ Metapontum was then made to pay an exorbitant amount for its recalcitrance: 600 talents and 200 girls from noble families as hostages. The size of this tribute, and the fact that it appears to have been paid, has been interpreted as reflecting the great prosperity of the city at the time, and also possibly as indicating that it had been ruled by an oligarchy which was now perhaps discredited and removed.¹⁸ For Meloni (and others), the Kleonymos episode is explicable as

an attempt to force the city back into the Italiote League, following its defection as a result of hostility toward Taras.¹⁹ All that can be said with certainty is that Metapontum, yet again, was prepared to act independently, though this need not necessarily indicate total rupture with the other Greek cities (compare the many modern examples of independent action within major alliances).

The clash with Metapontum marked the beginning of the end for Kleonymos who — thinking that his position in S. Italy was secure — began to indulge in a somewhat unSpartan lifestyle and to broaden his field of interest by seizing Corcyra. The Tarentines, realizing that they had again made an error of judgment in their choice of commander, revolted against Kleonymos, who returned from Corcyra and sacked the city. He then moved on to a place called Triopion, which he besieged until his camp was attacked by barbarians. Here, since large numbers of his mercenaries were killed or taken prisoner, he judged it best to withdraw to Corcyra. Metapontum is not mentioned in relation to these later stages of the Kleonymos story, and it used to be assumed that the city must have been effectively destroyed by the Lucanians in 303. This now seems unlikely in view of the archaeological as well as the numismatic evidence, and it is therefore possible that Metapontum played some part in the efforts to get rid of Kleonymos.

There is no literary reference to Metapontum again until the Hannibalic period, so that historians have tended to rely on numismatic evidence to supply clues to the role of Metapontum in the S. Italian ventures of Agathokles and Pyrrhus. Since serious doubts have been cast on the connection between Agathokles and the use of the triskeles symbol on coins of S. Italy (see below, p. 60-61), we are left with fragmentary and confused knowledge of

¹³ E.g., Taras at the time of Pyrrhus.

¹⁴ Taras maintained mercenary forces in which the young Agathokles enrolled: Diod. 19.4.1.

¹⁵ Diod. 20.104.1.

¹⁶ R. Mitchell, "Rome's Earliest Didrachms," *ANSMN* 15 (1969), p. 66, thinks the alliance between Metapontum and Rome could have been already of long standing by 302.

¹⁷ The treaty between Rome and Taras which stipulat-

ed that Roman ships should not pass Cape Lacinia probably dates from 302, although earlier dates have been proposed. See L. Santi Amantini, *Memorie dell' Istituto Lombardo* 35 (1975), pp. 173-90, cited in Giannotta, p. 12 n. 20 (*non vidi*).

¹⁸ Giannotta, *Metaponto* (above, n. 2), pp. 12-13.

¹⁹ Meloni, "L'intervento di Cleonimo" (above, n. 2), p. 14.

Agathokles' activities after 300. According to Strabo,²⁰ the Syracusan ruler was brought in by Taras in yet another attempt to quell the Lucanians and Messapians. In fact, however, Agathokles' efforts appear to have been concentrated on Bruttium. As Giannelli says, it seems rather a roundabout way of dealing with the Messapians and Lucanians. Furthermore, Taras had a history of extremely bad relations with Agathokles — starting in his youth with his ejection from the Tarentines' mercenary forces for suspected pro-democratic activities, and continuing with Tarentine support of Akrotatos' expedition against Agathokles — which would have made him an unlikely source of assistance. A summons from the Greek cities of Bruttium seems more plausible (Strabo simply has his list in the wrong chronological order: Agathokles *was* employed by Taras, but in the 320s and not the 290s). In any case, there is no record of Agathokles having penetrated further east than Croton, which he captured in 295, and no reason why Metapontum should have been involved directly in his activities.

The expedition of Pyrrhus is much more fully documented, and there is no doubt that his troops must have passed through or close by the territory of Metapontum on their way between Taras and their first major battle at Heraclea. Yet there is never any mention of Metapontum in the detailed accounts of Plutarch, Diodorus, etc., at this or any other stage of the campaign. The literary and epigraphic evidence rather implies that the Tarentines provided all of the support for Pyrrhus in the initial period and that the other Greek cities joined in strength only after the battle of Heraclea.²¹ There were, however, "other [unspecified] Italiote Greeks" who joined the first embassy from Taras to Pyrrhus²² and who

presumably contributed to the forces at Heraclea. Could Metapontum have been among them?²³ It will be argued below (p. 17) that the last phase of the silver coinage and perhaps one issue of gold belong to the Pyrrhic period because of their resemblance to the Pyrrhic issues of Taras and Heraclea and their occurrence with these (apparently contemporary) coins in hoards.²⁴ Aside from these coins, there is as yet no archaeological evidence to fill out the literary record on this question. It seems unlikely that Metapontum was completely unaffected by the conflict which mobilized the rest of S. Italy. If there had been lasting treaties with the Lucanians and/or Romans, the city would presumably have been required to render aid to its allies; and if it did not support them, its defection would probably have been remarked by the historians. Lévêque suggests²⁵ that opposition to Rome and support for Pyrrhus came most readily from democratically governed cities; aristocracies tended to see greater benefits in allying themselves with the Senate. *If* the Kleonymos episode marked a switch to democratic rule, as Giannotta proposes, this might suggest that (a) such treaties as had been made earlier by the oligarchs were no longer recognized, and (b) the city may now have been predisposed to support Pyrrhus. To judge from the coins and the silence of the sources, this support in any case would seem to have been insignificant, perhaps (as several writers have suggested) because the city had suffered a rapid decline following the Kleonymos episode. For example, the number of farms in the *chora* seems to have fallen drastically (presumably as a result of barbarian attacks),²⁶ and this must have had disastrous consequences for the local economy in general. Metapontum was the only Greek city of the Ionian coast

²⁰ Strab. 6.280.

²¹ Plut., *Pyrrh.* 16.3, 17.5; *SIG* 392, dedication at Dodona by Pyrrhus and the Tarentines.

²² Plut., *Pyrrh.* 13.5.

²³ Lévêque, *Pyrrhos*, pp. 280 and 304 (above, n. 2), states that Metapontum, Thurium and Heraclea were allies of Taras virtually from the outset, but he offers no source.

²⁴ Note that Lévêque, following Giesecke, wrongly attributes the large bronzes marked OBOLOS to this period (*Pyrrhos*, p. 435), seeing in them an emergency coinage arising from the necessities of war. In fact, all

bronze by this period was fiduciary, and the OBOLOS pieces almost certainly date from the mid-fourth century (see p. 47). Other bronze may belong to the Pyrrhic period, but the precise dating of the bronze remains uncertain; see A. Johnston, "The Bronze Coinage of Metapontum," in *Kraay-Morkholm Essays*, ed. G. Le Rider, et al (Louvain-la-Neuve, 1989), pp. 121-36.

²⁵ *Armées et fiscalité dans le monde antique* (Paris, 1977), p. 473.

²⁶ D. Adamesteanu and C. Vatin, "L'arrière-pays de Métaponte," *CRAI* 1976, p. 18.

that did not strike silver coins on the reduced standard, i.e. in the later phases of Pyrrhus' campaign (see below), so that such support as there was for Pyrrhus was short-lived as well as small-scale.

Whatever the role of the city, the final outcome of the Pyrrhic War for Metapontum, as for the other Greek cities, was Roman domination for the remainder of the third

century, until Hannibal offered an opportunity to rebel. Archaeology provides most of the evidence for the third-century occupation of the site, now shrunk to the area in and around the *castrum*. Much of the abundant bronze coinage of the city seems to date from this period of reduced circumstances, about which we as yet know little.

Arrangement of the Issues

In order to provide a basis for discussion of the coinage, it is clearly desirable to establish the order in which the silver issues of Metapontum were struck. Regrettably, however, there is little completely objective evidence on the matter. While the sequence of the major Classes A-D is reasonably certain, the arrangement of issues within Classes suggested here is of necessity tentative and should not be regarded as immutable.

The one wholly reliable method of reconstructing a sequence is through *die-links*, as was possible for Part 2 Class VIII.²⁷ Unfortunately there are very few die-links between issues in Part 3, although links are frequent within issues, and those not the most significant (A9.1ff., linking Demeter and Leukippos types all signed ΑΓΗ; C11.1ff., linking right- and left-facing Demeter heads and also different reverse signatures and symbols).²⁸ In the absence of die-links, or of a sequence of lettered dies (such as is found at several S. Italian mints), we must fall back on a combination of other factors, some of which may also have significance for the absolute chronology of the coinage.

Signatures provide the simplest way of grouping the coins, though there is always the possibility that the same initials recurred over time. For instance, there seems no justification for placing together all the coins of Metapontum signed ΑΥ or ΦΙ (see, e.g., pp. 8, 13). In theory, *hoards* should provide reasonably objective information about the order in which issues were struck. Up to a point they do, and the evidence of the hoards has been taken into consideration here. Nevertheless, the retrieval and publication of hoards (especially descriptions of the relative wear of the contents) are rarely ideal, and an allowance for error usually has to be made, often undermining the validity of the evidence. In any case, it is inevitably the

larger issues that tend to be represented in hoards, so that we learn virtually nothing about the smaller issues. *Overstrikes* may be helpful in two regards: legible and datable undertypes may permit a relative sequence of the upper types to be determined; and, where the undertypes are not legible, it may be reasonable to group the overstrikes roughly together if the practice appears to have occurred at irregular intervals, as seems to have been the case generally in S. Italy in the fourth century (see below).

Where these criteria fail, we must rely on avowedly subjective judgments of changes in *fabric* and *style*, hopefully more subtle than the arrangement of *BMCItaly* into “Period of Finest Art” and “Period of Decline” (the majority of the issues under discussion). There are clear changes in the models used for the Demeter heads: from the variety of hairstyles and hair ornaments of Part 2, through the acquisition of an obligatory barley wreath, to a veil worn over the hair neatly gathered up under the wreath, finally to a head without veil and with the hair allowed to fall loose below the wreath in a riot of curls (the model used for most of the obverse dies of Part 3). Different engravers coped with these types with varying degrees of success, so that when assessing stylistic changes, we should try to look beyond the idiosyncrasies and incompetences of individuals to the broader trends, and also to avoid the facile equations “good = early, bad = late.” It does not appear to be feasible to trace the development over time of particular features, such as the disposition of the curls on the head, because the engravers seem to have copied from established models (perhaps statues) rather than from the immediately preceding dies. There does appear to be a general tendency for the hair to become more stringy

²⁷ Noe-Johnston, pp. 92–93, 95.

²⁸ Connections on the basis of plated coins are obviously not considered to be valid. See below, pp.

89–91, on apparent die-combinations between issues of plated coins.

and the wreath disproportionately large as the model was copied again and again; the face changes from that of a good-looking young woman to one with a much more matronly appearance.

The barley ears are not easy to distinguish at first sight; they nevertheless fall into different stylistic groups. The groups can be differentiated by the treatment of the ear itself (the modeling of the individual grains, whether they form a tapering or a squarish, chunky ear; whether there are tiny, partially ripened grains at the apex), the awns (fanning out or straight and compact, close together or widely spaced, with or without barbs), and the leaf or leaves (straight or curly, narrow or broad and furled). It took some time for the disposition of the elements of the reverse type (barley ear, ethnic, symbol, signature) to become standardized. In Part 2, symbols or signatures occurred only sporadically until Class VIII. The inclusion of both a symbol and a signature did not become regular in Part 3 until A6, so that the layout of the reverse depended in part on the number of elements to be accommodated. The evolution of the "normal" layout can be traced during the course of Class A.

Comparisons with neighboring mints can sometimes be helpful, on the assumption that similar developments were roughly contemporary everywhere in Magna Graecia. These similarities include changes in technique (e.g., variations in the weight standard, reuse of flans by overstriking), the use of abbreviated/full-length signatures, the adoption of particular types and symbols (e.g., the choice of Corinthian rather than Attic helmet for Athena, apparently influenced by the influx of pegasus after the middle of the fourth century). Sometimes the mints shared engravers (like Aristoxenos) or even perhaps magistrates (see A6).

Consideration of other coinages leads into the problems of establishing an absolute chronology for Metapontum that is compatible with our knowledge of the rest of S. Italy, a topic which will be discussed after the full range of the evidence has been presented (pp. 57-59). The aim of this section is more limited: to offer an explanation for the relative sequence adopted in the catalogue.

CLASS A

Most of the issues of Part 3 belong in readily identifiable groups that can be seen to follow on from one another with some logic, but we start with two that are not easily related to the others. The issue with caduceus symbol (A1) is one of the most puzzling, because the indications of its place in the sequence conflict with one another. The obverse portrays Demeter with her hair bound up under a wreath (consisting of only two visible barley ears and leaves) and no veil. It does not therefore conform to either of the models that were to become standard for Part 3, where Demeter is normally veiled *or* wears her hair loose (A6.7 or A6.12). The dies are very deeply incised and the style resembles the heads of later Part 2 (N.507-9 in particular, note the cutting of the hair and the neck tranche). The style of the obverse on its own thus points to late Part 2/early Part 3. The style of the reverse is peculiar, but insofar as its features are to be found elsewhere in the coinage, the connections are with later Part 3. The disposition of the elements of the reverse type is unique. Normally the symbol is found above the leaf, leaving a clear space on the other side of the barley ear for the ethnic. On A1 the elements are juxtaposed, so that a large caduceus symbol occupies the space where the ethnic is usually inscribed, while the ethnic is disposed rather clumsily across the leaf. The placing of the signature ΛΥ at the base of the ear below the symbol is unusual (the "normal" position is below the tip of the leaf), though there are other instances (C8-10, also signed ΛΥ, and A6.7-11). The signature itself does not provide any obvious clue since ΛΥ recurs in Part 2 and Part 3 (N.448, 483, 496-98; C6-10). The lettering is large and coarse, not at all like the neat letters that are standard from Part 2 Class VIII through Part 3 Class B and for much of Class C. In Class A only A4 and A7.11-16 stand out as having similarly large letters. The style of the barley ear is quite unlike Part 2 Class VIII or A3-4. The ear is composed of highly modeled, ripe grains with the husks clearly shown; the ear tapers toward the apex; the awns are slightly splayed and the barbs usually well marked; the leaf is broad and

furled, curling slightly at the tip. A2, C4.1–4 and C5.2 are the closest parallels.

In general, the style of the caduceus issue is idiosyncratic and it may be a mistake to try to find meaningful stylistic connections since the engraver (there seems to have been only one for the issue) may possibly have been an outsider unfamiliar with the traditions of the mint, who simply followed his own inclinations. Since there do not appear to be any overstrikes among the specimens of the issue, the only other evidence is from a single hoard, *IGCH* 1933, which contained an example of A1 in *fdc* condition, plus A6.12 (also *fdc*), A7.10 and a distater B1 with *nomoi* of Taras Period V. As we shall see below (p. 26), the suggested burial date of c. 325 would allow the caduceus issue to belong to the latter part of Class A or even the beginning of Class C. One hoard is hardly a very satisfactory basis for assigning A1 to a fixed position in the sequence (the other hoards in which it appeared are all much later: *IGCH* 1958, 1959, 1980, 1985, Ginosà), and it seems best to leave the issue somewhat vaguely in Class A for the time being.

A2 falls into the same category. Indeed the barley ear and lettering of the reverses could be the work of the same engraver as the caduceus issue, even though the ethnic, symbol and signature are in the orthodox positions. The hoard evidence is even less revealing since examples were found only in the big, later hoards, *IGCH* 1958 and 1959. One specimen at least is allegedly overstruck,²⁹ which suggests that the issue belongs in Class A with the other overstruck issues (see below). The type of Zeus Eleutherios is usually associated with Timoleon and more generally with the notion of Greek freedom and autonomy, both of which point to a date in the 330s for the issue, when the memory of Timoleon's coinage was still fresh and when the S. Italian cities were particularly preoccupied with maintaining their integrity vis-à-vis the barbarians. The labeling of the head is most characteristic of early Part 3

(compare A6.7, 6.10–12; B3). The signature (?AΔ, never truly legible), and also to some extent the style of the reverses, might indicate a connection with C5 (also signed AΔ/ΔA), but on balance the issue seems most likely to be part of Class A.

Class A almost certainly overlaps with the end of Part 2.³⁰ It has been argued above³¹ that the two small Leukippos issues (A3–4) should probably be inserted among the Demeter heads of Class VIII, partly because A4 occurred in hoards which otherwise ended with Class VIII (*IGCH* 1926, 1928), partly because of the high incidence of overstriking in both, and partly because the style very closely resembles that of Class VIII (in the treatment of the barley ears, the variation in the length and placing of the ethnic, the erratic use of the reverse symbol). A3 does not appear in hoards. Its absence is to be expected since the issue is very rare, struck from a single die-pair. Hoards thus provide no certain evidence as to the place of A3 in the sequence. It is nonetheless reckoned to be the very first Leukippos type because the head is labeled with the hero's name; the style of the reverse, too, is closer to Part 2 than Part 3, and the large pomegranate symbol may be related to N.490. The signature API occurs later, on A6.7–9, but the style by then is rather different and the two instances of the signature need not be contemporary.

With the torch issue, A5, we reach the start of Part 3 proper. The connections with late Part 2, A3–4 and with other Class A issues are strong. Like later Class VIII and A3–4, almost all the known specimens of A5 show traces of overstriking, apparently on pegasi. Again like Class VIII and A6.3–5, the reverse has a signature only, without a symbol; FH might even refer to the same person/thing as the FHP signature on N.526–7. The obverse symbol (without signature) is also characteristic of early Class A and ties in with A3–4, A6.2–5, 6.10, 6.12. The style generally resembles A3–4 (the angle of the helmet, the blunt-ended ears of A5.1–8, the

²⁹ *SNGMunich* 988, on a unidentified undertype: S. Garraffo, *Le reconiazioni in Magna Grecia e in Sicilia* (Catania, 1984), pp. 73, 61.

³⁰ After this text went to press, new evidence emerged to confirm this point. A4.4 provides the link with Part 2: the reverse is the same die as N.516 (the very end of Part

2, Class VIII), while the obverse is struck from the die of A4.1, now showing considerable wear. There can be no doubt about the authenticity of this unique piece, which neatly confirms the sequence already proposed.

³¹ Noe-Johnston, p. 94.

ethnic in small neat letters), though the modeling of Leukippos' face is more accomplished. The female head was presumably the first obverse of the issue: the torch served to identify her as Demeter in the absence of a barley wreath (compare N.322 and 421); the head has affinities with Class VIII, before the wreath became standard, rather than with A6.7ff., the models for the remainder of Part 3. The two Leukippos obverse dies were used until they were very worn, like A4.1.

The next group, A6, is made up of six small issues, each with a different obverse type and reverse symbol but all with the signature K or KAA. Included with them is a single die-pair, A6.1, whose symbol and signature are unfortunately just off the flan of all four known specimens, but its style so closely resembles that of the rest of the group that there need be little hesitation about placing them all together. In addition, the fact that one example is an overstrike suggests that A6.1 belongs in the phase of overstriking that began in Class VIII and continued through A3-4, A5 and A6.2-4.

The range of gods and heroes chosen for the obverse types of this group is unique in the silver coinage of Metapontum — indeed, in Magna Graecia. Mints were usually very conservative in their adherence to their chosen type, although engravers often achieved considerable diversity in their treatment of the basic themes. (Silver fractions and bronze exhibit much greater diversity of types for the obvious practical reason that the types helped to distinguish the denominations.) Metapontum had been more adventurous than most of her neighbors, especially at the beginning of the double-relief coinage before Demeter had been selected as the standard obverse type. During the late fifth and first half of the fourth century Herakles, Apollo, Apollo Karneios, Dionysus and a Pan had appeared occasionally interspersed among the Demeters. The Leukippos type seems to have been introduced after c. 350 and was used sporadically thereafter. As we shall see, there were only three other instances of deviation from Demeter and Leukippos in the whole of the stater coinage after 350 (Tharrago-

ras: A7.13-18; Athena: C3; Herakles: D4.1-3). Five different male heads and two completely new versions of Demeter were therefore a remarkable break with tradition. They could all be the work of a single engraver, very likely the same person who cut the torch issue: the style is excellent, and has a flair and an assurance that is rare in the coinage of Metapontum. We can only speculate as to the reason for the variety. Perhaps a talented engraver was allowed to parade his skills and at the same time display a range of gods and heroes that epitomized the city's Hellenic tradition at a time when it was threatened by the Lucani.

Herakles and Apollo are identified simply by their headgear (lion skin, laurel wreath), Zeus by a fulmen; Leukippos, Tharragoras and Demeter are labeled with their names, and in addition Leukippos has a parazonium and Demeter a torch (on A6.12, compare A5, N.322 and 421; there may have been a torch on A6.7 as well that is simply not visible on the surviving examples since they are all struck on flans much smaller than the area within the dotted border of the obverse die).

All the subsequent Demeter heads were based on the two models, A6.7 and A6.12. The first, A6.7, is an adaptation of the Hera type on the Tarentine gold staters and half-staters which date from the third quarter of the fourth century. The details of the hair and veil are closely copied, even to the way that the end of the veil trails below the neck tranche; the only change is that Demeter wears a barley wreath whereas Hera wears a stephane. The other model, A6.12, does not appear to have any numismatic antecedent (unless it developed out of the type with long hair, signed by Aristoxenos, N.139) and may have been derived from a statue. If the type were not clearly labeled Demeter one might well be tempted to identify the youthful head with its exuberant curls and flamboyant wreath as Kore, and the more sober veiled head as Demeter. The Apollo head with its tightly curled hair is closer in style to the fourth-century facing Apollo types of Amphipolis^{30bis} than to the Apollo of Catania with his more unruly locks. Erhart^{31bis} remarks that such a narrow

Dionysus, although the wreath is clearly of laurel and not ivy, and then puzzles over why he should be shown as young and beardless, which is not a problem if Apollo is depicted.

^{30bis} C.M. Kraay, *Archaic and Classical Greek Coins* (Los Angeles, 1976), pl. 32, 570 (hereafter, *ACGC*).

^{31bis} K. P. Erhart, *The Development of the Facing Head Motif on Greek Coins and its Relation to Classical Art* (New York, 1979), pp. 249-51. She identifies the head as

view, almost in profile, is very unusual, although the three-quarters view was fairly widespread from the fifth century onward.

The reverse dies offer less scope for virtuosity; they are very similar to the reverses of the torch issue, the barley ears chunky, the lettering small and neat. The longer form of the ethnic, **METAFON**, is used on A6.2–5 for the last time on the staters — **META** is used invariably thereafter. On the reverse of the Herakles (A6.1) there are traces of either a symbol and signature on either side of the leaf (as A6.6 or 6.12) or alternatively two symbols (as A6.7–9); it is impossible to guess what either might have been. Only one reverse die of the Zeus type (A6.2–5) has a symbol, and that does not appear to have been the first (or last) of the issue since a break had already begun to develop on the obverse die by the time that the die was used with the poppy seed reverse. As noted in the catalogue, there are specimens of A6.4 both without and with the die break, as if more than one reverse die had been prepared and dies were drawn at random from a die-box. The standard layout of the elements of the reverse was still evolving at this stage: on A6.2–5 the signature is above the leaf (as on the torch issue and on the lettered series of Part 2 Class VIII), with the symbol on A6.2 above the signature — the first reverse die to have both a symbol and a signature. A6.6 and 6.12 move closer to the norm, with the symbol above the leaf and the signature below, but running vertically. The double symbol of A6.7–9 leaves no space for the signature below the leaf, so instead it is placed horizontally at the base of the ear below the ethnic, the position where it then remained on A6.10–11 and A7.1–10.

The control marks had normally been minimal prior to A6.6: either one symbol *or* one signature, or at most two symbols sufficed. Hereafter almost all reverse dies carry both a symbol and a signature, and many obverse dies were also signed (A6.6–12, all A7). The new

practice may have been copied from elsewhere or arose from changed circumstances that affected other mints too, since these same signatures Kal..., Ari... and Ona... also occur together at Taras, Thurium and Heraclea (see below, p. 53). Significantly, these issues were the latest of all three mints to be included in the Palombaio hoard (*IGCH* 1940), the only hoard to end with A6.³² Significantly, too, they were also among the last issues of all four mints to be overstruck visibly.³³

A7 has three obverse types: a Demeter copied from A6.7 (A7.1–9), an unusual head of Demeter/Kore surrounded by barley stalks (A7.10–12), and a helmeted male head (presumably Tharragoras again, A7.13–18). A7.10 is connected with A7.1–9 by the signature Pro..., placed on both at the base of the barley ear but above a second short leaf which is peculiar to these dies. The obverse die of A7.10 then recurs with a different reverse signature (Ap...) and symbol, and again (recut) with Pro... and a third symbol. The Tharragoras issue, A7.13–18, is more tenuously associated with A7.10–12 on grounds of style and (possibly) the more abbreviated signatures Σ and Γ (where A7.10–12 have Σ/A and ΓPO).³⁴ The group appears to be the work of two engravers, one of whom probably also cut the reverses of A6: the hallmarks of his style are the chunky barley ears and small neat letters, whereas his colleague used large letters and made a narrow leaf curve up very close to the base of the barley ear. The first engraver could have been responsible for the large bold Demeter heads of A7.1–9, which are deeply incised; the other produced more delicate, even fussy, heads in flatter relief.

All the obverse dies are signed, continuing the practice of A6.6ff., but the letters are now placed behind the head and/or under the chin. At first the reverse signatures follow on from A6.7–11, at the base of the barley ear; they are then displaced to the other side of the ear by the large ethnic on A7.11–12; and they end up

immediately following issues IVG-L, the group with the signatures Kal..., etc.

³⁴ As in the preceding group, virtually all the flans are smaller than the dies so that signatures and symbols are often partially or wholly illegible. The signatures may have consisted of more than one letter, but that is all that is visible on the surviving specimens.

³² An example of A6.12 was found in *IGCH* 1933 with an example of the caduceus issue.

³³ See p. 40 below for Metapontum overstrikes; Thurium with Kal..., *SNGANS* 1095; Heraclea with Kal..., *SNGLLoyd* 272; Taras with K, *SNGLLoyd* 177 (Period IVF), is the latest issue of Taras to occur overstruck — there are no overstrikes among the

below the leaf, underneath the symbol on A7.13–18, the position normally used thereafter.

The Demeter head surrounded by barley stalks is unique, and was perhaps inspired by Sicilian models. The barley stalks symbolize the rich fields of the *chora* around the city like the barley grains around the lion's head at Leontini, or the dolphins representing the sea around the head of Arethusa at Syracuse. Tharragoras, like Leukippos, presumably had military connotations³⁵ — hence, too, the trophy and helmet symbols.

The tripod issue is the only one of the three that has been found in a hoard. One example in *fdc* condition was found in *IGCH* 1929, the "Molossian" hoard, with a Kal... group stater of Heraclea and two didrachms of Alexander the Molossian among others (see p. 22); a burial date of c. 335/330 has been proposed.

After the variety of A6 and A7 we come to a fairly homogeneous group of Demeter types, all based on the veiled head model (A6.7) and all signed on the reverse Φ l or Φ . The Φ l issues have no visible obverse signature, but this may again be the accident of survival since the flans are even smaller. The style generally of A8.1–6 is unlike anything that has gone before: the Demeters look weak and insipid because the modeling of the faces is poor and the eyes have not got the forceful expression of the earlier versions of the head; the barley ears are small, fine-grained and tapering.

The mouse issue, A8.7–28, is the largest under a single symbol to date, with six obverse dies and twice as many reverse dies. The die combinations indicate that there was a die-box and probably more than one anvil was in operation. The obverse dies are now all signed under the chin, like A7.14, rather than behind the head (as A6); the signatures on the reverse are almost always in the usual place under the leaf, except for A8.10 (Φ at base of ear and also under leaf) and A8.16 (above symbol). The Demeters were cut by three different hands. Engraver A was responsible for the small, slightly prim-looking head with the transparent veil shown slightly above the line of the

curls at the top and back of the head (A8.7); engraver B produced a bolder version with large, heavy-lidded eyes and an earring with bulbous central pendant (A8.10, 8.18); engraver C most closely imitates the Tarentine prototype — a soft, youthful head with full cheeks and rounded chin, sometimes wearing both wreath and stephane or ampyx (A8.15, 8.19, 8.22). The reverses cannot be so easily assigned among these engravers. There were at least two engravers, one cutting small neat barley ears and closely spaced ethnics (e.g., A8.7–8), the other larger chunky ears and less crowded ethnics (A8.9).

In spite of the size of the mouse issue, neither it nor the other Φ issue was represented in the hoards that closed with the Molossian or immediately post-Molossian issues (see pp. 28–29, Table 1). The first hoards to contain examples of A8 were buried much later in the century (*IGCH* 1934, 1970). None of the specimens appears to be overstruck.

The transition to Class B is provided by A9, a small interlinked group comprising two obverse and three reverse dies, the obverses signed N or Nl and the reverses all signed AΓH. The connection with A8 is provided by the Demeter head A9.1, which is clearly the work of engraver C of A8.15, etc., while the connection with Class B is provided by the switch to a Leukippos type and (more significantly) by the signature AΓ(H), also found on the obverses of the Leukippos head distaters and staters, B1–2. The signature may well refer to the same person as the AΓ of A8.15ff.

The most remarkable feature of A9 is that almost all the known specimens of A9.1–3 are very clearly overstruck,³⁶ as if the coins were produced in great haste with little concern to obliterate the earlier types. The undertypes are all pegasi of Leucas and Anaetorium (see p. 38, Table 4).

In contrast to the mouse issue, where the same symbol and signature recurred on more than a dozen reverse dies, each reverse of A9 has a different symbol, as if the symbol was intended to distinguish the dies. The symbols are drawn from outside the normal repertoire at

helmeted head is obviously a variant of an Ares type.

³⁶ Only Vienna 4051 shows no trace of overstriking.

³⁵ F. Imhoof-Blumer (*Monnaies grecques* (Amsterdam, 1883), Vol. 5, p. 5, 21 ff.) suggested that he may have been a local hero associated with Leukippos. The

Metapontum (see pp. 51–52): a comic mask, a pegasus protome (a reference to the source of the flans?), a crescent. The signatures are added haphazardly — retrograde between the ear and leaf, at the base of the ear below the ethnic (as A6.7ff.), or above the leaf and below the symbol (as A6.2). The engraving otherwise shows no sign at all of haste or carelessness: Demeter's hair and veil and Leukippos' beard and helmet are rendered with meticulous care, even to the point of showing the clips on the helmet for attaching plumes and the worked edge of the neckflap, both refinements that were usually omitted.

Before moving on to Class B, we should examine the possibility that the production of parallel series noted for Part 2 Class VIII continued in Class A. There is in fact no obvious indication of this. The issues seem rather to proceed from one another, and although two anvils could have been operating simultaneously at any stage, and almost certainly were by the end of Class A (A8.7ff.), the numbers of dies involved until A8 seem too small to have required more than a single-anvil operation.

CLASS B

Class B comprises the distaters (B1) and the three issues of staters (B2–4), all with Leukippos types and all signed **AMI**, which it is argued elsewhere³⁷ belong to the time of Alexander the Molossian's campaign and more specifically to the period when Metapontum was one of his main allies. The distaters are connected with the large stater issue B2 by common symbols (lion protome/head, club) and signatures (obverse **AΓH/AΓ** as well as **AMI** on the reverse). The other large stater issue, B3, has different symbols (dog, bird) and obverse signature (**Σ**) but the same reverse signature (**AMI**), and it so closely resembles B1–2 in style that they must be approximately contemporary. The remaining stater issue, B4, is markedly different in style: instead of the proliferation of control marks there is only one signature (again **AMI**, but on the obverse) and one symbol (a fulmen on the reverse). It is also a much smaller

issue than the others — only three obverse and three reverse dies. The issue may have been struck under different circumstances from B1–3, on the responsibility of Ami... without his colleagues, perhaps in response to some sudden need for cash toward the end of the campaign. The engraver of B4 was clearly not responsible for B1–3, but it is almost impossible to be certain how many engravers worked on the larger issues since the overall style is extremely consistent and could be the product of one man, or possibly two who worked closely together. Some of the reverses have tiny extra grains at the apex of the barley ear (e.g., B3.3, 3.17), but otherwise the style in general is very similar to A8.1ff.

None of the examples of Class B appears to be overstruck. Hoard evidence suggests that the group was roughly contemporary with early Taras Period V (*IGCH* 1933, 1950; it was also included in *IGCH* 1960 and 1969, which extended into Class C). The staters and distaters often turn up in later hoards, already worn by the time of burial of *IGCH* 1964 and 1965 (with Taras VI [part]).

CLASS C

With the exception of one small issue with Athena head (C3), Class C is entirely composed of Demeter types. The veiled head type is abandoned completely and all the Demeters hereafter are based on the "long-haired" model, A6.12. They are fairly evenly divided between left-facing and right-facing heads, with one attempt at a three-quarters view, C2.³⁸ The issues — defined as a group with a common reverse symbol and signature — vary considerably in size. The largest (C1) required 60 reverse dies, four run to between 10 and 20 reverses, and the rest have six or even fewer. Two signatures, **AΘA** and **ΛΥ**, recur with several symbols; the styles of these issues are in some cases sufficiently disparate that it seems unlikely that they follow one another and they may have been spread across a considerable interval. Obverse signatures occur on only five issues (C1–3, C5, C8).

³⁷ See p. 57. The arguments have already been presented in *Coin Hoards* 7 (1985), p. 47.

³⁸ The direction of the heads does not appear to be

significant in establishing the sequence, unlike some other series such as Neapolis.

There is no obvious indication as to the duration of the large plough issue (was it struck over a period of months, or years?) or the reason for its size. The return to the Demeter type suggests that it was struck in peacetime: it recalls a similar phenomenon at Heraclea, where there is a contemporary issue — again much larger than any previously under a single signature — showing Herakles holding the skin of the conquered lion,³⁹ a type that is normally thought to be an allusion to the defeat of the barbarians by Alexander the Molossian. The style of the plough issue is remarkably consistent throughout the 25 obverses and 60 reverses, and the strong affinities between C1 and B2 especially (in the cutting of the tapering barley ears, the thickly barbed awns and the small neat lettering) suggest that there was no significant break in the coinage between Classes B and C. This is confirmed by the hoard evidence since two important hoards close with Class B and C1 in similar condition (*IGCH* 1960, 1981).⁴⁰ The plough symbol also occurs on several fractions, some of which (F2) are clearly contemporary with C1.

The single variant of C1 with bucranium symbol (C1.1) provides a possible connection between C1 and the facing head issue, C2, although the bull's head wears a fillet on the former and is unadorned on the latter; the style of the reverses, too, is very similar. C1.1 clearly belongs with the plough issue, given the close similarities of style between the obverse and C1.2ff., and the unusual reverse signature **MAX**. The obverse is signed **Ξ** behind the head, a signature that does not recur.

The facing head issue is one of three signed **AΘA**.⁴¹ In spite of the small number of dies (three obverse and five reverse), the pattern of die use indicates that two anvils were in operation simultaneously. The obverse signature **AΓ** might refer to the same person as the **AΓ** of A8–9 or B1–2, though the commonness of Greek names beginning Ap... makes this far from certain.

Another small issue, C3, again signed **AΘA**, is modeled on the Athena heads of the later pegasi

on which the goddess wears a Corinthian helmet with a very large neckflap, and straggly locks of hair protrude beneath. The style of the reverses is not unlike that of certain dies of C1 (e.g., C1.23–25), apart from the unusual position of the signature between ear and leaf. As in the case of the plough staters, a companion issue of fractions was apparently struck alongside C3, also signed **ΣA** and with owl and locust symbol, but with Apollo Karneios in place of Athena as the obverse type (F7).

The final issue signed **AΘA**, C4 (tongs), is quite unlike C1–3 in style: the proportions of the Demeter head are very different from the plough issue (though in some ways closer to A6.12); the small, neat lettering and fine-grained, tapering barley ears have been replaced by less careful engraving, the barley ears coarse-grained and the ethnic in untidy letters; the obverse die is no longer signed. The pattern of die use of the 11 obverses and 20 reverses again indicates a two-anvil operation for much if not all of the issue.

Apart from one obverse (C5.1), the hayfork issue is very similar in style to the tongs issue and most of the dies could have been cut by the same engraver. The one anomalous obverse is much closer to the Aristoxenos model (N.439) or even the Agathoklean Kore head at Syracuse (*PCG*, pl. 31, no.14) than to A6.12: the head is more dignified, the hair is less curly and the barley wreath consists of only one pair of barley ears and leaves. It is also the only signed obverse of the issue (perhaps **ΔΩΠΙ**... was an engraver?). It is not clear whether the signature on the reverse is meant to be **AΔ** or **ΔA** since both occur: the ethnic is retrograde on two dies, but as one reads **ΔA** and the other **AΔ**, we are none the wiser. Although there are almost as many dies as for the tongs issue, one anvil seems to have sufficed to produce the issue.

The other major element of Class C are the five issues signed **ΛΥ** (C6–10). Two (C6–7) are so similar to one another (and also to the hayfork issue) that they could be the work of a single engraver. Another two (C8–9, with right-facing Demeter) do not in the least resemble C6–7;

also found in the same hoards.

⁴¹ Compare also Heraclea, Work (above, n. 39), nos. 62 ff.

³⁹ E. Work, *The Earlier Staters of Heraclea Lucaniae*, ANSNNM 91 (New York, 1940) nos. 49 ff.

⁴⁰ Taras VB5–8 are also signed **ΔA**, like C1, and are

both share some common features and may share one engraver. The remaining tiny issue, C10, is of very poor style, clearly produced by an inexperienced workman.

Some of the obverse dies of C5, C6 and C7 could easily be mistaken for each other, and only close inspection of the arrangement of the curls reveals the slight differences. The reverses of C6–7 have large untidy letters similar to C5; the barbs are often barely visible on the deeply incised, densely packed awns. The larger issue, with griffin symbol (C6), runs to eight obverse and ten reverse dies which are so combined that a two-anvil operation seems likely; the Artemis issue (C7), with only four obverses and six reverses, is less complex in its pattern of linkage.

C8–10 break with the established layout of the reverse used since the end of Class A, and for some reason revert to the practice of A6.7ff. in placing the signature at the base of the ear below the ethnic. Some of the obverses of the star issue (C8) show greater finesse in the engraving than C6–7, though there is a tendency to make the leaves and barley ears in the wreath disproportionately large; three of the obverses (C8.14ff.) are markedly inferior (one perhaps crudely recut), apparently cut by the same engraver as the much smaller Nike issue, C9. (For the large number of unofficial dies of C9, see further below, p. 90.) The engraving of the altar issue, C10, is still less competent. The workman lacked the skill even to reverse most of the letters as he cut a die, so that both ethnic and signatures are often retrograde, while the Demeter head was far beyond his capacities.⁴² The sharply tapering barley ear of C10.1 is quite similar to the reverse of C9.1ff., which may mean that the same personnel was involved.

The last group of Class C to be discussed is made up of three issues, amounting to four obverse and seven reverse dies in all, distinguished by amphora, fly and alabastron sym-

bols. Die links show that the three belong together, even though the obverse heads are dissimilar (C11.1: left-facing Demeter strongly resembling C7.2 (reversed); C11.3ff.: right-facing Demeter resembling C5.8ff.). The same signatures, Δ I and Φ I, recur together again in Class D.

The issues of Class C can be divided into three phases:

- (a) plough, with the facing head and Athena types either following immediately afterward or else contemporary with the latter part of C1.
- (b) tongs, hayfork, griffin and Artemis, which appear to follow on closely from one another; C11 could well belong here, overlapping the hayfork and griffin issues.
- (c) star, Nike, altar; amphora, fly, alabastron.

These phases emerge from an evaluation of both stylistic considerations and the hoard evidence. In the first phase, which is apparently a continuation of Class B, the engraving is neat and careful, the dies not deeply incised. As already mentioned, two hoards closed with the early part of this phase and with Taras Period V (*IGCH* 1960, 1981). The second phase is characterized by much bolder and untidier engraving, irregular letters, much coarser Demeter heads and barley ears than before. Five hoards go down to the griffin issue and early Taras Period VI (*IGCH* 1934, 1961, 1964, 1967, 1970).⁴³ C2 and C11 are recorded as being in the Mesagne hoard (*IGCH* 1971) which, in spite of the deficiencies in our knowledge of its contents, is compatible with the arrangement proposed here.⁴⁴ The final phase differs again in style, and is represented in a later group of hoards (*IGCH* 1947, 1956, 1965), of which the Taranto Via Mazzini is the most revealing (the plough issue very worn, the star issue apparently fresh at the time of burial).

The three phases appear to have spanned a minimum of approximately 30 years to judge

to be present in the population from which the hoard content was selected.

⁴⁴ The larger issues, including the plough issue, have not been mentioned as being in the hoard, though it would be surprising if they were not. We must await full publication.

⁴² The retrograde legends and peculiar style led C.T. Seltman to identify the issue as Punic: "The Influence of Agathocles on the Coinage of Magna Graecia," *NC* 1912, pp. 1–13.

⁴³ The Artemis issue is not represented in any of the five, either because it had not yet been struck or (more probably) because it was smaller and therefore less likely

by the spread of contemporary Tarentine issues, and while one could plausibly postulate steady production at the rate of five obverse and ten reverse dies (on average) every couple of years, it seems more likely that there were gaps between each phase and that production was concentrated in short bursts as circumstances permitted or required.

The two problem issues mentioned at the beginning of Class A (A1–2) might alternatively belong in the second phase of Class C, where the reverses are of compatible style and the reverse signature **AΔ** and **ΛΥ** also occur, though there are other difficulties which make this possibility unlikely. For instance, the idiosyncrasies of the caduceus issue are even harder to explain after decades of accepted mint practice: the placing of the signature connects A1 with the final phase of Class C, though there is no other common feature; and the labeling of the Zeus head, not unusual in Class A, would be incongruous in Classes C or D. Furthermore, the burial date of *IGCH* 1933 cannot easily be pushed down far enough to accommodate a much later place in the sequence for A1 because of the other contents, and the absence of any examples of the large issues of Class B or the plough symbol seems improbable if the hoard were given a much later burial date.

CLASS D

A significant break in time or organization must have ensued at the end of Class C, since the pattern of production was markedly different when coinage was resumed, in that there are many changes of symbol for each change of signature, the symbols often being used for only one or two dies. Furthermore, the style of both the Demeter heads and the barley ears is unlike anything that has gone before: the heads tend to be large and matronly, the hair depicted in almost corrugated curls, while the barley ears are either very coarse-grained with widely separated awns or else made up of many tiny grains and compact awns. The lettering is varied — some small and neat, some large and more irregular. A's with broken cross-bars make their first appearance since Part 2 Class VIII.

The class again falls into three main subsections: (a) no reverse signature, (b) reverse signature **FA**, (c) reverse signature **ΦI**. The spindle issue, D1, appears to be the first of the Class since the large Bernalda hoard (*IGCH* 1958), which contained a full range of issues of Classes A-C, stopped with two examples of D1 and no other representative of Class D. The reverse is unsigned, for the first time since B4 or, before that, A4; the signature is placed instead on the obverse, **ΔI** on one die (obscured by a die break) and **K** on the other. The style is completely unrelated to Class C. The Demeter head still ultimately derives from the "long-haired" model, A6.12, though much of the detail has been lost: the wreath consists of only three barley ears and three leaves, the curls of the hair have been much simplified and there are no locks visible under the chin. D1.1 is of a rather better style than the other Demeter heads of Class D, and stands in the same relationship to them as A6.12 to its less accomplished successors.

The cock and satyr issues (D2), placed next, are entirely unsigned. If, as appears to be the case, the obverse of D2.6 is the same die as D3.1 recut, the signature **Γ** was deliberately removed and the anonymous issues clearly do not form a separate (and prior) group. The Demeter head of the cock issue, D2.1–4, is very similar to D1.1, the details slightly coarsened. The reverses of D2.2–4 are by a different hand to D1: the ear cut small enough that the awns do not reach to the edge of the die, thus the extremities of the barley ear are visible on most specimens. The ethnic is engraved in small letters (including **A** with broken cross-bar). The symbol on the reverse of D2.4 may be a cock obscured by die flaws.

The reverses of the satyr issue are apparently copied from D1 (note the large knobby grains and the awns have been cut too far apart). The Demeter head of D2.5 appears to be by the engraver of D1 in spite of the differences in the hairstyle and the lack of a barley wreath; similarly, the obverses of D2.6–8 are coarser, though even they may be by the same hand.

The **FA** group, D3, comprises five small issues with different reverse symbols (ram's head, krater, wing, caudelabrum/thyrsos, amphora) and the signature **FA** on the reverse, either in a

peculiar place between the barley ear and the symbol (D3.1–5) or in the orthodox position (D3.6 ff). All the obverse dies are signed: Γ (D3.1–2, compare D4.18–19) or Δ (D3.3–4, 3.6–11, compare D4.4–17), recit **TAP** in monogram on D3.5; the letters Δ are cut rather tentatively on D3.6, as if the engraver had been prepared to erase them. The Demeter heads are very similar to D2.6ff.

The Φ group, D4, is larger and more varied in type and symbols. The three unsigned Herakles dies appear to belong together in spite of their differences of style, as D4.1 and 4.2 share a common reverse and D4.3 has a symbol whose only visible part seems to be handle of a kylix. The model is quite unlike the earlier types in which Herakles wore the lion skin on his head; the left- and right-facing heads are by different hands (note the cutting of hair, beard, eye and mouth, and the modeling of the neck on D4.1). The Leukippos head, too, is a new variant of an old type, the helmet embellished for the first time with crest and wreath. The revival of these two warlike types suggests that coinage was prompted by renewed military activity. Like D3, all the obverses of D4 (except the Herakles) are signed Δ (D4.4–17) or Γ (D4.18–19). The Demeter head, D4.7, resembles the heads of D3, while the other Demeter types appear more youthful, with the hair rendered vigorously in corkscrew curls. The largest issue of the Class is the ant and cornucopiae (D4.8–14) with five reverse dies (three is otherwise the maximum); the style is almost identical to the double amphora and pig issues (D4.15–19).

As a tailpiece to the Φ group there are four closely similar die-pairs without obverse signature, two (?three) of them with obverse symbols instead. On D5.5 a die break obscures either a symbol or a signature behind the head. The mint appears to have tolerated such flaws, and repair was clearly not the reason for the alteration of the symbol on D5.2.

It is not easy to apportion dies among engravers in Class D. There is a general similarity about the Demeter heads which might have occurred if a single workman did not always copy the model in precisely the same way or if an assistant had tried to produce imitations.

The obverses share certain features — like the large heavy-lidded eye with prominent eye-ball and the cutting of the hair in bold strokes — and yet the detailed treatment of the hair and the expressions of the faces vary. D1, D2.5 and D4.2–3 seem to show more delicate workmanship than the others. The reverses ought to be simpler to assign: the knobbly grains of D1 (and perhaps D2.5ff. and D3.9) or the tiny grains of D2.2–4 and D4.3 stand out at once. But is D4.18 by the same hand as the last, or by another?

The general impression is that Class D was produced within a brief time-span, perhaps in parallel series (Γ A alongside Φ I, given the recurring signatures Δ I and Γ on both?), perhaps consecutively. The Class recalls the final phase of the coinage of Heraclea, where a few signatures are repeated with frequently changing types and symbols, or the Pyrrhic coinage of Taras, again with an abundance of changing symbols and signatures (some of them shared with Metapontum, see below). It will be argued later (p. 31) that the Class does in fact date from the Pyrrhic period. Most of the published examples come from two large hoards which seem to be Pyrrhic War burials (*IGCH* 1959 and 1980), both of which contained a full range of the coinage of Part 3 and closed with examples of Class D in sharp condition.

This study deliberately does not cover two silver issues that are normally catalogued with the coins of Metapontum, but which are peripheral to the main coinage: the drachms of the Lucani with barley ear type and the Hannibalic silver in the city's name. There is nothing to add to Robinson's brief but adequate description of the latter⁴⁵ in which he decisively attributes the issues to the Hannibalic occupation of the city on the basis of the Punic weight standard and their occurrence in *IGCH* 2016 with similar coins of Taras Period X. The drachms of the Lucani have also been dated to the Hannibalic period but are, as Robinson says, more likely to belong to the beginning of the third century in view of their weight (c. 3g), which is more in line with the standard of the "reduced" drachms of Taras Periods VI and

⁴⁵ E.S.G. Robinson, "Carthaginian and Other South Italian Coinages of the Second Punic War," *NC* 1964,

VII and also of Metapontum (F1, p. 168 below). (There is, of course, a half-shekel with Metapontine types, but ΛΟΥΚΑ in place of ΜΕΤΑ,⁴⁶ which is obviously Hannibalic.) The coins are attributed to the Lucani because of the monogram in place of an ethnic. The reverse type is clearly an imitation of the standard Metapontine reverse, with the symbol (club) placed above the leaf (cp. also the fractions of Rubi, see below, p. 49), but the obverse Athena

is much closer to Tarentine types than to anything struck at Metapontum.⁴⁷ There is, in fact, no solid reason why the coins should have been struck at Metapontum for the Lucani. The Lucani were presumably quite capable of the limited technical competence required to produce their own coins by the early third century, and not unnaturally chose types already familiar in the region.

ARRANGEMENT OF ISSUES: SYNOPSIS

Class A

Uncertain Classification

- A1 Demeter l./ΛΥ, caduceus.
 A2 Zeus r. (ΕΛΕΥΘΕΡΙΟΣ), Δ/ ?ΑΔ, crouching Silenus

With Part 2, Class VIII

- A3 Leukippos r. (ΛΕΥΚΙΓΓΟΣ), barley grain / ΑΡΙ, pomegranate
 A4 Leukippos (no legend), grapes / poppy seed pod or no symbol.

Part 3

- A5 Demeter r., cross-torch / ΗΗ
 Leukippos r., cross-torch / ΗΗ
 A6 6.1 Herakles r., no symbols or letters / symbol illegible
 6.2 Zeus r., fulmen / ΚΑΛ, poppy seed pod or no symbol
 6.6 Apollo three-quarters l., ΚΑΛ / ΦΙΛΟ, coiled serpent
 6.7 Demeter r., veil, Κ / ΚΑΛ (recut ΑΡΙ) or ΑΡΙ, bird and snake
 6.10 Leukippos r., parazonium, Κ / ΟΝΑ, kalyx krater
 6.11 Tharragoras (ΘΑΡΡΑΓΟΡΑΣ), Κ / ΟΝΑ, oinochoe
 6.12 Demeter l. (ΔΑΜΑΤΗΡ), cross-torch, Κ / ΑΡΧΙΓ, crab
 A7 7.1 Demeter r., as A.6.7, ΑΓ / ΓΡΟ, tripod
 7.10 Demeter l., barley ears around, ΣΑ / ΓΡΟ, Corinthian helmet
 7.11 Die of A7.10 / ?ΑΓ, ant
 7.12 Die of A7.10 / ΓΡΟ, star
 7.13 Tharragoras, Σ / Γ, trophy
 A.8 8.1 Demeter r./ΦΙ, two-handled krater
 8.2 Demeter r./ΦΙ, oinochoe
 8.7 Demeter r., ΑΓΟ or ΦΙ / Φ, mouse
 A.9 9.1 Demeter r., Ν / ΑΓΗ, comic mask
 9.2 Die of A.9.1/ΑΓΗ, protome of pegasus
 9.3 Leukippos r., ΝΙ/die of A9.2
 9.4 Die of A.9.3/ΑΓΗ, crescent

⁴⁶ Robinson (above, n. 45), pl. 6, 10.

⁴⁷ Compare O.E. Ravel, *Descriptive Catalogue of the*

Collection of Tarentine Coins Formed by M.P. Vlasto (London, 1947), nos. 1046, 1266 ff.

Class B

(a) Distaters

B1 Leukippos r., helmet decorated with quadriga, ΑΓΗ, protome of lion / ΑΜΙ, club

(b) Staters

- B2 Leukippos r., ΑΓ, lion-head / ΑΜΙ, club
 B3 Leukippos r., (ΛΕΥΚΙΓΓΟΣ), Σ, dog / ΑΜΙ, bird
 B4 Leukippos r., ΑΜΙ / no signature, fulmen

Class C

- C1 Demeter r., as A6.12, ΔΑΙ or Ξ / ΜΑΧ, plough or bucranium
 C2 Demeter three-quarters r., ΑΓ / ΑΘΑ, bucranium
 C3 Athena r., Α / ΑΘΑ, owl and grasshopper
 C4 Demeter l. / ΑΘΑ, tongs
 C5 Demeter l., ΔΩΡΙ on one die / ΔΑ or ΑΔ, hayfork
 C6 Demeter l. / ΛΥ, griffin
 C7 Demeter l. / ΛΥ, Artemis-Hekate
 C8 Demeter r., ΕΥ / ΛΥ, star
 C9 Demeter r. / ΛΥ, Nike with wreath
 C10 Demeter l., ΔΕΞ retrograde / ΛΥ, lighted altar
 C11 11.1 Demeter r. / ΔΙ, fly
 11.2 Die of C11.1 / ΦΙ, amphora
 11.3 Demeter l. / ΦΙ, amphora
 11.10 Demeter l. / ΔΙ, alabastron

Class D

- D1 1.1 Demeter l., ΔΙ / spindle
 1.4 Demeter l., Κ / spindle
 D2 2.1 Demeter l., cock
 2.5 Demeter l./satyr
 2.6 Demeter r./satyr
 D3 3.1 Demeter r., Γ / ΨΑ, ram's head
 3.3 Demeter r., ΔΙ (recut ΤΑΡ in monogram) / ΨΑ, krater
 3.6 Demeter r., ΔΙ / ΨΑ, wing
 3.9 Demeter r., ΔΙ / ΨΑ, candelabrum
 3.10 Demeter r., ΔΙ / ΨΑ, amphora
 D4 4.1 Herakles l./ cantharus
 4.2 Herakles r./ ?die of D.4.1
 4.3 Herakles r./ ?cantharus
 4.4 Leukippos r., wreathed helmet, ΔΙ / ΦΙ, triskeles
 4.7 Demeter r., ΔΙ / ΦΙ, krater
 4.8 Demeter r., ΔΙ / ΦΙ, cornucopiae and ant
 4.15 Demeter r., ΔΙ / ΦΙ, 2 amphoras
 4.18 Demeter r., Γ / ΦΙ, pig
 D5 5.1 Demeter r./ ΦΙ, Helios
 5.2 Die of D.5.1 recut, billhook added / ΦΙ, helmet
 5.3 Demeter r., ?no symbol or signature/no signature, sphinx
 5.5 Demeter r., ?arm or die-break across symbol/sphinx.

Hoard

The hoards containing material relevant to our period have been set out in Table 1 (below pp. 28–29), arranged in approximately chronological order of burial dates which have been assigned on the basis of their total known contents, not of the Metapontine coins alone. All the usual caveats apply with regard to the completeness and the accuracy of recording of the hoards. In the post-Noe period, with no standard catalogue or listing of the issues available, there have been inevitable difficulties about the precise identification of the Metapontine pieces, especially where symbols or initials are illegible. In addition to the fully published hoards (and those hoards containing only a few coins of Metapontum that often presented no problem of identification, even without illustrations), it has been possible to give details of several hoards in the museums in Taranto and Reggio which I have been able to examine through the kindness of the curators, as well as some that are documented in the ANS archives in New York.⁴⁸

First, three hoards should be mentioned that were omitted from Part 2, Table 3, or that have now been published in greater detail.

Pezza della Lita, near Cosenza, October 1974 (Guzzo, *AIIN* 1974–5, pp. 203–8). Omitted from Part 2, Table 3. Only ten pieces were recovered from a pot-hoard originally comprising more than a hundred, therefore little weight can be attached to the evidence. Nevertheless, the known contents accord well with the arrangement in Part 2, Table 3. The Metapontine coins were an incuse (as N.136) and one of Class VIIIa (N.496); the Taras pieces were one IID1 and two IIL4; the four of Croton were an incuse, a facing Hera (as *SNGCop* 1801), and two eagle/tripod (*SNGCop* 1795, 1797).

IGCH 1930, Taranto environs c. 1937. Included Metapontum, but there are no details of the

issues, nor of any of the contents apart from the Thurian distaters and a didrachm of Taras as Côte 208 (= Vlasto 512/513, Evans IVC) *fdc*, all of which would be compatible with the Metapontine pieces having been later issues of Part 2.

IGCH 1923, Altamura, August 1961. The hoard has now been published very fully by Giuseppe Guzzetta (“Il tesoretto monetale da Altamura, *IGCH* 1923,” *Bollettino di Numismatica* 1987/8, pp. 73–143). The last issues represented of Heraclea (Work 31), Thurium (*SNGOxford* 957, 960, 1058) and Terina (Regling 62–3, 78) were somewhat later than those in the Paestum hoard (*IGCH* 1925). The Taras pieces included a full range of Evans Period III (K, L, M, N, O, P, S) but nothing later than the three examples of IVB1 (*fdc*), while for Metapontum there was full coverage of Part 2 Class VIII (to N.512, 514, 516, 522), with no Leukippos or Part 3 Demeters. Guzzetta accepts the dating proposed in Noe-Johnston and suggests a burial date of 340/335.

1. Hoards containing Metapontum Class A and Taras Period IV [burial 335+].

Note. This group of hoards overlaps with those listed at the end of Part 2, Table 3.

IGCH 1931, Lucania 1865. The contents are known only from an inadequate description by L. Sambon, who does not distinguish the Tarentine issues beyond the fact that they are horsemen (“style de transition”). There were two staters of Metapontum: one “T. de Cérés et grain d’orge” (presumably N.443–4, with obverse but no reverse symbol), and one “T. barbue et casquée,” which could be either Leukippos or Tharragoras, probably the former and perhaps one of the early issues more pro-

here, see the relevant entries in *IGCH*.

⁴⁸ For complete citation of the references briefly noted

perly included in Part 2. The hoard presumably came from somewhere on the western side of Lucania in view of the inclusion of coins of Velia and Campania.

IGCH 1928, Carosino 1905. As noted in the discussion of this hoard in Noe-Johnston (p. 100), the latest coins are of Taras Period IV (to IVA-C, H and F, *fdc*) and Heraclea (as Work 32), and they determine the position of the hoard in the sequence of burials. The coins of Metapontum stop with Part 2 Class VIII, plus one Leukippos (A4.1), exactly like the earlier Lizzano hoard (*IGCH* 1926).

IGCH 1940, Palombaio 1910 (= "Palombara hoard" mentioned by Noe-Johnston p. 62). The first hoard to contain coins of the KAA groups of Heraclea (Work 32ff.), Taras (IVK, IVL, plus several IIIG1, IIIB, IVA1) and Metapontum (A6.6 and A6.4, plus N.422, 435 and 504). In addition, Selvaggi describes a nomos of Taras as Evans VIA3; on any reckoning this would mean that the coin was added 20+ years after the rest of the coins in the hoard were amassed, or else the piece may have been unearthed elsewhere by the peasant who found the coins since the rest of the contents are remarkably consistent. All were said to be in a "meraviglioso stato di conservazione."

IGCH 1929, Taranto (Molossian) 1925. Given the very wide chronological spread of the issues in the hoard (see Noe-Johnston, p. 100), it is most fruitful to concentrate on what can be deduced from those that are least worn: Metapontum A7.6 (*fdc*), Velia Period V (as *SNGOxford* 1182 *fdc*), Heraclea (as Work 32) (extremely fine) and, most significantly, the two didrachms of Alexander the Molossian ("fresh condition"). (The significance of the Thurian stater with two fish in exergue in "very good condition" cannot be judged since the sequence of Thurian staters is not yet established. The latest piece of Taras that is known for certain to have been in the hoard, HIO3, is described as "very well preserved" by Vlasto; Vlasto 502, if in fact from the hoard, is classed "EF" by Ravel, and is more likely to be contemporary with the Molossian didrachms.) The same type of Velia Period V had already occurred in *IGCH* 1925 with Taras IVB, a

pegasus of Leucas and Metapontum to Part 2, Class VIII. Work 32, as we have just seen, occurred first in *IGCH* 1928 (again with Metapontum Class VIII, plus A4 and Taras IVD), and then with other KAA group issues in *IGCH* 1940. Thus, whatever the lacunae in our knowledge of the full contents of the "Molossian" hoard, the recorded issues appear to be perfectly consistent with the other hoards buried in the 330s. The presence of didrachms of Alexander the Molossian, yet the absence of Metapontum Class B, Taras Period V or Velia Period VI (issues with explicitly Molossian types or symbols), suggests that *IGCH* 1929 was deposited toward the end of the 330s.

2. Hoards containing Metapontum Class B/Class C1 and Taras Period V [burial c. 325/320]

IGCH 1933, Taranto 1919. There is still some minor confusion as to the contents of the hoard, in spite of Kraay's efforts to disentangle them from Noe's notes and Vlasto's letter. A card with photographs of casts and illustrations from sales catalogues survives in the ANS archives, presumably put together by Noe in clarification of Vlasto's letter, which shows the four Metapontum types along with Taras pieces as Vlasto 537 (1 specimen), Evans VA5 and VB15 (2 specimens each, rather fine), VD1 (1 specimen, brilliant *fdc*). In addition, Vlasto lists in his note under Taras didrachms one "as Berlin Beschreibung Tab.XII, 187" (i.e., as Vlasto 664) and a piece "as Evans Pl. V,6" – which is not a coin of Taras but a gold fraction of Alexander the Molossian with types of Helios/fulmen; this is illustrated from *JIAN* 2 (1899), pl. IB', 13, so that there is no question of its being the actual specimen from the hoard. Noe was puzzled by this, but does not appear to have questioned Vlasto, or the reply has not survived if he did. In fact, the presence or absence of Molossian gold is not crucial to the interpretation of the hoard, though its inclusion would confirm the post-Molossian burial date. The Metapontum coins are unambiguously identifiable as A1.6, A6.12 (both *fdc*), A7.10ff. and a distater, while the Taras didrachms extend only part of the way into Period V, with

only one example of the large group VB. Vlasto mentions that there were also staters of Heraclea, Thurium and Velia that he was never shown, and the catalogue of his collection notes nos. 303, 451, 453 and 462 (Taras Periods II and III) are from the same hoard.

IGCH 1950, Monteparano 1905. Poorly recorded and dispersed, the hoard is mainly important for the Tarentine gold that it contained. The details are known from the catalogue of the Vlasto collection (from which it appears that the hoard contained a full range of Evans Period V, apparently covering the whole of the large group, VB) and from a letter from Vlasto to Noe which lists the Taras gold types. Vlasto added, "I have unfortunately no details of the important part of silver coins included in the Monteparano hoard. I have only the following note taken in 1905 and given to me by a friend... There were many Tarentine didrachms of Period V, 1 tetradrachm, very good, of Metapontum; 1 tetradrachm, V.f. of Thurium of Type Jameson Pl. XVII, 362, not fine, but as I have not been able to trace the silver coins *avec certitude*, I cannot give you any further reference to this important find." Presumably there were many other staters besides the distater of Metapontum, perhaps similar to those in *IGCH* 1960 and 1981, which contained an almost identical range of Taras Period VB.

IGCH 1960, Valesio 1935. This pot-hoard has been much discussed in the literature because it contained two Mars/horse's head ROMANO didrachms, and its burial date has been shunted up and down according to the view taken of the earliest Roman silver issues. The interest of the find, as Mitchell pointed out, is that the Metapontine and the Tarentine coins were in each case of a single type (the plough issue; Taras VB). In addition, some of the pieces were die-linked, which suggests that they were drawn all at once from issues recently struck. One piece each of Metapontum and Taras was lost before the hoard came into the possession of the Museo Fr. Ribezzo in Brindisi, but given the coherence of the other coins, it is highly unlikely that they diverged significantly in date from the rest and, thus, alter the burial date substantially (*pace* Crawford, *RRCH* 12). In Mitchell's estimation the latest coin in the hoard was

probably the stater of Heraclea (as Work 62ff., i.e., post-Alexander).

IGCH 1981, Ruvo n.d. I am grateful to Dr. Maria Antonietta Gorgoglione and Prof. Aldo Siciliano for permission to study and discuss this unpublished hoard in the Museo Nazionale, Taranto. The circumstances and date of its discovery appear to be unknown (there may be some connection with another Ruvo hoard, *IGCH* 1952, of similar composition). The contents as preserved mirror exactly those of *IGCH* 1950 and 1960. The Metapontum coins include three of Part 2, four of Class 1 (A7.1ff., A8.2–6, A8.11ff.x2), eight Leukippos types of the Molossian period (B2x7, B3x1), and seven with plough symbol. The majority of the Taras pieces are of VB, including issues identical to those noted in *IGCH* 1950 and 1960, some of them die-linked; two pieces of Period VIII and a halved coin, along with the miscellaneous bronze and the denarius mentioned in *IGCH*, appear to be intrusive. The stater of Heraclea, published by Stazio in *AJN* 1965–7, pp. 46–47, is again an example of Work 62ff. There was also a diobol of either Heraclea or Taras with Athena wearing helmet with hippocamp or griffin/Heraclides kneeling, strangling lion, A above.

3. Hoards containing Metapontum Class C1–7 and Taras Period VI (part) [burial 325–300]

Ginosa, June 1911 (*CH* 1, no. 50). The Metapontine coins ranged from staters of Part 2 to a Leukippos type (B2) and a plough symbol: the Tarentine pieces included examples of Periods IV, V and VIA 1, 3 and 4.

IGCH 1934, Torre dell'Ovo 1912. The five Tarentine coins covered a wide range, from an oecist to two VIA1, both *fdc*; the Metapontum pieces were A8.11ff., C1x2, C4 and C6x4, these last unfortunately "oxidized and eroded," although they were presumably contemporary with the Taras pieces.

IGCH 1967, South Italy 1969. A large hoard containing a considerable spread of S. Italian issues that was noted as it passed through the trade. Half the coins were of Taras, and more

than half of those were Period VI (A, C, D), many apparently die-linked. The Metapontum pieces went down to C1, C4–6, plus an unidentified “unpublished variety with grapes symbol” (not A4, because published in *BMC*). The latest pieces were probably of Neapolis (Sambon 477) and Taras.

IGCH 1970, Lucania 1957? Like the last, a large hoard seen in commerce and recorded by Kraay; it was possible to identify all the Metapontine issues from his notes. The range of Taras and Metapontum was much the same as *IGCH* 1967: to Taras VID (again, half the Tarentine pieces were of Period VI), including the same late issues of Metapontum, plus two facing Demeters (C2) as well. There was also a spread of full-weight staters of Thurium (see *IGCH* for examples in *SNGOxford*).

IGCH 1964, Oria 1884. Noted by Evans in the course of his article on the horsemen of Tarentum: the hoard went down to his Period VIG *fdc*, plus reduced-weight drachms. The Metapontum staters appear to have been of the same groups as in the hoards noted above (C4–6?), as well as two distaters “somewhat worn.” Although the hoard had been mixed with other coins by the time that Evans saw it, he was confident that only the drachms were of reduced weight, and the other mints (Heraclea, Thurium, Croton) were represented by full-weight staters, of which a coin of Heraclea (as Work 62ff.) was the best preserved.

4. Hoards containing Metapontum Class C8–11/D1 and Taras Period VI (all) [burial c. 300–280]

IGCH 1965, Monacizzo 1908. Predominantly Taras (2 gold, 56 silver to VIA, C-E), plus a handful of other rather more worn S. Italian pieces. The Metapontum coins were N.367 (worn), B2 and B3 (wear equivalent to Heraclea and Thurium), C8 and C7.2 (not identified by Quagliati).

IGCH 1956, Taranto Via Mazzini 1929. Roughly half the hoard was recovered (87 out of approximately 160 pieces). The composition is very similar to Monacizzo: predominantly Taras gold and silver (to Period VID), plus a

few Velia, Heraclea and Metapontum (distater and 21 staters, including four very worn plough symbols, C1x9, C4x3, C6x1, C7x2, C8x2, C9x1 - i.e., exactly the same span of issues).

IGCH 1947, Grimaldi 1933. A pot-hoard, apparently complete, containing a mixture of staters and fractions. The single stater of Metapontum (C8) appears to be in similar condition to the stater of Taras (VIA1). Most of the fractions appear to be contemporary with Taras Period VI (or earlier). The staters of Velia may be the latest contents of the hoard; they go down to the middle of Kraay Period VII.

IGCH 1971, Mesagne 1907. Although the hoard is in the Taranto Museum, it has not been possible to examine it; the details are known only from Mitchell’s note (in *RIN* 1973, p. 103, n. 34). The Taras pieces are unfortunately unknown beyond the inclusion of VE, but the Metapontine pieces are identifiable as N.314ff., N.366 (x2), A7.1ff., C2, C11.1, which is not out of line with the other contents (Neapolis to Sambon 477, Velia to Period VII, Acarnanian pegasi dated by Burnett to c. 308–295).

IGCH 1958, Bernalda 1935. A very substantial pot-hoard of gold and silver, largely in good condition and covering a wide range of fourth-century issues. In addition to the gold tetrobols of Metapontum recovered by the authorities, another 40 or 50 were dispersed, including at least four with facing Demeter “in mint condition” and the Leukippos type with slanting barley ears reverse. According to a letter in the *ANS*, a further 100 or so nomoi of Taras were seen in the trade, all in brilliant condition and apparently all of Period VI. The coins in Reggio were very thoroughly catalogued by Procopio, though he was unable to identify several pieces of Metapontum where the symbols were off-flan; almost all the issues of Classes A-C were represented, including C8–10 and two examples of D1. There was also a complete spread of full-weight issues of Heraclea, Thurium and Croton. The apparently reduced stater of Croton (Procopio no. 951, weighing 6.714g) was kindly checked for me by Dr. Maria Mastelloni, who confirms that the dies are as *SNGANS* 356 (not 357), and the low weight

arises from the poor alloy that seems to have been used for many of the fourth-century issues of Croton. One Thurian stater weighs only 6.95g, but this is the result of its worn condition. See also the discussion of the hoard, pp. 43, 44.

IGCH 1969, Soverato 1914. An extremely unsatisfactory hoard, recorded in two batches. The coins of Metapontum (B3, C1) and Tarentum (IIIH, diobol Per. V) are obviously much earlier than those of Velia (to early Per. VIII).

IGCH 1961, Oppido Lucano 1968. Again, a hoard composed entirely of full-weight issues, apart from the "reduced" drachms of Taras. It is not very revealing for Metapontum, since there was apparently only one coin (C6), but it does fit the general picture otherwise (Taras VI, Velia to end IX, Croton to Apollo/tripod, late full-weight Thurium, Neapolis to left-facing heads [Sambon 488], all of which were said to be on a par with the Metapontum stater as regards condition).

IGCH 1966, Lucania? 1953. Reputedly contained a coin of Metapontum but there is no record of it, or of the 10 Taras pieces, among the photos in the ANS archives. The contents were otherwise similar to Oppido Lucano (Neapolis to Sambon 475, Velia to the end of Period IX, Thurium to Noe M16 [distater] and to end full-weight staters).

Ospedale Nuovo, Crotona, 1976 (reconstructed by Andrew Burnett on the basis of P. Attianese, *Calabria Greca* 3, pp. 354–62, and kindly communicated to me). The hoard was mainly composed of reduced-weight drachms of Croton (as *SNGANS* 421–22) and pegasi of Ravel Periods IV and V. Only a handful of other S. Italian mints were represented: the Taras pieces went down to Period VI (A, F), there was one stater each of Velia and Thurium, and the four coins of Metapontum included two Leukippos types and one C7. There were rather more coins of eastern mints: ten of Athens, 16 Alexanders and (most significantly for dating purposes) two of Demetrius Poliorcetes, including one with the same obverse die as Newell LVII (Pella 294/3). The non-Crotoniate pieces of S. Italy were clearly marginal in a find of more than 350 coins, but nevertheless the Meta-

pontum and Taras pieces are roughly in line with the issues found in other hoards of the same period.

5. Hoards containing Metapontum Class D and Taras Period VII [Pyrrhic War burials]

IGCH 1980, Metaponto 1910 (Salonica). At least half of the 67 Metapontine coins in the hoard are examples of the latest issues, all clearly *fdc* at the time of burial — although now frequently oxidized and damaged by drastic cleaning — and presumably drawn out of circulation immediately after they were struck. (Most of the known examples of the issues of Metapontum Class D derive originally from this hoard and the following one.) The staters of Heraclea, similarly in brilliant *fdc* condition, are almost all of the last full-weight issues (Van Keuren Group Ia). The only reduced-weight issues were two coins of Taras: VIID and VIIIL2, apparently in the same condition as the late staters of Metapontum. Evans himself suggested (*NC* 1918, p. 151) that VIIIL2 might have been misplaced in his arrangement; the type would fit with the other "Nike" issues of late Period VI and VII and the ~~HP~~ monogram may refer to the great battle at Heraclea. An example of Taras VIB2 was also found, but Evans dismissed as intrusive various pieces, including an early Wheel type of Taras, two nomoi as VIIIA4 and VIIIB1, and also a Hannibalic stater of Metapontum.

IGCH 1959, Metaponto 1955. The precise contents of the hoard cannot now be ascertained since the hoard was stolen from the museum in Metaponto; fortunately many of the coins were illustrated by Neutsch and Procopio in their publications, so that it is possible to be reasonably certain about the issues of Metapontum represented. Burial would appear to have been about the same time as *IGCH* 1980 since, in addition to the full range of Class D staters of Metapontum, of Taras Period VI and of Thurium full-weight, there was one reduced stater of Heraclea (as *SNGANS* 84) and one of Croton (as *SNGANS* 411). *IGCH* mentions the inclusion of Taras VIII, but there seems to be no

reference in either of the publications to any coin later than Period VI.

IGCH 1985, Benevento 1884. Not significant for Metapontum or Tarentum, whose issues probably date from half a century before the burial of the hoard. Composition otherwise similar to the previous two hoards listed, plus two "fresh" Herakles/wolf and twins didrachms.

6. Hoards buried after the end of regular minting at Metapontum

IGCH 1946, Cariati 1957. A very mixed hoard, including reduced-weight issues of Taras and Heraclea, plus electrum of Syracuse and Carthage; the one identified coin of Metapontum was clearly one of the oldest pieces in the hoard (N.469). See now S. Pennestri, "Il ripostiglio di Cariati," *AIIN* 1983, pp. 39–62.

IGCH 1977, Torchiarolo 1926. The real significance of the hoard probably lies in the range of fractions of Taras, Heraclea and Thurium that it contained. Metapontum was represented by a range of staters that goes back to early incuse, and most of the fractions also belong to the earlier periods, apart from two with plough symbol. See discussion under Fractional Coinage (p. 49).

Timmari 1929 (A. Siciliano, "‘Tesoretto’ Monetale dalla stipe votiva di Timmari," *AIIN* 1978, pp. 45–73). Again a hoard important for the fractions that it contained, spread across a century and a half. The coins of Metapontum were a stater as A2 and two diobols as *SNGOxford* 798–801 with cornucopiae symbol (F21).

IGCH 1982, Taranto 1899. Another hoard composed of fractions. The four staters of Metapontum ranged from Part 2 (probably N.523–24) to C1 and C11.2ff., plus three diobols (plough and "branch" = ?cornucopiae). The Taras pieces were five nomoi of Period VI (A1, C1, D2, E1), three drachms signed Sostratus and 52 fractions (litrai, obols and hemiobols) of both full and reduced weight, some of which Gabrici connects with Period VIII. The fractions of Taras are not yet satisfactorily classified, however, and the hoard is not illustrated

so that the precise date of burial remains uncertain and might be in the first quarter of the third century.

San Giorgio Ionico (details and casts kindly supplied by Prof. Dr. Christof Boehringer, who will publish the full hoard). A vast hoard, including a very wide range of material. For some reason, there were no issues of Metapontum later than the plough issue, and the coins of Croton (to *SNGANS* 355–56), Thurium, Velia and Neapolis also appear to stop well before the last issues of those mints.

IGCH 1992, Gioia del Colle, 28 February 1936. Noe annotated a cast of A1.7: "ex Apulian hoard of 1936," and *IGCH* 1992 appears to be the only Apulian hoard of that date. The publication of the hoards from Gioia del Colle (Scarfi, *NSc* 1962, p. 18), however, makes no mention of Metapontum pieces in this hoard, nor are there any included in the photos in the ANS archives.

IGCH 1999, Parabita 1948. Again none of the later issues of Metapontum was represented, although the hoard was clearly buried after 250.

IGCH 2009, South Italy pre-1969. A hoard largely composed of third-century Roman Republican and Campanian silver; it is reported to have included as well one stater as A6.10, which is anomalous both geographically and chronologically.

IGCH 1996, Pisticci 1934. The two worn coins of Metapontum (an owl/caduceus drachm and a small bronze) clearly pre-date the latest coins of Taras (Period IX) by more than half a century.

IGCH 2003, Surbo 1928. The oldest coin in the hoard was the single piece of Metapontum (C1).

IGCH 2016, Taranto 1908. A Punic War burial, containing only coins struck on the shekel standard.

Hoard too poorly published to be intelligible

IGCH 1949, Metaponto 1881. The range of Carelli references cited by Helbig is too wide for accurate identification of the Metapontine pieces; no details of Taras. Two-thirds of the hoard was dispersed without record.

IGCH 1951, Gioia del Colle 1908. Included a distater and "many staters" of Metapontum; unknown issues of Taras, Heraclea and Thurium. The hoard is not mentioned in the article on the finds from the site (Scarfi, *NSc* 1962, p. 18).

IGCH 1952, Ruvo 1877. No details; Kraay in *IGCH* thought that it might be related to *IGCH* 1981, above.

IGCH 1962, Capua 1855. The head of "Volcano" might be either Zeus or Leukippos. The other contents are equally vaguely described.

DISCUSSION

Although none of the evidence is sufficiently trustworthy to stand alone, the groups of hoards taken together provide a plausible basis for discussion.

The hoards of Group 1 contain none of the issues of Metapontum or Taras traditionally associated with Alexander the Molossian, but the hoards do contain issues of the $K\Lambda\Lambda$ / API/ONA group of Metapontum, Taras and Heraclea which appear to have been struck just prior to, or in the early stages of, Alexander's campaign. This impression is confirmed by the inclusion in *IGCH* 1929 of Molossian silver which is most likely to have been brought to Italy by Alexander's men, if not struck locally. The contents of the hoards appear to have been accumulated over a considerable time-span since there is a fairly random selection of issues for most mints, sometimes dating even as far back as the incuse period or the late fifth century, and including coins of the long-defunct mints of Terina and Caulonia. In *IGCH*

1929, in particular, there are long intervals between the penultimate and latest issues of each mint. The find-spots, insofar as they are known, are widely scattered across Magna Graecia.

The next group, 2, is much more consistent. In each of the four hoards the majority, if not all, of the Taras pieces belong to Evans Period V, and the spread of issues generally is much smaller.⁴⁹ Heraclea and Metapontum both go down to types which are apparently immediately post-Molossian (Heraclea: Work 62ff., Herakles standing with the skin of the vanquished lion over his arm; Metapontum: the first hoards to contain the Leukippos-head staters and distaters usually associated with Alexander [Class B], plus Demeter with plough symbol, C1). As mentioned above in the descriptions of the hoards, not only is the range of issues quite limited, several of the latest pieces are die-linked, suggesting that — unlike Group 1 — the contents were not long-term accumulations, but were drawn all at once from circulation and included issues very recently struck. The consistency of the contents lends support to the view that the Mars/horse's head didrachms were struck in the last quarter of the fourth century, perhaps even earlier than argued by Mitchell.⁵⁰ What might have prompted the Romans to strike didrachms at that time? (a) The alliance with Alexander in the late 330s could have been the occasion. The Samnite War may then have diverted them, hence the long gap before any subsequent issues were struck. In that case, the coin in Valesio could have been brought south by retreating troops after Alexander's death, though it is curious that the hoards of Group 2 contain no other Campanian pieces. (b) The Roman take-

⁴⁹ Issues of Taras V which are not represented in the hoards: VC, which Vlasto thought should be moved back to the start of V, so as to join the rest of the $K\Lambda\Lambda$ group at the end of IV; VF, signed $A\Gamma H$, comprises few known die-pairs, so that its absence is perhaps not significant; and VE, possibly not yet struck when the hoards were buried. Evans grouped many varieties under VB: it runs to 75 obverse dies in the Vlasto Collection alone.

⁵⁰ R.E. Mitchell, "The Fourth Century Origin of Roman Didrachms," *ANSMN* 15 (1969), pp. 41–71.

A. Burnett, "The Coinages of Rome and Magna Graecia in the Late Fourth and Third Centuries B.C.," *SNR* 1977, p. 118, n. 99 and "The First Roman Silver Coins," *NumAntClas* 7 (1978), pp. 121–42, reckons that the didrachms were struck in Campania, not Metapontum (as has been argued on flimsy stylistic grounds, based on a supposed similarity between the Mars head and the Leukippos head wearing helmet with long flap (A9.3–4, though often illustrated by the obvious forgery, no. 9).

Hoards Containing Issues of Metapontum Buried After c. 335

IGCH	pre-Part 3			Metapontum			Taras	Heraclea	Thurium	Croton	Velia	Neapolis	Other significant	Burial
	A	B	C	D										
Pezza della Lita	N.496						IIID IIIL			SNGANS 373,367				340-335
1930	?	?					to IVC <i>fdc</i>		to F10, 22, 28	x	x			c. 335
Group 1														
1931	?						x	x			IV or VI			c. 335
1928	x	A4					to IVH IVD <i>fdc</i>	to Work 32	Molossus H, K		SNGANS 382, 355-56	III		335-330
1940	x	A6					to IVK, L	Work 32ff.						c. 330
1929	x	A7 <i>fdc</i>					to IIII ?IVA	to Work 32ff.	x		V <i>fdc</i>			c. 330
Group 2														
II 1933		A1 <i>fdc</i> A6.12 <i>fdc</i> A7	B1				to VA, B VD <i>fdc</i>							325-320
1950		?	B1 ?				to VG <i>fdc</i> plus A		F12					c. 320
1960						C1	VB	Work 62ff.	x					
1981	x	A7-9	B2 B3			C1	to VB	to Work 62ff.	x					
Group 3														
Ginosa	x	A1	B2			C1	to VIA							310-300
1931		A8				C1 C4 C6	to VIA <i>fdc</i>	to Work 62ff. (eroded)	x	x				
1967			B2			C1 C4-6	to VID	Work 52	x		III			c. 300
1970	x	A4-5 A8-9	B2 B3			C1 C2 C4-7	to VID							
1964			B1			C4-6?	to VI <i>fdc</i> reduced drachms	Work 62ff.	full weight					c. 300
									full weight	full weight				c. 300

HOARDS

Group 4

1965	x	B2 B3	C7 C8	to VIE plus A	Work 31	SNGANS 1051	II	300-280
1956		B1	C1 C4 C6 C7-9	to VID plus A	Work 85ff.		IV	300-280
1947			C8	VIA fractions incl. VE	Work 17 diobol	full weight	SNGANS mid-VII 355-56	c. 285
1971	x	A7	C2 C11			full weight	VII to S.477	Mars/horse's head didrachms pegasi
1958	x	A1-2 A4-8	C1-2 C4-9 C11	to VIF,G	Work 85ff.	full weight	SNGANS 356	285-280
1969		plus gold ? B3 ?	C1 ?	to III diobol			early VIII	300-280
1961			C6	VID reduced drachms	diobols	J10 full- weight fractions	SNGANS end IX 389ff.	c. 280 Mars/horse's head Locri
1966			?	x		M16 full weight	end IX to S.475	300-280
Ospedale Nuovo		?B2ff.	C7	to VIA,F		x	IV	c. 280

Group 5

1980		A1 A5-6 A8	C1 C4-9	VIB VIID VIIL2	full weight Van Keuren 1a		V	280+
1959	x	A1-2 A5-6 A8	C1-9 C11	to VIG	to Van Keuren 1b	full weight	to SNGANS 411 (reduced)	280+
1985		A1 A8		to VB			to IX to S.476	c. 275 Mars/horse's wolf head and twins <i>fdc</i>

over of Neapolis in 327/6⁵¹ is perhaps rather more likely, if Burnett is correct in his attribution, though it is still curious that the ROMANO didrachms do not occur with other Campanian coins in the hoards from further south. The Benevento hoard, naturally enough, does include both.⁵² The hoards are more concentrated geographically too: all four come from Taranto and the fringes of Apulia. We can only guess that their burial was occasioned by renewed barbarian attacks after Alexander's death.

Groups 3-4 cover the hoards which close with the long span of Taras Period VI. Brunetti⁵³ has argued for a 25-year sequence of ephors in Period VI, but the chronology proposed here suggests a less regular emission of coinage at Taras, in line with the bunching of issues that appears to have occurred at the same period at Metapontum and Heraclea (and perhaps at Croton, Thurium and Velia also). The elements of Period VI and early VII have been arranged according to the apparent sequence in which they occur in hoards (see Table 2), with consideration of the issues of other mints as well, particularly where the information about the Taras pieces is incomplete or where there is good reason to believe that other coins are rather later in date than the latest Taras. This order may well be revealed to be spurious when there is more information about hoards, or about die-links between magistrates, but it is the best that can be achieved at present.⁵⁴ In fact the order of magistrates that emerges does not differ radically from Brunetti's, which was largely derived by grouping together similar type-varieties of horseman and dolphin-rider without any reference to hoards.

The 12 hoards can be divided roughly into two groups:

(a) The first nine hoards contain only the first half of the issues of Taras VI and not all the varieties of the AY group of Metapontum (C6-7 only, down to *IGCH* 1967) appear. From Hera-

clea there is nothing later than Work 85ff. (the AΘA group). Velia is patchily represented and does not go beyond Period VII; Neapolis occurs in only a couple of hoards which go down to Sambon 477, the end of the right-facing heads. (b) The remainder of the full-weight issues of Taras (the last non-Pyrrhic Period VI) and Metapontum (the whole of the AY group plus D1) are represented in *IGCH* 1958. Two other hoards appear to be roughly contemporary to judge from the coins of mints other than Taras and Metapontum (whose coins made up too small a proportion of the total to be significant). Burial can perhaps be dated to the very beginning of the Pyrrhic War.

The remaining hoards, Group 5, must have been buried very shortly afterward, at some time during the Pyrrhic War, since they contain the final issues of Metapontum, Taras to the Pyrrhic types of the end of Period VI/early VII, plus reduced staters of Heraclea and Croton in *IGCH* 1959. The reduced standard had apparently not yet taken over completely, however, since the latest (fresh) staters of Thurium in *IGCH* 1959 and of Heraclea in *IGCH* 1980 were still of full weight. *IGCH* 1985 probably dates from roughly the same period, though the Metapontum and Taras coins are clearly much earlier than the ultimate burial of the hoard.

The majority of these hoards in Groups 3-5 were found within a rough triangle Metaponto-Brindisi-Taranto (including the area just to the east as far as Torre dell'Ovo); two from Brutium (Grimaldi and Ospedale Nuovo) predictably contain few pieces of Metapontum; in Oppido Lucano, from the mountains northwest of Metapontum, the Metapontum and Taras pieces are again marginal in a hoard dominated by Velia, Neapolis and Thurium. The three from the vicinity of Metapontum (*IGCH* 1958, 1959, 1980) were presumably connected with attacks on the *chora*, and were not recovered

the job, rather than at any established mint.

⁵¹ L. Brunetti, "Sull' eforato eponimale semestrale in Taras durante il periodo pirrico," *RIN* 1966, pp. 5-8.

⁵² On the riskiness of such a procedure, see the comments of R. Mitchell, "Hoard Evidence and Early Roman Coinage," *RIN* 1973, pp. 93ff.

⁵¹ Livy 8.22.5.

⁵² M.H. Crawford, *Coinage and Money under the Roman Republic* (London, 1985), p. 29, suggests that this isolated issue of didrachms can best be explained by an isolated cause, most plausibly the building of the Via Appia from Rome to Capua, c. 312-308. He wonders whether the issue was struck in improvised fashion on

Overstrikes

Overstrikes among the issues covered by the present volume have already been discussed briefly⁵⁵ because the division between Parts 2 and 3 cuts across the period when overstrikes are most abundant and noticeable. Salvatore Garraffo's promised study of the phenomenon in Magna Graecia and Sicily appeared shortly after the publication of Noe-Johnston⁵⁶ which makes it superfluous to provide a detailed listing here of all the known overstrikes, but at the same time invites a fuller discussion of all the material, especially the final phase from Part 2 Class VIII onward. As was clear from his earlier article, Garraffo⁵⁷ proposes a somewhat different chronology for the double relief issues of Metapontum, in line with his revised (lower) dating for Taras (see further below).

The number of identifiable undertypes is extremely small for all the S. Italian mints in the fourth century, although a much larger number of pieces show traces of overstriking, usually apparently on pegasi. The identified overstrikes of Metapontum from the beginning of the coinage in double relief are set out in Table 4, alongside the contemporary overstrikes of Taras, Croton and Velia. (The many overstrikes at Thurium have been omitted because the absence of any clear idea of the sequence of issues of that mint means that the overstrikes are much less informative in our present state of knowledge.) Insofar as the undertypes are legible, it appears that all the S. Italian mints were reusing the same flans to approximately the same degree at approximately the same periods. It seems that there was a sporadic incidence of overstriking throughout the first half of the fourth century (at Taras in the late Oecist/Periods I, II and early III; at Metapontum in Part 2, Classes I-VII). For Metapontum the rate of overstriking appears on average to have been about the same as in

the medium and dumpy incuse phases: roughly 25% of obverse dies were used to strike old flans. The increase in overstrikes in Part 2 Class VIII and the Leukippos issues of early Part 3 at Metapontum — to around 70 or 80% of obverse dies — is matched by a similarly high incidence at Taras in Periods III/IV and at Croton during the issues with Eagle/tripod **KPO** and letters.

After that there are very few coins with traces of overstriking: A6.1 at the beginning of the **KAA** group; A9.1-3 just before the large Leukippos issues of Class B, and perhaps a few examples much later.

The legible undertypes provide useful *termini post* for the upper types. The overstruck issues of Dyrhachium and Leucas with caduceus and **Λ** are generally agreed to be contemporary with late Corinth Period IV, while Corinth V is taken to begin at about the time of Timoleon's expedition to Sicily, which was the obvious moment for a major influx of pegasi into the West. The interval between the dates of the original pegasus issues and the reuse of the flans has been the subject of some debate, as already mentioned.⁵⁸ Garraffo recognizes⁵⁹ that if Kraay was right to suggest that the pegasi of the Corinthian colonies were struck specifically as contributions to Timoleon's expedition, they could have arrived in S. Italy early in his campaign and been overstruck shortly afterward. Since his inclination is to shift the chronology downward as far as possible (see below), however, he places greater credence on Jenkins's original allowance of ten years or more for their arrival and overstriking (a figure ultimately based on the occurrence of the pegasi in Sicilian hoards). I have already argued for a much swifter arrival and overstriking of pegasi in Magna Graecia: (i) there is no need for pegasi to have traveled to Sicily and *then* returned (note that Timoleon spent some

⁵⁵ Noe-Johnston, pp. 102-3.

⁵⁶ S. Garraffo (above, n. 29), see pp. 66-82 on Metapontum, with catalogue of overstrikes.

⁵⁷ "Per la cronologia dei 'cavalieri' Tarantini dei

, periodi I-IV Evans," *RIN* 1982, pp. 101-28.

⁵⁸ Noe-Johnston, p. 102.

⁵⁹ Garraffo (above, n. 29), p. 156, n. 21.

time at Metapontum on his way to Sicily,⁶⁰ and (ii) pegasi were not compatible with the local weight standard (unlike Sicily), and thus not part of the normal coinage in circulation, so that the pegasi were likely to be overstruck immediately upon arrival in S. Italy.

If the pegasi were available in quantity in Magna Graecia from c. 344 onward, the obvious occasions when the S. Italian cities needed to produce their own issues rapidly by reusing existing flans are the conflicts with the barbarians of the late 340s and 330s, for which Taras twice enlisted outside aid. It is perhaps not coincidental that many of the issues overstruck on pegasi at Metapontum have the obverse type of Leukippos (a type apparently with warlike connotations), while at Taras several of the issues with abundant overstrikes have allusions to war (Taras armed, the horseman armed and/or accompanied by a Victory). The same signatures, even, occur on some of the upper types: K on Metapontum and Taras; KAA on Metapontum (A6.2-5), Heraclea and Thurium (also with Nike).⁶¹ It is argued elsewhere that this conjunction of signatures may be indicative of a concerted defense effort.

The overstrikes appear to end immediately before the large Leukippos issues (B2-3) at

Metapontum and before the final groups of Period IV at Taras, both some time after Corinth Period V with letter N. Clearly the supply of pegasi did not end as abruptly, even if it was much reduced compared with the 340s and 330s; pegasi were sufficiently abundant to influence the types and even the weight standards at S. Italian mints in the last quarter of the century. Apparently the barbarians ceased to pose as great a threat to the Greek cities after 330, and the circumstances were not repeated in which the mints had been under pressure to produce large quantities of coinage by restriking pegasi. Reuse of existing coinage may well have continued during the last quarter of the fourth century, but the flans were either melted down or else greater care was taken to obliterate the traces of the previous types. The only subsequent piece with traces of overstriking would appear to be Paris 1196 (C11.11), clearly much later in the sequence. There does not appear to be any evidence of overstriking among the issues of Pyrrhic date, at Metapontum or elsewhere, although the conditions prevailing during the Pyrrhic War must have been similar to those in the 330s.

The pattern of overstrikes thus fits into the historical context set out in Table 3.

TABLE 3
Chronological Pattern of Overstrikes

		Metapontum	Taras
400-	sporadic import of pegasi	Classes IV, VI some overstriking	Periods I and II
344-	Timoleon arrival of colonial pegasi in West; Corinth V begins	VII/VIIIa	III begins
342- 338	Archidamus arrival of Corinth V issues in West	VIIIb/A3-5 overstrikes on colonial pegasi and Corinth V/letter E A6.1 on Corinth V/letters Δ, N KAA group few overstrikes A9.1-4 on Leucas/mast Class B	III/IV IVC, F IVE-L V
334-	Alexander		
330		end of overstrikes	

⁶⁰ Diod.16.66.5.

⁶¹ Nevertheless, there are apparently few overstrikes

among the large groups signed KAA, API, ONA at Metapontum, Taras and Heraclea.

The chronology proposed by Garraffo diverges in varying degrees from the one suggested here, starting with the beginning of coinage in double relief. In the earlier phases, the overstrikes are not in fact particularly revealing as the undertypes can rarely be dated accurately; hoards therefore provide the main evidence for chronology. The fundamental source of disagreement is Garraffo's acceptance of Stazio's late dating of the earliest staters of Heraclea,⁶² which leads him to reject both Kraay's date for the burial of the Oecist and Paestum hoards (the first to contain such staters), and Kraay's rearrangement of the early phases of the double-relief issues at Metapontum. Kraay's argument was based in part on the contents of these hoards,⁶³ and also on the important hoard of fractions, *IGCH* 1896, which proved that the Herakles types (N.428–31) belong among the earliest issues in double relief.

His lower dating for the hoards, and therefore for Taras Period I horsemen/late oecists and the early Classes of Metapontum Part 2, is then justified by Garraffo in terms of the "likely" rates of output, a procedure which he recognizes to be hazardous. For Metapontum, he is skeptical about Kraay's order and dating because they mean that the mint would have had to have used 38 obverse dies in 20 years for a coinage "che non ha affatto le caratteristiche di una coniazione di emergenza," while only about 50 were used for the remainder of the

period down to the end of Noe's sequence, i.e., from 410/405 to 330.^{63bis} As remarked above,⁶⁴ it is impossible to allocate numbers of dies/ issues to specific time-intervals with any certainty, particularly since there may well have been periods without coinage. The use on average of two obverse dies per annum in any case hardly seems to denote an "emergency coinage," and the remainder of the coinage of Part 2 docs indeed seem to have been extremely sparse up until the final phase of Class VIII (with 70 remaining obverse dies to be accounted for, rather than Garraffo's 50). Yet neither case is so exceptional as to invalidate Kraay's analysis.

For Taras, too, Garraffo remarks that Kraay's chronology would mean that the remaining issues of Period II (after IIB1, E1 and G1 have been transferred into Period I) would have to be spread over 30 years, which he also finds "ben strano."⁶⁵ He finds nothing strange in the consequences of *his* chronology for the down-dating of all the other S. Italian mints considered by Kraay, which he simply does not discuss.

For the following period Garraffo continues to use the same approach, concentrating exclusively on the Tarentine issues in the hoards, which he justifies by saying: "le altre emissioni italiote in essi contenute sono ben lungi dall'offrire utili indicazioni, dato che anche esse sono state datate proprio sulla base

⁶² A. Stazio, "Contributo allo studio della prima fase della monetazione di Heraclea Lucaniae," *AJN* 12–14 (1965–67), pp. 31–84 arrived at a date c. 390 for Work 1 by comparison with the coinage of Croton. The seated Herakles of the reverse at Heraclea is supposed to have been copied from the identical type at Croton (*SNGANS* 378–79), datable from its first occurrence in *IGCH* 1917 immediately prior to the Apollo/infant Herakles strangling snakes issue that was linked by Evans with the founding of the Italiote League c. 390. The facing head of the Croton obverse is clearly based on the Kimonian model and closely resembles similar heads at Hyria, etc. which are dated to c. 400–390 by N.K. Rutter (*Campanian Coinages 475–380 B.C.* [Edinburgh, 1979], p. 61). Since Stazio followed Pozzi's date for the burial of the Paestum hoard at the end of the fourth century (i.e., based on the Campano-Tarentine coins that Kraay later rejected as intrusive) and was unaware of the contents of the Oecist hoard, he found nothing in the hoard evidence that was incompatible with his date. Kraay's dates for these hoards were, however, based on an appraisal of *all* the mints represented and they cannot

be rejected without pushing all the chronologies down by a quarter of a century. Stazio's argument is too insecurely based to merit such a rearrangement. The original of the seated Herakles type appears to be one of two fifth-century statues at Croton which the new city of Heraclea could have copied directly; it need not have been used first as a coin type by Croton, where the other statue of Herakles *was* used very briefly as an obverse type in the last quarter of the fifth century (*SNGANS* 334–35).

The connection between the infant Herakles type and the founding of the Italiote League is entirely conjectural and, although Evans was doubtless correct in suggesting the priority of the facing Hera type, the precise sequence and absolute chronology of the coinage of Croton is as yet far from certain. All in all, the arguments are too flimsy to stand against Kraay's meticulous consideration of the sequences of all the series involved.

⁶³ Noe-Johnston, pp. 91–92.

^{63bis} Garraffo (above, n. 29), p. 80.

⁶⁴ Noe-Johnston, pp. 104–5.

⁶⁵ Above, n. 29, p. 55.

- a. III A,B,C
- b. III H,K,O,P,Q,L1-2
- c. III D,E,L3-4,M,N;
IVD; IIIR-T
- d. III F,G; IV A,B,C,F
- e. IV E,G,H,K,L

Many die-links, some overstrikes, large output.

Parallel groups (see overstrikes, Paestum and Altamura hoards), several officinae.

Multiple signatures.

Fig. 1.

delle associazioni con le monete tarentine, o comunque delle eventuali connessioni con queste.”⁶⁶ In fact, it is precisely the consideration of these other S. Italian coinages, whose dates are not necessarily wholly dependent on Taras, that renders his chronology unworkable, for other constraints are thereby imposed upon the system.

As already mentioned, the largest number of legible overstrikes occurs among the coins contemporary with Taras Periods III/IV. The problem lies in their interpretation. Garraffo takes a view entirely opposite to my own: “non sappiamo esattamente quanto, ad esempio, gli stateri corinzi appartenenti alle prime fasi del Periodo V del Ravel abbiano circolato prima di essere impressi. E nostra impressione, infatti, anche sulla base della particolare composizione dei ripostigli italoti, che la penetrazione dei ‘pegasi’ in Italia meridionale in una certa misura ... debba essersi verificata alquanto più tardi che non in zona siceliota, più direttamente esposta all’influsso corinzio attraverso la mediazione siracusana.”⁶⁷ He adds that the chronology may be even lower than his conservative estimate, and the end of Taras Period IV may be as late as 315/310. As a consequence, Taras V and VI must then be telescoped to fit into the thirty years before Pyrrhus. The implications for the dating of the other S. Italian mints are not discussed.

Within Evans Periods III and IV, Garraffo proposes a plausible arrangement similar to

Brunetti’s, based on types, die-links, overstrikes and occurrence in hoards (see Fig. 1).

The difficulties arise only when absolute dates are attached to this arrangement. The whole of Group b (rather than the final part of it) is dated after 345 because of the overstrikes of III O and P on Leucas and Dyrrhachium, as well as the attribution of the large output with many overstrikes to the need to finance military expenditures in the years down to 335/330.

The two parallel groups, c and d, are then tentatively dated between 335/330 and 320, presumably to allow at least a ten-year interval for the overstrikes on Corinth V. The explanation for the overstrikes in this period (offered in the conclusion) is that pegasi continued to arrive in payment for grain exports from S. Italy during the famine in Greece and were then overstruck in line with the traditional policy of excluding foreign coin. The rather abrupt disappearance of visible overstrikes with the final phase of Period IV (320–310) is not discussed. As long as Taras is considered *in vacuo* there is little to stand in the way of this chronology (apart from the difficulty of explaining the insistent use of the Epirote eagle on Taras VA in the last decade of the fourth century), but it does cause problems for the dates of the issues of other S. Italian issues related through hoards and overstrikes.

Four hoards in particular are mentioned by Garraffo because they contained issues of Taras relevant to his groups (see Fig. 2). He does not

IGCH 1924 Corte Vecchie

IGCH 1925 Paestum

IGCH 1923 Altamura

IGCH, 1928 Carosino

to Taras III P-Q (i.e., Group b);

overstrikes on Leucas and Dyrrhachium.

to Taras IV B (i.e., Group d);

to Group d; overstrikes on Leucas with caduceus, Corinth V/letter E.

all Taras III, plus early IV (i.e., to Group d), but not recovered complete.

Fig. 2.

⁶⁶ Above, n. 29, p. 60.

⁶⁷ Above, n. 29, p. 61.

refer to *IGCH* 1926 (which included Taras III M) or 1929 (to III O and ?IV A).

Garraffo does not discuss the other S. Italian mints represented in these hoards.⁶⁸ Corte Vecchie stops with (among others) the first part of Metapontum Class VIII and Heraclea to Work 26; Pacstum and Altamura must be slightly later, since they include Taras IVB, plus issues of the latter part of Metapontum Class VIII (most of which are overstruck) and Heraclea to Work 31 (only in Altamura). These hoards therefore stop prior to the **KAA** groups at Taras, Metapontum and Heraclea (Work 32ff. appears for the first time in the two slightly later hoards, *IGCH* 1928 and 1929—with Taras IV D *fdc* in 1928 and Metapontum [A7.4] *fdc* in 1929) and prior to the issues traditionally associated with Alexander the Molossian (Metapontum Class B, Taras Period VA). The burial dates proposed in Noe-Johnston took account of this fact, and were also meant to accommodate the overstrikes in Taras III/IV and Metapontum Class VIII, on the assumption that the pegasi started arriving in quantity with Timoleon and were almost immediately overstruck. Garraffo's chronology would mean that these hoards were buried more than a decade after Alexander's death and yet contained none of the large issues struck during his campaigns, even among the freshest pieces; it would have been almost the end of the century before such issues appeared in hoards. This lower chronology would also mean that the dating of Velia and Heraclea should be moved down, so that Velia V would start in the late 320s and the type of Herakles strangling the lion (taken by Work to be symbolic of the struggle between Greeks and barbarians) would continue at Heraclea until the end of the century instead of changing after the Molossian's expedition. At Metapontum, Garraffo dates all the Leukippos types *after* 330, in view of their occurrence in hoards with early Taras IV and of the overstrikes. In the case of all the mints, Alexander's campaigns would have had no noticeable effect on the output or types of the coinage, but instead production would have been rather more intense around the turn of the century, if the issues displaced downward are to be accommodated.

These difficulties are obviated if the overstriking contemporary with Taras III/IV is seen as largely concentrated in the 330s. The chronology then neatly fits the types, the overstrikes, the hoards and the historical context across the whole of Magna Graecia.

Several comments are prompted by details of Garraffo's discussion. The Herakles type (A6.1) he says revives a type of the fifth century, "ma che è certamente da datare verso la fine del quarto," without further justification. As we have seen, the issue clearly belongs with the rest of the **KAA** group prior to 330. At Heraclea only two overstrikes are noted: (i) Work 5 on an incuse stater (? of Metapontum), at least 50 years old at the time of overstriking, based on his own chronology for Heraclea; (ii) *SNGLloyd* 272 = Work 32ff., on an unidentified pegasus, to which he gives a *terminus post* of 370–360, whereas it too must belong with the rest of the **KAA** group in the 330s.

For the earlier period (down to the end of the incuse coinage at Metapontum and Croton), Garraffo offers detailed chronologies and explanations of the circumstances in which the flans were imported into S. Italy and overstruck. He relates the influx of Sicilian coinage in the period 475–460 to the need to pay for troops and supplies during the Sicilian interventions in Magna Graecia under Gelon and Hieron I; the next phase (460–450) is to be explained in terms of movements of people (paid-off mercenaries and exiles) rather than commercial relations, which were not likely to have flourished during the political troubles between Sicily and S. Italy in the fifth century; commerce may, however, be responsible for the last phase, down to 440, as economic life recovered in Sicily. Throughout, Garraffo believes that the S. Italian cities acted in concert to overvalue their own coinages *vis-à-vis* all others and hence all foreign coin was subject to rejection or overstriking. The adoption of the incuse fabric was part of this policy since it made "acceptable" coins immediately recognizable.

There is much of interest in this analysis, but several points need to be made. First and foremost, it is obvious that an area like S. Italy with negligible local sources of metal must have

⁶⁸ Noe-Johnston, pp. 98–99, Table 3.

TABLE 4
Overstrikes in Southern Italy, Fifth-Fourth Centuries

	<i>Metapontum</i>	<i>Taras</i>	<i>Croton</i>	<i>Velia</i>
Class I	N. 310 on Corinth , Ravel T202 (31)	IA1 ?pegasus (28)		
	N. 319 (B2)	Metapontum incuse (31)		
III	N. 321 on Croton , as <i>SNGOxford</i> 1472f. (33)	IA2 on Thurium wreathed head (32)		
	N. 378 pegasus	IB1 ?pegasus (29)		
IV	N. 385 on Corinth , Ravel 345		<i>Eagle/tripod</i> as SNGANS 352 (36)	Per. III as <i>SNGOxford</i> 1132 on pegasus
	N. 389	IB1 (30)	344 (37)	
	N. 336 on Poseidonia (35)	IIA ?pegasus (38)	as <i>SNGOxford</i> 1512 (38-39)	<i>Facing Hera</i>
	N. 391	IIC2 (34)		
VI	N. 327 on Laos or Poseidonia (34)	III1 (35)	as SNGANS 246 (40)	as SNGANS 381-383 on Corinth IV/XIV (48-49)
	N. 422 on Corinth IV/XIV (36)			
VII	N. 425 pegasus	IIIC (36-37)		Per. IV as <i>SNGOxford</i> 1168ff. (1-2)
	N. 434			
VIIIa	N. 467 pegasus (37)	IIIK pegasus (38)		
	N. 501 pegasus (39)	IIIL2 (39)	as SNGANS 371-374 (50-53)	
VIIIb	N. 521 pegasus			
	N. 500 pegasus (38)			
IX	N. 512 on ?Anactorium (40)			
	N. 513 pegasus (41)			
	N. 514 " (42)			
	N. 515 " (43)	IIIO on Leucas (40-41)	as SNGANS 358 (41)	Per. V <i>SNGOxford</i> 1187 on Corinth IV/XI (3)
	N. 526 " (45)	IIIP on Dyrhachium (42-44)	as SNGANS 361-369 (42-46)	
	N. 527 " (46)	IIIL3-4 (45-47)	as SNGANS 368 (47)	
	N. 529 "	IIIM (48-49)		
	N. 518 on Leucas \wedge/caduceus (44)	IIID (50)		
	A3 pegasus (57)			
	A4 " (47-50)			
X	A5 on Leucas			
	Dyrhachium (51-56)			
XI	A2 pegasus (61)			
	A6.1 on Corinth V/Δ (62)			
XII	A6.3-4 pegasus (58)			
	A9.1 pegasus			
XIII	A9.2 on Anactorium (60)			
	A9.3 on Leucas, mast/\wedge (59)			
XIV				
XV				
XVI				
XVII				
XVIII				
XIX				
XX				
XXI				
XXII				
XXIII				
XXIV				
XXV				
XXVI				
XXVII				
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XXXI				

relied almost entirely on bullion from elsewhere to supply its requirements. There does not need to be a policy of over-valuation for cities to draw on existing coinage in order to supply their mints. Whether the flans are overstruck or melted down depends on purely technical factors (availability and suitability of flans, urgency of new coinage), and we cannot be sure that the recognizable undertypes of the overstrikes reflect accurately the full range of coinage available in Magna Graecia. Garraffo writes as if the overstruck coins were the *only* ones imported, whereas in fact they may have been the only flans remotely suitable for trimming and overstriking. Furthermore, Garraffo sees a sharp distinction between coins hoarded and overstruck, especially in the fourth century, from which he argues that the overstruck flans could not have been acceptable in circulation. Against this it should be noted that some hoards do contain non-Italian coins, often including those varieties that were also overstruck (*IGCH* 1874, 1888, 1891, 1908, 1916, 1925, 1929). In any case, there is a danger that the hoard evidence is unrepresentative of the coinage in circulation: (a) the contents of

hoards are trivial in comparison with the volume of coinage from which they were drawn; (b) the selection of coins to be hoarded may well be strongly biased in favor of local pieces that can be expected to retain their value and to be acceptable immediately when the moment comes to use the money, since that was presumably the intention behind the hoard.

Elaborate theories are not really necessary to explain the evidence of the overstrikes. Coins from outside Magna Graecia were likely to be reused by melting down or overstriking for the practical reasons that they were not as negotiable as local coinage, because struck on other weight standards, and they formed a useful supply of metal for local coinage. Pegasi, traditionally a major part of the foreign coin imported, happened to be reasonably suitable for overstriking. The major inflow was concentrated in the decade after Timoleon, which coincided with the period of greatest activity against the barbarians in S. Italy. The overstrikes were the result of increased pressure of defense needs and they ceased when the emergency ended.

Gold

Issues of gold tend to be exceptional in the coinages of Magna Graecia, and they are usually associated with abnormal military expenditures, often as payment to mercenaries at the end of their service.⁶⁹ Taras, in keeping with her role as the leading city and the one usually responsible for organizing military relief expeditions from outside the area, struck a relatively large number of gold issues, both staters and a range of fractions, which are traditionally spread between the 340s and the 280s, from Archidamus to Pyrrhus.⁷⁰ Heraclea struck only one: a quarter-stater, normally attributed to the Pyrrhic War (as de Luynes 420). Similarly, there is a single gold issue for Locri, a tenth of a stater struck for either Alexander the Molossian (Pozzi) or Pyrrhus (Kraay).⁷¹ All three struck their gold on the Attic standard, although they used Italo-Achaean weights for their silver. For Metapontum there are five issues of gold fractions, which present some problems of chronology and metrology.⁷²

The most straightforward issue has a female head r. on the obverse and occurs in two denominations, a third- and a sixth-stater (G1–2). All the evidence suggests that this was the first gold type, since it showed the most wear of the gold pieces in the Bernalda hoard (IGCH 1958). In addition, the obverse head is very similar in style to the Tarentine gold fractions (Vlasto 5–9,12) that were probably

struck at the time of Alexander the Molossian's expedition (note the fulmen symbol). There are no signatures to connect the gold with the silver, nor is the symbol repeated exactly on the silver (bird with wings *closed* on the gold but bird with wings *open* on the silver staters, B3). It does, however, seem reasonable to date the gold to the period of Alexander's activities when other exceptional issues were struck in silver (distaters, large issues of staters with Leukippos types; see p. 57). The obverse type may represent Hera instead of the more usual Demeter: she wears a stephane rather than the barley wreath which had become standard for Demeter, and the head is apparently directly modeled on the Taras Hera type. There was, of course, a cult and temple of Hera at Metapontum, too, but this is perhaps her only appearance on the city's coins.⁷³ Imitation of Taras did not, however, extend to the weight standard, which is Italo-Achaean — like the silver — and not Attic.

The remaining gold issues, all tetrobols, are much less easily placed. The two issues with facing heads on the obverse (G3–4) are described together because of the similarity of their types, but they need not be contemporary with one another since they differ in the style of lettering and in the treatment of both the obverse heads and the reverse barley ears.⁷⁴ The identity of the heads is uncertain: neither goddess wears a visible wreath or stephane, and

⁶⁹ See G.T. Griffith, *The Mercenaries of the Hellenistic World* (Cambridge, 1935); M. Launey, *Recherches sur les armées hellénistiques* (Paris, 1949–50).

⁷⁰ The gold issues of Taras are most accessible in M.P. Vlasto, "Les monnaies d'or de Tarente," *JIAN* 2 (1899), pp. 303–40 with plates, and in Ravel's catalogue of the Vlasto collection, to which the Vlasto numbers given here refer. A new arrangement and chronology is attempted in *HN*³ (forthcoming); see also G.K. Jenkins, "A Tarentine Footnote," in *Essays in Honor of Margaret Thompson*, O. Mørkholm and N.M. Waggoner, eds. (Wetteren, 1979), pp. 109–13.

⁷¹ E. Pozzi, in *Le Tavole di Locri*, ed. D. Musti (Romé, 1979), pp. 143–44, following Kraay in *ACGC*,

p. 197; Kraay proposed the later date in an unpublished contribution to *HN*³.

⁷² See earlier discussions by A. Stazio, "Osservazione sulle monete di Metaponto," *Atti XIII Convegno sulla Magna Grecia, Taranto 1973* (Naples, 1974), pp. 90–92; G.K. Jenkins, *British Museum Quarterly* 27 (1963), pp. 23ff.

⁷³ A bronze type, *SNGANS* 558/V4248, shows a similar head. It is possible that the goddess wearing a stephane on A5.1 is also Hera, though the torch symbol suggests Demeter; the facing head, C2, wears both stephane and wreath.

⁷⁴ Compare the continuity of the Hera types on the Tarentine gold across several decades.

although G3 has the legend NIKΑ, this may have been an epithet of Demeter. (Compare N.450 and N.495, also labeled NIKΑ. The former wears an olive wreath appropriate to Nike, while the latter is indistinguishable from the contemporary Demeter heads.) For convenience, they will be referred to as "Nike" and "facing Demeter," respectively. The reverses have the standard single barley ear, the awns widely spaced and without barbs on G4, more compact on G3; there is a krater with two large handles as the symbol on G4 but no visible symbol on any of the specimens of G3. The weights again follow the silver standard (c. 2.6g). The quality of the engraving of the facing-head types, especially the Demeter, is extremely good, which makes it unlikely that they date from the final phases of the coinage when standards of engraving had deteriorated. The treatment of the hair and eyes in particular is much more accomplished than C3. It is much more accomplished, too, than the other attempts at facing heads at Metapontum, or the later fourth-century types at Croton, Velia and Heraclea.⁷⁵ The facing-Demeter type has been known since the discovery of the Bernalda hoard in the 1930s, whereas the Nike was unknown until the early 1960s.

Finally, there are two issues with Leukippos as the obverse type, so identified in the legend. The heads are quite unlike the Leukippos distaters and staters attributed to the period of Alexander the Molossian: the helmet is now crested, and the bowl is decorated with the Skylla hurling a rock. Leukippos does wear a crested helmet on the late silver staters, D4.4–6, but there the helmet has a plain bowl encircled by a wreath and it is worn tipped back, so that the vizor is almost horizontal; the treatment of the face and beard, too, is quite different from the gold. On the reverse, both Leukippos tetrobols have two barley ears side by side; on G5 the ears are parallel (or almost),

very neatly cut, whereas on G6 the stalks are close together and the ears fan out. The type fills the whole field, making it difficult to place the ethnic legibly. G5 has M/E on either side of the field above the leaves in the manner of some of the bronze types (*BMC* 175, 177 [barleycorn] or McClean 1004–6 [Nike]); on G6 the ethnic META is placed above the barley ears in a part of the field that is not normally visible on the silver staters since the edge of the flan usually coincides with the tips of the awns (exceptions can be found among the late silver issues, e.g., *SNGANS* 508, 514). The two issues are similar in essentials (obverse type, double barley ear reverse), but there are variations in the placement of the barley ears and of the signature (on the reverse of G5, on the obverse of G6), and the use of symbols (none on G5, ant and locust above the leaves on G6). The same is true of the weights: for both, the weights are higher than the Italo-Achaean tetrobols. But while G5 conforms to the Attic standard (c. 2.85g), examples of G6 weigh between 3.24 and 3.32g, weights which do not readily fit any system (assuming that gold/silver ratios remained constant, see further below). The double barley ear was presumably intended to signal the use of a different weight standard (the same device was later used as a denomination marker for the Hannibalic silver and the bronze, e.g., *SNGOxford* 807, *SNGANS* 599ff.). It is then curious that the two issues were not distinguished more explicitly from one another in view of the fact that the weights differ substantially.⁷⁶ Examples of both were reportedly found in the Bernalda hoard with the other Hera head tetrobols, so that they presumably circulated together.⁷⁷

The stylistic affinities of both Leukippos issues are with the end of the silver coinage rather than with the issues for Alexander.⁷⁸ In addition to the style of the head on the obverse, note that the signature ΣΙ occurs only on G5 and on the "reduced" drachms with owl on

Robinson's notes in the British Museum; I have been unable to confirm the facts from other sources.

⁷⁸ For an opposing view, see Stazio, "Osservazione" (above, n. 72), pp. 91–92, where the Leukippos gold is "securely" given to Alexander because the type is taken to be parallel to the Leukippos distaters and staters; the other gold types are also given to the same period.

⁷⁵ It is not mentioned by K.P. Erhart (above, n. 31^{bis}).

⁷⁶ The possibility cannot be excluded that G6 is a fake, which would explain the anomalous weights. The two specimens appeared plausible enough on examination; they are utterly unlike the inept forgery in Berlin of similar type illustrated by Giesecke (see below p. 94, no. 37), which weighs 5.56g and is of poor style.

⁷⁷ The inclusion of G6 is known only from E.S.G.

olive-spray (F1); furthermore, the engraving of the reverses is similar, especially the rather fussily curled tip of the leaf. G6 has the knobbly barley grains and the unevenly drilled lettering of, e.g., C8 and C10; there is no exact parallel on the silver for the ant and locust symbols, though there is an issue with ant and cornucopiae (D4.8–14) and several with two reverse symbols.

Logic would suggest that the facing-head issues followed after the Hera head because they are all struck on the same weight standard and the format of the reverses is the same (single barley ear and ethnic in the longer form **ΜΕΤΑΓΩΝ**, which is not found on the silver after A6.2–5). The Leukippos issues stand apart in using different weight standards and the double barley ear reverse type; there is clearly no stylistic or other connection with the early group of Leukippos silver, so that it would be tempting to place these issues much later in the coinage. This arrangement is to some extent confirmed by the evidence of the Bernalda hoard, the source of many of the known specimens of the gold. As already mentioned, the Hera head tetrobols in the hoard were more worn than the Leukippos pieces, but unfortunately the condition of the others is less revealing. The British Museum possesses casts of three specimens each of the Leukippos and facing-Demeter types from the hoard, and it is clear that there is little to choose between them as regards wear: both appear extremely fresh (compare, too, *SNGANS* 396–98 and Gulbenkian 71–72, also from the hoard). Facing heads obviously show wear very quickly, but there is no sign at all of rubbing on the nose and hair of the Lockett specimen from Bernalda (compare the rubbed nose of the BM-Lloyd Nike). Similarly, the beard and details of the Leukippos heads are equally sharp. The gold pieces were presumably kept in some kind of separate purse, not mingled with the very large quantity of silver in the pot, so that they would have been somewhat protected from further damage after deposit; it appears that both the Leukippos and the facing-Demeter types were added almost immediately after they were struck. There is nothing, however, to indicate which was added first nor whether their burial was separated by a long or short interval.

The known specimens of the Nike head probably came from a single hoard found about 1960, but unfortunately the other contents, if any, are not recorded. All show some wear, which suggests that the issue was in circulation for a while before burial. We shall have to await other well-documented hoard evidence to ascertain their relationship to the other gold and to establish the sequence of issues more objectively. For the moment let us suppose the order to be: Hera-Nike-facing Demeter-Leukippos (**ΣΙ**)-Leukippos (ant).

When and why did the mint switch from one weight standard to another (if not, indeed, to a third)? There are two possible reasons:

(i) For the first gold issue the city, with no tradition of striking in gold, chose to adopt the same standard as for the silver, and this standard was maintained for the facing-head issues (perhaps the gold was intended primarily for payments locally and the recipients were accustomed to the standard). By the time of the Leukippos issue it had become clear that it would be more practical to follow the Attic standard, which had become widely known as a result of the large issues of Philip II of Macedon and which had been used all along by Taras for its gold issues as well as by Alexander the Molossian for all his coinage in gold and silver struck in S. Italy. If the gold was intended as payment for mercenaries, it would obviously be more acceptable if struck on a generally recognized standard. This does not explain, however, the heavier Leukippos issue, which fits neither standard; the only explanation, somewhat implausible though it may be, is that it might be equivalent to a half-stater on the reduced standard.

(ii) The variations in weights may be the result of changes in the gold/silver ratio following upon the arrival of the huge Macedonian gold coinages in Italy. The mint may have been trying throughout to maintain the rough equivalence: 1 gold tetrobol = 4 silver staters. The first issues, before the gold of Philip II had made much impression in the West, were struck on the local standard with the gold/silver ratio at 12:1 [2.6g *A* = 31.2g *R*, i.e., 4 staters]. The lighter Leukippos issue, struck later when the gold of Philip and of Alexander the Great had been absorbed into circulation,

was also equivalent to 4 staters, but at a ratio of 11:1 [2.85g *A* = 31.35g *A*]; conveniently, this also passed as an Attic tetrobol. The heavier Leukippos issue, perhaps later still, was struck when the ratio had fallen to 10:1 [3.25g *A* = 32.5g *A*].

The changes in weight are hard to understand given that Taras maintained the same standard throughout for its more abundant gold issues, without any fluctuations in weight. Why did Metapontum not simply imitate Taras, especially in view of the fact that they were probably striking gold on the same occasions?⁷⁹

This leads to the further problem of assigning more specific dates to the issues. The first, with Hera head, seems to date to the 330s during the Molossian expedition, as argued above. The Nike head, too, may well belong to the second phase of the campaign, following Alexander's first successes for which the type would be appropriate, though this is mere conjecture.⁸⁰ (The Leukippos gold issues, which have often been attributed to this period, are as we have seen quite unlike the Leukippos staters and distaters and therefore appear to belong later in the sequence.) There is no trace in the literary or archaeological record of specific campaigns against the barbarians in the decades immediately after Alexander, although problems clearly continued at least for a while. The Kleonimos episode could have been the occasion for payments in gold for the defense of the city (?facing Demeter/first Leukippos issue), and there may have been skirmishes with the barbarians which required extraordinary expenditures at any time between the end of the fourth century and the successes of Pyrrhus (?Leukippos type[s]).

The *terminus ante quem* for all the gold would appear to be the early stages of the Pyrrhic War. All the varieties had been issued before the burial of the Bernalda hoard, which in all

probability dates from the beginning of the War as the silver contents range down to the issues immediately prior to Pyrrhus: the first of the "late" Demeters of Metapontum (Class D), most of the issues of Taras Period VI, Heraclea to Work 85ff. (i.e., before the final full-weight staters), Thurium to the last issues of full-weight staters. As noted above, the literary and epigraphic evidence implies that all of the support for Pyrrhus at the outset came from Taras, and that the other cities became involved only after the battle of Heraclea; the dominant role of Taras is certainly borne out by the city's large issues of gold with Pyrrhic references. The contribution of Metapontum, if the Leukippos gold does belong to the War, was minimal. Evidence suggests that a mercenary's basic pay in cash was approximately 20 silver staters per month in the third century, with bonuses equivalent to 1-2 months' pay (i.e., 5 gold tetrobols), so that one tetrobol die-pair might have produced roughly a month's pay or a small bonus payment for 1000 men.⁸¹

The Leukippos varieties cannot be attributed with certainty to the Pyrrhic War, though a good case could be made. As already mentioned, the only association between the Attic-weight tetrobols and the silver is with the "reduced standard" drachms: both denominations were unusual at Metapontum but common at Taras, the drachms apparently from Period VI onward, even before the reduction in the standard for the nomos (cp. similar drachms at Croton with owl on barley wreath, *SNGANS* 422). There are other possible connections with Taras, too. The signature ΣΙ, found on the gold and the drachms but otherwise unknown at Metapontum, occurs on nomoi of Taras Periods VI (C-D) and VII (C); the Skylla hurling a rock, also unique at Metapontum, decorates the helmet of Athena on the Tarentine reduced weight drachms. Further-

⁷⁹ Stazio, "Osservazione" (above, n. 72), p. 92, believes that Metapontum was simply showing its independence. He does not discuss the variations in weight and declares all the gold to be *Achaean* tetrobols weighing 2.85g.

⁸⁰ As Kraay, *ACGC*, p. 366, nos. 611-12.

⁸¹ See Griffith (above, n. 69), Ch. 10, and Launey (above, n. 69), Vol. 2, pp. 750ff., on rates of remuneration. Cavalry and specialist infantry would have received

higher rates of pay. As an indication of the scale of the outlay involved in the Pyrrhic expedition, Lévêque, *Pyrrhos* (above, n. 2), p. 322, reckons that Pyrrhus had about 30,000 troops at the battle of Heraclea, and accepts as plausible Frontinus' figure of 40,000 at Ausculum the following year; some of these were regular soldiers and some mercenaries raised for the occasion, but all had to be paid.

more, there are issues of diobols/triobols at Metapontum (p. 48) which also copy Tarentine types and which have been interpreted as an alliance issue of some kind. All three issues may have been part of a concerted effort against the barbarians some time in the first quarter of the third century. The heavier Leukippos issue has no strong connection with any other issues of Metapontum or Taras and can-

not be placed with any assurance, although the lower gold:silver ratio may indicate that it is the last gold struck.

The problems raised here can be resolved only when there is more information, in particular further specimens of G6 to provide better data on the possible weight standard and more hoards to help clarify the chronology.

Fractional Coinage

Silver fractions had been a feature of the coinage of Metapontum from the very outset. Although fractions were not provided with every issue of staters, the relative abundance and variety of smaller denominations indicates that fractions were considered an essential part of the mint's output. This long tradition appears to have come to an end fairly abruptly with the Apollo Karneios triobols of Part 2 Class III, after which there was probably an interval of more than half a century without any fractional silver. It seems unlikely to have been simply coincidental that bronze issues started to be struck at about the same time. Indeed, it would appear that the city henceforward opted for bronze as the most practical and flexible means of providing very small change, and only rarely thereafter struck silver fractions. (It is, of course, much simpler to produce small denominations in bronze than in silver, and bronze has the further advantage of being fiduciary and not necessarily very strictly regulated.) This practice is in sharp contrast with Taras, whose fractional silver coinage is copious and the bronze minimal.

A preliminary study of the bronze has been attempted elsewhere;⁸² the arrangement is perforce highly conjectural, since there are relatively few connections with the silver and even fewer objective clues to absolute dating. The sequence and chronology can only be given a more secure base when the results of the archaeological work in the territory of the city are available, so that the bronze coins can be placed in the context of the pottery and other finds. Suffice it to say here that bronze coinage appears to have started at the very end of the fifth century (?unit and half: *SNGCop* 1250, 1270), and continued throughout the fourth century and into the third. As on the silver, the barley ear serves as distinguishing reverse type for the city (or barley grains on some of the smaller denominations), and the obverse is almost always the head of a deity.

The most widely known bronze types are those marked with the denomination "obol" (*SNGANS* 552–54), struck, to judge from the variety of flans and styles, over a number of years around the middle of the fourth century. Two smaller denominations (?half and quarter, distinguished by barley ear and barley grain reverse types, respectively) were also struck in the course of the first half of the fourth century; the dating is based largely on the similarity with the staters of Part 2 in the style of the barley ears on the reverses (and also, where appropriate, the Demeter heads). The obverse types are very varied: Apollo, Athena, Leukippos, Pan, Zeus Ammon, as well as the predictable Demeter and several unidentified heads of bearded males. In the last part of the century an even smaller denomination was introduced (barley ear reverse, less than 1.5g). Issues attributable to this period are not very numerous, perhaps because the needs for small change were adequately met by the earlier bronze coinage. Besides, some of the silver fractions belong to the last decades of the century and, while they clearly represented much larger denominations than the bronze, they may have been to some extent an alternative.

The nature of the bronze coinage changes significantly in the next phase, which may well belong to the period after the last silver staters were struck. Instead of being produced singly, as usual hitherto, the majority of issues comprise three or four denominations (identifiable by their reverse types of barley ear/three barley grains/two sizes of barley ear with distinctive obverse types); each such issue has some unifying factor (common symbols or signatures, or else thematic connections, such as reverse symbol related to obverse type). No precise dates can be attached, though some of the types and symbols may be interpreted as Pyrrhic; the hoard evidence is unsatisfactory in this regard, and indicates nothing more definite than the third century (*IGCH* 2008, 2039,

⁸² Johnston, "Bronze Coinage" (above, n. 24).

2040). The remainder of the bronze coinage dates from later still in the third century and need not concern us here since it clearly post-dates the silver issues.

The silver fractions are very sparse in comparison with the bronze. There is a single drachm issue, which will be discussed further below, and several issues of smaller fractions weighing in the region of 1g. The relationship between the fractions and the staters (or between the various issues of fractions) is far from clear-cut. In one instance only, F2, the fractions are obviously related to the staters, C1, with the identical obverse type (Demeter) and reverse symbol (plough), though with different signatures (Γ on the fractions, **MAX** on the staters). Like the stater issue, F2 is a relatively large issue (four obverse, eight reverse dies). For the rest, another approach is necessary since the other fractions do not correspond exactly to any stater types.

Taras, Thurium and Heraclea used exclusively Athena types for the obverses of their triobol/diobol size fractions in the fourth century. Metapontum also struck Athena types in four variants: crested Attic helmet decorated with hippocamp or Skylla, and plain Corinthian helmet with or without long neck-flap. The first two may well have been struck in imitation of — perhaps to be interchangeable with — the fractions of the neighboring cities, some of which are almost identical in style. Taras also struck some fractions on the reduced standard on which Athena wears a Corinthian helmet without flap, not unlike some variants of F2.

The other two obverse types, Zeus Ammon and Apollo Karneios, are peculiar to Metapontum. Both were clearly part of the heraldic

vocabulary of the city since they are also used as types for the bronze; Apollo Karneios had, of course, already appeared on the early double-relief staters and fractions (N.334 ff., N.363 ff.).

The reverse types with two exceptions follow the pattern of the staters: barley ear, usually with symbol (and occasionally with signature as well). The two exceptions are the scenes of Herakles struggling with a lion, either kneeling (F11, 15) or standing (F14). These, too, were standard types for the fractions of Taras and Heraclea, and the Metapontine versions have been interpreted as being part of some kind of "federal" issue of the three cities. The reverse symbols (plough, tripod, owl and locust, club, cornucopiae) are drawn from the same repertoire as those on the staters and cannot necessarily be matched with them.

Each of the three obverse types occurs with several symbols, and it is an interesting feature that some are die-linked through obverses and/or reverses to form composite, and presumably roughly contemporary, issues. The links can be seen most readily in the diagram (fig. 3).

Only a few of the dies are linked, but others may be identified as more examples come to light. Various interpretations of this pattern of issues are possible. The different obverse types might distinguish different workshops/officinae and the symbols different responsible officials, or batches of metal, or items of expenditure. On the other hand, the numbers of dies involved are so minute that such complexity seems improbable and there is perhaps no need for overly elaborate explanations. It does nevertheless seem likely that the symbols are not directly connected with the same symbols on the staters. Despite the spread of weights, these

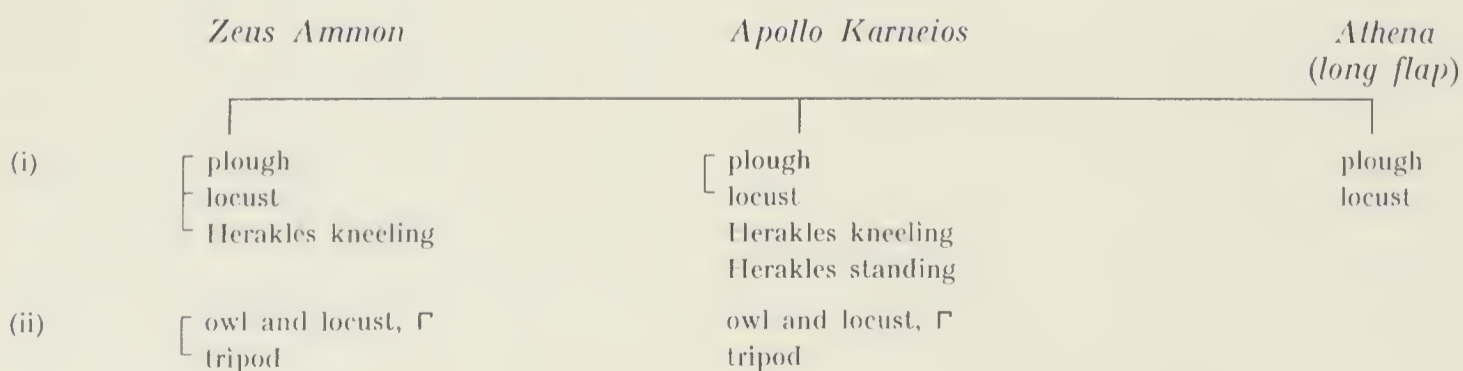


Fig. 3.

fractions probably represent a single denomination.

Several other issues of fractions are known, in some cases with the same symbols as the die-linked issues above. There is, in fact, an Athena issue with owl and locust (F4) which could be added to (ii) above, although there is no visible signature on the reverse (as there is on the Karneios and Ammon versions). This issue bears some resemblance to the staters of C3 in that both have Athena on the obverse (though the fractions have Attic helmet with hippocamp, not plain Corinthian helmet) and the owl and locust symbol on the reverse — perhaps the badge of a prominent family, as Noe suggested,⁸³ and hence likely to occur more than once. The Apollo Karneios fractions with the same symbol (F7) have a similar or perhaps better claim to be connected with the staters, in that the obverse shares the same signature, ΣΑ.

Another apparently repeated symbol is the plough, which occurs with obverse Athena in Attic helmet decorated with Skylla or hippocamp as well as with Demeter. The existence of the exact parallel between F2 and the stater types suggests that neither the Athena fractions nor the die-linked fractions with plough symbol (see (i) above) belong with C1. One cannot therefore argue that Athena-Skylla/elub, F3, must belong with the Leukippos staters (B2) simply on account of the elub symbol, though it is possible. (Note that the elub appears frequently on the fractions of Taras and Heraelea as an adjunct of Herakles or as a symbol, and was also a symbol on the drachms of the Lucani [p. 18 above].)

For the same reasons, the Athena/cornucopiae issues (F21–22) may or may not belong with the late staters, D4.8ff. If the symbol is assumed to have Pyrrhic significance, the fractions could have been struck at any point in the city's involvement in the war. The issue runs to at least seven obverse dies in varying styles. Identical fractions, apart from the ethnic, were struck by the Apulian city of Rubi (*SNGANS* 716–19), perhaps at the same time.

In view of these doubtful connections between fractions and staters, it is impossible to establish a chronology on the basis of common

types and symbols. The hoard evidence is not as useful as it might be, partly because of inadequate publication, partly because the Taras fractions are not always clearly attributable between the later Evans periods. Torchiarolo (*IGCH* 1977) was clearly accumulated over a long time-span since it contained incuse and early double-relief staters with, for the most part, contemporary fractions. Among the latest pieces are a stater of Metapontum with star symbol (C8) and three of Taras Period VII; all 1400+ Taras fractions were reckoned to be full weight, pre-Period VII. The two Metapontum fractions relevant to Part 3 were Demeter/plough types, presumably struck well before the burial of the hoard. The Timmari hoard included two Athena/cornucopiae fractions with Taras to Period VIII, obviously a mid- to late third century burial. Taranto 1899 (*IGCH* 1982) included three Demeter/plough and Athena/"branch" (presumably a cornucopiae) with Taras staters to Period VI, drachms to Period VII and fractions, including reduced. All in all, the hoards to date offer little insight into chronology.

The resemblances between the fractions of Metapontum and those of Heraelea and Taras in particular provide the best indication of relative chronology, and suggest that most belong to the period between the latter part of the fourth century and the Pyrrhic War. (F24, Demeter/owl, could belong with the half-shekels of the Hannibalic period: the Demeter and Tanit heads are very similar, and both have an owl symbol.) The drachms (F1), too, clearly echo the drachms of Taras and Croton with similar owl types (Vlasto 1102–3; *SNGANS* 421–22), dated by Evans to his Periods VI and VII in spite of the low weight, because some of the signatures occur on staters of Period VI.

The denominations are not easy to distinguish because the pieces are small, and are often poorly preserved (or perhaps carelessly struck) so that margins of error in the weight may be large. The vast majority of the fractions weigh in the region of 1g and appear to have been intended to be interchangeable with the fourth century diobols of Taras which also weigh about 1g, although in both cases the

⁸³ Noe-Johnston, p. 9.

weights often lie rather below the theoretical weight: diobols at Taras and triobols at Metapontum should have weighed about 1.3g with the nomos/stater weighing 7.8g. The Demeter/plough fractions are closest to this standard (0.9–1.3g). The other fractions rarely surpass 1g and many are much lighter (0.65–0.9g); it is possible that the change in obverse type for the related Athena-Zeus-Apollo fractions may have indicated a change in denomination, and that these smaller fractions are in fact diobols (theoretical weight 0.86g). The drachms, too, appear to have been designed to match a Tarentine denomination: the “reduced” drachms. Like

them, the Metapontine drachms were equivalent to half-staters rather than the traditional Achaean third-stater. On this weight system diobols could again weigh 1g, so that some of the fractions might be associated with the “reduced” drachms, metrologically at least. Even the Hannibalic standard could accommodate an eighth-shekel of about 0.9–1g (? F 24).

The relative abundance of fractional issues — in silver but particularly in bronze — indicates, as Stazio has already pointed out,⁸⁴ the importance of trade in the economy of the city and reflects the desire to facilitate even the smallest transactions.

⁸⁴ “Osservazione” (above, n. 72), p. 101.

Symbols and Signatures

Almost every coin of Metapontum from roughly 400 BC onward carries at least one symbol or signature and frequently has both. It should be remembered that these marks — which often assume disproportionate importance for the numismatist because they may provide the only way of grouping issues and identifying relationships between them — were usually added to dies by the mint for purely administrative purposes (so that there was some means of matching up the bullion consumed and the coinage struck, or of tracing a batch of coins and the person(s) responsible if the metal was found to be defective or if some other problem arose). Neither symbols nor signatures had any great significance after the coins left the mint. Symbols in particular must often have been chosen at random, so that there is now a real danger of overexplanation. Nevertheless, since they were sometimes picked from the repertoire of particular personal emblems that we can identify or else that made an allusion to a known event (such as the Pyrrhic symbols at Taras), it is worth examining them more closely and considering possible interpretations, in case they may provide useful information.

Symbols were used at Metapontum (as elsewhere) long before signatures, first during the period of the incuse coinage (Part 1 Class V), and intermittently thereafter on the reverse dies of the staters. In Part 2, obverse symbols almost always serve to identify the head of the deity (Demeter/Persephone with torch [N.322, 421], with barley ear [N.391ff.], with barley grain [N.439ff.], with poppy-head [N.406ff.]; the exception is N.331, where the symbols are unexplained). This tradition continues in Part 3 (Zeus with fulmen [A6.2ff.]; Demeter with torch [A5, A6.12], with barley ears [A7.10ff.]; perhaps Leukippos with parazonium [A6.10]). It cannot, however, explain the retention of the

torch when the obverse type switched to Leukippos on A5 or the obverse symbols on the other Leukippos issues (barley grain, A3; grapes, A4; lion protome or head, B1–2; dog, B3); the Leukippos issues do tend to have more “control marks” than other issues, a point that will be discussed further below. Obverse symbols do not occur at all in Class C, and are revived only at the end of Class D, where one Demeter obverse die carries a wreath symbol in place of a signature (D5.1), subsequently recut as a billhook (D5.2). Almost every *reverse* die of Part 3 appears to have been marked by a symbol, the only exceptions are those of A5, B4 (both with letters only), and some dies of A4 (symbol possibly off-flan) and A6.3ff. (where one die has both symbol and letters and the other two only the signature).

In a few cases the reverse symbol may have been suggested by the obverse type (Apollo/snake [Python?], A6.6; Tharragoras the warrior/trophy, A7.13ff.; Demeter/pig, D4.18; Herakles/cantharus, D4.1ff.); there is a group of third-century bronze coins where this seems to be the obvious explanation for the selection of reverse symbols.⁸⁵ Many of the symbols recur throughout the coinage (most notably the grasshopper), which might mean that these were the badges of prominent families, or that they were obvious decorative adjuncts to a barley ear (especially locust, mouse, ant, fly), or simply common everyday objects (plough, hayfork, tongs, the different ceramic containers); yet others are standard symbols widely used on Greek coinage (caduceus, griffin, grapes, tripod, bucranium). A handful of more unusual symbols are found at both Metapontum and Taras at approximately the same period and their conjunction may be significant (comic mask: A9.1 and Taras V, Vlasto 660; cock: D2.1–4 and Taras VI G; identical form of krater on a high base: D3.3ff. and Taras VIII L1,

⁸⁵ E.g., Karneios/billhook, *SNGOxford* 810; Pan/syrinx, *SNGOxford* 811; Hermes/caduceus, *SNGOxford* 813.

compare the symbol on the obverse of bronze of Pyrrhus, Lévêque [above, n. 2], pl. 7 no. 11; two amphorae: D4.15ff. and Taras VIIC7).⁸⁶

Finally, a few symbols are traditionally connected with foreigners who intervened in Magna Graecia: fulmen and eagle with Alexander the Molossian; triskeles with Agathokles; fulmen, star, cornucopiae, owl, amphora, bucranium, spear-head with Pyrrhus. Many of these emblems occur on their coinages in their own names and hence it has been tempting to connect S. Italian coins marked by the same symbols with their activities in the area. The associations are by no means certain, however: Andrew Burnett⁸⁷ has cautioned against the close link between the triskeles and Agathokles, as argued by Seltman,⁸⁸ because the symbol appears at a number of S. Italian mints which had no direct connection with Agathokles and yet does not appear on the coinage of Croton, which was captured by him. At best its use may have been influenced by the example of Agathokles, but the chronological connection is weak. Nevertheless, Burnett's warning could drive us too far to the other extreme. It should be pointed out that the coinage of Croton is very patchy throughout the fourth and into the third centuries, and — since none of the issues can be securely dated to the period of Agathokles — the absence there of the triskeles may not be significant. While it is true that Agathokles is not known to have gone beyond Croton in the 290s, the possibility that the triskeles on D4.4ff. at Metapontum refers to him cannot be entirely excluded. As to the Epirote symbols, the fulmen of B4 seems plausibly to belong to the period of Alexander; the star (C8), amphora (D3.10), and cornucopiae (D4.8ff.) also occur on coins of Pyrrhus⁸⁹ and on some S. Italian coinage associated with the Pyrrhic War (c.g., Croton: cornucopiae, SNGANS 412–13; Heraclaea: bucranium,

SNGANS 87–88). In addition, the dog on B3 is apparently a Molossian hound.⁹⁰ The bird on the reverse of B3 does not look sufficiently aquiline to be taken for an Epirote eagle (compare N.408, showing a similar bird), and nor does the bird with wings closed on the reverse of the Hera-head gold: the manner of presentation is unlike the eagles of the Epirote coinage proper or of Taras Period VA which Evans associated with Alexander.

What significance the symbols had as control marks cannot be guessed, and most probably changed in the course of time in any case. Clearly at the outset symbols were not essential since many of the issues of Part 2 lack them altogether. They could have been intended initially to distinguish reverse dies (and therefore batches of coins within an issue or issues) since the symbol almost invariably changes from die to die (the exception with the same symbol but differently placed: N.397–8).⁹¹ When letters are introduced they might be expected to replace symbols — which to some extent they seem to do in the parallel symbol/letter issues of Class VIII.⁹² There symbols and letters do not correspond exactly in that the letters are repeated on several reverse dies, whereas the symbols continue to change from die to die in the first part of Class VIII. Letters and symbols do not occur together on a die, i.e., clearly standing for different things, until Part 3 (A3, A6, etc., but not A5); the combination then becomes standard for all the remaining silver staters apart from a couple of issues almost at the end of the coinage (D1–2, D5.3–4: symbol, no signature). The gold, as we shall see, has *either* symbol *or* letters, while the silver fractions and bronze have symbols and only very infrequently letters as well.

Another development at the beginning of Part 3 is that reverse symbols come to mark whole issues, the same symbols (often accompa-

⁸⁶ On the significance of the double amphorae, see E. Petersen, "Dioskuren in Tarent," *MDAI (Römische Abteilung)* 15 (1900), pp. 1–61, illustrated at p. 24. The amphorae were terracotta containers for wine offered at the hero-feast for the Dioskuri.

⁸⁷ *SNR* 1977 (above, n. 50), pp. 119–20.

⁸⁸ Above, n. 42.

⁸⁹ B.V. Head, *Principal Coins of the Greeks* (London, 1932), pl. 37, 15–19,

⁹⁰ Compare P.R. Franke, *Die Antiken Münzen von Epirus* (Wiesbaden, 1961), pl. 58, 6 and pl. 59. My thanks to T.V. Buttrey for pointing out this resemblance.

⁹¹ In Part 3, symbols seem to identify the reverse dies on A7.10–12 and A9, where the symbols change with each die.

⁹² Letters first occur on the obverse die only, apparently in addition to the symbol; see further below.

nied by letters) being repeated on several reverse dies. Since the same letters may be repeated with several different symbols, the reverse symbol presumably now marks some subsidiary (more frequent) change such as the issue within the administrative period or the agent below the responsible official. Changes of symbol per signature become more frequent in Class D, perhaps indicating a batch within an issue or even an officina within the mint. Similar changes take place at other mints, e.g. Corinth switched from symbols only to lettered series with changing symbols between Ravel Periods IV and V.

Letters on dies have a variety of possible explanations. Single letters on Greek coins sometimes stand for figures (A = 1, B = 2, etc.), so that sequences of numbered dies or issues can be reconstructed, as at Poseidonia or Thurium; this system seems never to have been adopted by Metapontum. Engravers occasionally signed their work with either abbreviated or full names, usually unobtrusively among the details of the type.⁹³ This was once a very popular explanation of large numbers of signatures, especially if the same letters recurred at several mints, since the work of peripatetic engravers is well documented, whereas magistrates with jurisdiction broader than the city were regarded as unlikely. Evans, for instance, assigned to two engravers all the dies signed K/KAA and A/API at Taras, Heraclea, Thurium and Metapontum; A/API was argued to be identical with Aristoxenos.⁹⁴ This hypothesis was neatly proved to be wrong by the discovery of a die signed KAA recut to read API (A6.7–8). In addition, it would be difficult to find any stylistic unity between the pieces with the same signatures. It is extremely unlikely that any of the signatures of Part 3 are those of engravers (apart, perhaps, from ΔΩΠΙ, the signature on the obverse of C5.1).

Most of the letters must refer to individuals in

some way “responsible” for the coinage, which may mean a contractor involved in the physical production of the coins; or a magistrate (of the city or of a league of cities) who authorized or oversaw the issue, or whose name was used as a convenient device to date the issue.⁹⁵ Letters sometimes indicate the office held by the magistrate, though rarely on coins of this area and period.⁹⁶ It has been suggested that APXIG on A6.12 refers to an office such as *archiprytanis* or *archipresbeutes*, but it may simply be an abbreviated form of personal names such as Archipolis or Archippus. At Metapontum the names are always abbreviated, usually to only two or three letters, and are never given in full as at Taras (Period VI onward) or Heraclea, so that although certain signatures recur (especially ΑΓ, ΛΥ, ΔΙ, ΦΙ) we cannot be sure that they stand for the same people on each occasion.⁹⁷ The same is true for signatures common to other mints as well. Are ΑΓΗ, ΔΑΙ, ΣΑ, ΣΙ the same people at Metapontum and Tarentum? Is the Atha... of C2–4 the same person as the Atha... at Heraclea (Work 57–84), or the FA of D3 and Heraclea, SNGANS 80–85? Or ΣΙ, ΝΙ, ΔΑ, ΔΑΙ at Thurium and Metapontum? Perhaps. The conjunction of several identical abbreviated names (KAA, API, ONA) at approximately the same period at Metapontum, Heraclea, Taras and Thurium is too much of a coincidence to be dismissed: they must be the same people, perhaps magistrates of the Italiote League charged with organizing preparations for Alexander’s expedition. This then raises the possibility that some of the other signatures, too, refer to individuals with inter-city responsibilities.⁹⁸

Alternatively, letters (and symbols, too) could designate things rather than people: workshops or officinae, sources of funds, or objects of expenditure. At this remove we can only speculate.

The earliest signatures at Metapontum—

fied by the general public.

⁹⁸ No obvious parallels come to mind because federal coinages (e.g., the Achaean League) tended to strike clearly identifiable issues using distinctive federal types. In the second century there is an instance of the same letters occurring on Achaean League issues of Elis and Patras (ΛΥ-ΣΩ for Elis, ΛΥ-ΑΡ for Patras), see M. Thompson, *The Agrinion Hoard*, ANSNNM 159, (New York, 1968), p. 101.

⁹³ E.g., Aristoxenos, Noe-Johnston, pp. 62–63.

⁹⁴ “Horsemen” (above, n. 2), pp. 68–74, 105–24.

⁹⁵ See P. Gauthier, “Noms de magistrats,” in *Numismatique antique* (Louvain, 1975), pp. 174–79.

⁹⁶ For ΕΦ at Heraclea and Taras: H. Pfeiler, “Die Namen der eponymen Ephoren auf den Stateren von Taras und Herakleia,” *JNG* 1965, pp. 49–51.

⁹⁷ Gauthier (above, n. 95) points out that abbreviated names and monograms were never meant to be identi-

apart from that of the engraver Aristoxenos—appear on the obverse (Part 2 Class VII), where they usually occur on a single die only. Signatures on the reverse start with Part 2 Class VIII (where the series of lettered reverses runs parallel to the symbol reverses) and they are then repeated on several dies to form groups of up to five die-pairs. With the start of Part 3 reverse signatures become habitual from A5 onward, while most obverse dies are also signed (exceptions: B4 and D1, obverse only; D2 and G1–2, 5–6, apparently unsigned). Since there are invariably reverse symbols, and sometimes obverse symbols as well, it is difficult to understand what all the control marks must have represented. The most thoroughly marked dies are those used for the Leukippos distaters and staters which have both symbols *and* signatures on both obverse and reverse; this perhaps reflects the involvement of military as well as civilian personnel. Yet the gold, which might be expected to require the closest supervision, has fewer issue marks than most of the contemporary silver: there is either a symbol or a signature to mark each issue.

The pattern of issues (i.e., groups of dies with common symbols and signatures) varies considerably. The **KAA/API/ONA** group is unusual in that there are several different obverse types as well as symbols and combinations of signatures within the group. Otherwise for each issue the standard practice seems to have been to produce several reverse dies with the same symbol and signature (caduceus + **AY**; tripod + **ΓΠΟ**; mouse + **ΦΙ**). The issues gradually increase in size up to 35 and 28 die-pairs respectively for the main Leukippos issues (B2-3), reach their peak with almost 70 die-pairs for the plough issue, and then diminish again to smaller issues comprising 10–20 die-pairs; in the final Class (D), several changes of symbol accompany each signature, as at the outset.

To some extent these changes in mint practice can be paralleled elsewhere. Heraclea had overall a much smaller total output and a smaller repertoire of symbols and signatures, but there are similar shifts from changing symbols/signatures (Work 24–56) to a large group all signed **AΘA**, and eventually to frequent

changes of symbol and signature on the final stater issues (full-weight and reduced). At Taras, abbreviated signatures gradually become regular in the course of Periods II and III, on obverse or reverse or both; in Period IV there are sometimes multiple obverse signatures in the **KAA** group (perhaps local officials signing alongside federal authorities?); with Period V the same signatures (especially **ΣA** and **ΦΙ**) recur on large numbers of dies, exactly as **AΘA** at Heraclea and **ΔAI/MAX** at Metapontum. Full-length names occur on the dies of Period VI with some repetition — Brunetti has arranged them in a 22-year sequence of annually-changing ephors⁹⁹—and of Period VII. Throughout, the horseman and the dolphin-rider are presented in constantly changing ways, the latter in particular is caused to hold a great variety of objects that must often have done duty as symbols. In addition, symbols are occasionally added in the field (many of Period V, rather fewer in Periods VI and VII), which perhaps fulfil the same role as the “extra” control marks at Metapontum in certain issues. Up until Period VI at Velia, too, there are often several control marks per die, and then in Period VII all reverse dies are signed **ΦΙ** with a single but changing symbol. Recutting of dies so as to cancel letters is common (e.g., *SNG Oxford* 1188, 1195, 1224, etc.; compare A6.8 and D3.5, D5.2). Croton, on the other hand, managed without any signatures and with a very small repertoire of symbols in the fourth century.

The general impression given by the symbols and signatures on the coinage of Metapontum is that the mint was closely supervised and administered, with a rather bureaucratic concern for keeping track that may have been true of other aspects of public life now lost to us. The careful surveying and layout of the *chora* also suggests an orderliness of approach to practical matters from an early date. There are interesting implications for city administration if the common initials on dies of Metapontum and of neighboring cities do in fact indicate the organization of coinage at a “federal” level, but the evidence at present is too flimsy, apart perhaps from the **KAA** group of issues.

⁹⁹ L. Brunetti, “Nuovi orientamenti sulla zecca di Taranto,” *RIN* 1960, pp. 48–51 on Period VI. There are too many names for his annual scheme in Period VII, so

he proposes that there must have been two magistrates per year during the war.

Fabric, Weights and Die-Positions

Little can be said of fabric in general since there are often greater variations between specimens of a single issue than between issues. At the end of Part 2 and the beginning of Part 3 the obverses tend to be struck in high relief and the reverses are often markedly concave where the metal has been pushed down into the obverse die. The large number of overstrikes in Class A mean that many of the flans are irregular in shape. Dies throughout Part 3 are about 20 mm in diameter, whereas flans are often as little as 17 mm and sometimes as much as 22 mm. The flans of the facing-head issue (C2) and the ant/cornucopiae issue (D4.11ff.) stand out as uniformly small and dumpy, while the tongs issue (C4) is mostly struck on larger flans, and the obverses tend to be in high relief.

There is little variation in weights of well-preserved specimens: the average hovers around 7.7–7.8g, with a few overstruck pieces noticeably higher or lower. Even in the final phase of the stater coinage the weights remain high (7.8g or more), although at other S. Italian mints there is some evidence of weights tending to drift down even before the reduction in the standard. Weights below 7.5g at Metapontum very often indicate a plated coin, or a poor alloy.

After the incuse period the dies were not fixed; there is no consistency even among coins struck from the same pair of dies. Consequently, die-axes have not been noted in the Catalogue.

Chronological Implications

A picture of the chronology emerges gradually from the evidence presented above, starting with Part 2 Class VIII (Table 5). The parallel series and the close die-linkage of Class VIII suggest relatively high levels of production, and this is further confirmed by the above-normal incidence of visible overstrikes toward the end of the Class. The first Leukippos types (a type appropriate to warlike activities) were probably struck toward the end of Class VIII or at the very beginning of Part 3. These factors taken together are consonant with measures being taken to defend the city against the barbarians. Similar trends can be seen in the coinage of Taras in late Period III-early Period IV (possibly several officinae, much die-linkage, overstrikes, warlike types and symbols). The Taras issues are also overstruck on pegasi of the same groups and they are found in the same hoards as the Metapontum coins (*IGCH* 1923, 1925, 1926, 1928). A *terminus post quem* for these issues is provided by the overstruck pegasi of Leucas and Dyrrhachium which probably started arriving in the West in quantity after 344, hence the coins could belong to the period of Archidamus' unsuccessful campaign in the late 340s and early 330s.

The same features continue sporadically in the early phase of Part 3: overstrikes, much die-linkage within issues (and also obverse dies allowed to deteriorate without repair), choice of Leukippos and other types suitable to accompany efforts to defend a Greek city against barbarian attack (Herakles, Zeus Eleutherios, Tharragoras). One group of issues is connected by the recurrence of the three signatures *KAA/API/ONA* in various combinations, and these same signatures are found at Taras, Heraclaea and Thurium; it is possible that they were

officials coordinating defense efforts at a federal level. The hoards and the overstrikes indicate that these issues of Metapontum are contemporary with Taras Period IV and perhaps early V (see *IGCH* 1928, 1929, 1940 and overstrikes on Corinth Period V with letters *E* and *N*). The obvious association is with the military build-up and the early stages of the campaign itself, when Alexander the Molossian still appeared to act for the Greek cities rather than for himself.¹⁰⁰ According to Holloway and Giannelli, it was only with the later campaigns that he began to assert himself as an empire-builder, and it may have been only then that specifically Molossian symbols were introduced on the coinage.

At Metapontum the staters and associated distaters with Leukippos heads and the common signatures *AΓH* and/or *AMI* of Class B undoubtedly belong to this latter phase of Alexander's campaign when Metapontum and Tarentum were left as his remaining allies. The issues are far larger than hitherto, indicating a changed rhythm of production: 17 and 11 obverse dies for B2 and B3 respectively, as against 2 or 3 maximum for most of the preceding issues. Class B is equivalent in size to the whole of Class A and the actual output of the dies was probably higher because production was continuous and dies were used until they were broken and replaced. The symbols of the dog (a Molossian hound?) on B3 and fulmen on B4 have Epirote rather than local associations; the lion (protome/head) of B1 and B2 is also exceptional. Furthermore, distaters were never otherwise struck at Metapontum, though they were a standard denomination at Thurium. Some of the gold fractions (with Hera and Nike heads) may well date to the same period or slightly earlier. At Taras, the eagle symbol of

¹⁰⁰ The chronology proposed here for the Alexander period fits with that reached independently for Velia by H. R. Baldus, "Zur en face-Athena des Kleudoros von Velia - Der Lukanersieg Alexanders des Molossers bei

Paestum und die velische Münzprägung," *Chiron* 15 (1985), pp. 211-33. As shown above (p. 37), it contradicts that of Garraffo for Taras and tends to confirm Evans.

VA was linked with Alexander by Evans, and there are also gold issues which resemble the types of Alexander's own coinage. At both mints the visible overstrikes have ceased by this point, and none can be recognized among the coins of this or later periods. The supply of pegasi from Corinth and colonies may have tailed off as pegasi were produced in Sicily, or the mints may no longer have resorted to the laborious adjustment and reuse of flans for reasons of technical expediency. Hoard evidence for this period is not revealing, since none of the hoards so far known stops with the issues of this group.

After the major Leukippos issues the coinage has few remarkable features. Almost all the subsequent issues have Demeter as the obverse type, with symbols and signatures that appear to have only local significance. The issues vary in size from 25 to 2 obverse dies per signature/symbol. Hoard evidence indicates that these issues (Class C) are contemporary with later Taras V/early Taras VI and the AΘA group at Heraclea, which are similarly uneventful phases of coinage at those mints.

The last phase of the silver coinage is characterized by many small issues within two main groups, the symbols changing with almost every reverse die while the same signatures (Δ/Φ) recur throughout. The traditional Demeter heads, now sometimes of rather poor style, are accompanied by a revival — after an interval of perhaps half a century — of the Leukippos and Herakles types. A similar pattern can be observed in the latest issues of full-weight staters at Heraclea.¹⁰¹ These final full-weight issues of Metapontum, Taras and Heraclea occur together in two hoards from Metaponto (*IGCH* 1959, 1980), confirming that the coinage of the city ended at roughly the same

time as the transition to the reduced standard elsewhere, rather than at the time of the disastrous intervention of Kleonymos about 300, as was once thought. The reduction appears to have occurred after the arrival of Pyrrhus, since there are full-weight issues of Taras and Heraclea with Epirote symbols and with allusions to Nike. The tiny issues with changing symbols at Metapontum could have arisen out of the need to strike frequent, relatively small issues to meet expenditures as the campaign developed. (The Leukippos gold, as well as some of the bronze, may belong to this period, too.) Pyrrhus was still in Italy at the time of the reduction because the early reduced-weight issues of Taras, Thurium, Heraclea and Croton all include references to Pyrrhus' elephants and to victory. Frances Van Keuren has suggested¹⁰² that the reduction was forced upon Pyrrhus soon after his campaign began, as a result of shortage of cash to pay his forces after the battle of Heraclea in 280. A more plausible time, in view of the number of full-weight issues with Nike references, may be after the battle of Ausculum the following summer, by which time the funds contributed in the first flush of enthusiasm for the campaign would have been exhausted and payment of mercenaries could not have been postponed (as it could after Heraclea, when it was clear that the fighting was not yet over). In any case, by the time of the reduction the silver coinage of Metapontum had come to an end. The early withdrawal from the campaign may have been the result of impoverishment, perhaps in the wake of the attacks on the *chora* that are being revealed by excavation, or of a willingness to make peace for purely political reasons, or perhaps a mixture of the two.

¹⁰¹ Frances Van Keuren, "The Late Staters from Heraclea Lucaniae (281–272 B.C.): Additional Evidence on the Reduction of the South Italian and Romano-Campanian Standards," *Atti del VII Convegno del Centro Internazionale de Studi Numismatici* 1980 (Naples,

1986), pp. 413–427. I am very grateful to Dr. Van Keuren Gordon for sharing her research results with me before publication.

¹⁰² Above, n. 101.

TABLE 5

Comparative Chronology of South Italian Coinages, 340-270

	<i>Metapontum</i>	<i>Taras</i>	<i>Heraclea</i>	<i>Croton</i>	<i>Velia</i>	<i>Rome</i>
340	Part 2 - VIII Part 3-A	Evans IV Per.		eagle/tripod. SNGANS 360ff., 355-56	SNGOxford V VI	
			Work 32			
330	B C	V	Work 49 Work 62		VII	
320				Apollo/tripod. SNGANS 389 ff.		Mars/horse's head didrachms
310		VI			VIII?	
300			Work 85			
290						
280	D	VII	Van Keuren 1a Van Keuren 1b	eagle/tripod. SNGANS 357,407ff.	IX? 	
270						Herakles/ wolf & twins

Metapontum and its Coinage in Retrospect

The silver coinage of Metapontum lasted for roughly two and a half centuries, a period that saw very great changes in the life of the city. At the beginning of the incuse coinage in the late sixth century the Greek settlement was well established and was perhaps in its most powerful and aggressive phase, marked most notably by the destruction of Siris and Sybaris and the dedications in the great sanctuaries of mainland Greece. Metapontum was one of the first *poleis* of Magna Graecia to strike coinage, in particular well before her later rival Taras — which suggests a willingness to innovate, as does also the production of fractional coinage virtually from the outset. The choice of the barley ear type is interesting: the other cities all selected types related to their principal cults or foundation myths, whereas Metapontum alone chose instead to be represented by her major product, since it must be recalled that Apollo Lykeios was the main deity in the early period.¹⁰³ We can only speculate as to the reasons for this difference. Was the culturally mixed population more able to identify with the barley ear emblem than with any single cult or myth, or was the city's prosperity more narrowly based in agriculture than that of other cities that had more diverse resources (minerals, industry, harbor facilities)? Whatever the reason, the barley ear badge endured throughout the coinage, and only very exceptional issues of bronze did not use it as major obverse or reverse type.

The fifth century seems to have been a time of consolidation, strongly marked by the influence of Pythagoreanism. The most remarkable features of the coinage are first the retention of the incuse fabric long after it had been abandoned by all the other cities, except Croton — a conservatism frequently attributed to some connection with Pythagoreanism — then

the variety of obverse types once double relief had eventually been adopted, again in contrast to other S. Italian cities where types changed rarely. Toward the end of the century the early introduction of bronze indicates a readiness to experiment, apparently successfully, in view of the large numbers of subsequent bronze issues.

The life of the city seems to have been dominated by agriculture, and presumably the trade related thereto, down to the middle of the fourth century. This is reflected on the coinage by the preponderance of Demeter types, with the occasional Hygeia variant perhaps elicited by concerns with flooding and disease. The rhythm of production was slower than in the incuse phase, probably including intervals without coinage; there is no evidence of any sudden spurts of output until the end of this period.

From the mid-fifth century the general impression is of a city largely minding its own business, joining in Greek cooperative efforts when necessary (such as the Italiote League), but not initiating action and leaving the role of leader to the Tarentines. If Thucydides' account is correct,¹⁰⁴ the Metapontines' involvement in the Sicilian expedition may have been typical of their general attitude: the Athenians called in at Metapontum and persuaded the city to supply 300 men and two triremes, but clearly nothing was volunteered. Nonetheless, the extent of the *chora* made the city's economic base particularly vulnerable as the barbarian attacks increased in the middle of the fourth century, and Metapontum was obliged to participate fully in the attempts to drive the Lucani and the other tribes back into the interior.

These new demands on the city are probably the reason for the apparent stepping-up of mint output, the hasty overstriking of pegasi and the

¹⁰³ Persephone is known to have had a rural cult at San Biagio, but Demeter seems to have displaced Apollo only after the influence of Pythagoreanism had waned;

see Noe-Johnston, pp. 35, 90.

¹⁰⁴ Thuc. 7.33.

sudden appearance of the founding warrior-hero, Leukippos, on the coinage. Metapontum's behavior during the expedition of Alexander the Molossian is revealing. Whatever reservations the authorities may have had about Alexander, they maintained their commitment through to the end. The episode may have convinced them that it was better to try to deal with the Lucanian problem in their own way, probably through negotiation, rather than rely on the whims of Taras and the uncertain success of imported condottieri—hence the reluctance to get involved with Kleonymos and its disastrous aftermath. There seems to have been a real contrast with Taras, always ready to embark on an adventure; Metapontum seems to have been much more cautious. By the time of Pyrrhus there was perhaps little choice, if the city's resources had indeed been eroded by payment of the enormous tribute to Kleonymos and by the attacks on the *chora*. The coinage that can plausibly be associated with the Pyrrhic War seems not to have been on anything like the scale of the issues struck at the time of the Molossian expedition, even if the city could still muster the wherewithal for a couple of small gold issues.

The silver coinage ended in very different

circumstances to the wealth and power of the sixth century, when the first incuse staters were struck. On the whole, it is not a coinage to arouse passions: there are few question-marks beyond the routine ones of chronology, and the artistic level only occasionally rises above the average (or, for that matter, falls below it). Reasonable standards of production were maintained throughout, and the importance of the fractions in silver and then in bronze is perhaps the most distinctive feature. Nevertheless, the coinage is significant as an element in our knowledge of S. Italy before Roman domination. After all, the most flamboyant and intrusive political units that dominate the written historical record — such as Taras, Syracuse or Rome — are not the most typical, and must be seen in context. It is to be hoped that this study of the coinage of Metapontum will help to create a more balanced perspective of the period down to Pyrrhus than the highly Tarentocentric view that has tended to prevail ever since Evans' impressive work on the horsemen provided a framework for analysis. Ideally all the coinages of Magna Graecia need to be treated in depth, and coordinated with each other and with the findings of the archaeologists; this is at least a step in that direction.

Catalogue

CLASS A

Obv. Head of Demeter l., wearing necklace, single- or triple-pendant earring and wreath of two barley ears and two leaves; her hair is tucked into the wreath at the back. Dotted border.

Rev. Ethnic in large untidy letters divided by leaf. Barley ear of 7 carefully modelled grains, usually tapering toward the top; furled leaf at r. or l. curves close to base of ear; caduceus symbol on opposite side of ear; AY horizontally between handle of caduceus and base of ear.

A1.1 *Obv.* Single-pendant earring. Upper leaf curves sharply upward and protrudes above top of head. Die flaws at back of head.

Rev. ME TA upward at r. Leaf at r.

7.85 Private collection

A1.2 *Obv.* Die of A1.1 with large die break at back of head.

Rev. M ETA Similar

7.9 BM ex SNG Lloyd 372

A1.3 *Obv.* Similar, but wears large triple-pendant earring.

Rev. Die of A1.2.

7.86 SNGANS 401

A1.4 *Obv.* Die of A1.3.

Rev. META with space between E and leaf.

7.9 SNG Oxford 740

A1.5 *Obv.* Single-pendant earring. Leaves in wreath close to each other and to barley ears.

Rev. ME TA Die break starting at l. of caduceus and also between fourth and fifth grains on r. side.

7.94 BM ex SNG Lloyd 371

A1.6 *Obv.* Triple-pendant earring. Die flaw across upper barley ear and leaf on most specimens (the die breaks are barely perceptible on Gulbenkian 79 [= Jameson 311]).

Rev. Die of A1.5 with die break enlarged on most specimens.

7.82 Private collection

A1.7 *Obv.* Die of A1.6, the die break enlarged and flaws beginning on cheek and eye.

Rev. M ETA upward at l. Leaf at l., caduceus and signature at r.

7.83 Private collection

A1.8 *Obv.* Die of A1.6, the flaws enlarged.

Rev. ME TA upward at r. Caduceus with small head.

7.52 Naville 15, 2 July 1930, 176

A1.9 *Obv.* Die of A1.6, the flaws further enlarged.

Rev. ME TA downward at r. 7 grains on l. row and 6 on r.

7.91 Glendining, 15 July 1929, 104

A1.10 *Obv.* Single-pendant earring. Larger head. Die flaw starting on nose.

Rev. Die of A1.8.

7.93 Naville 6, 28 Jan. 1924, 184

A1.11 *Obv.* Die of A1.10 with flaws across eye, nose and mouth, back of neck.

Rev. Die of A1.9.

7.94 Berlin ex Fox

A1.12 *Obv.* Die of A1.10, the flaws further developed.

Rev. Die of A1.7.

7.74 Berlin ex Löbbbecke

Obv. ΕΛΕΥΘΕΡΙΟΣ Bearded, laureate head of Zeus r.; Δ behind head. Dotted border.

Rev. META downward at r. 7-grained barley ear, similar in all respects to A1; leaf at l. with crouching Silenus symbol above and ?ΑΔ below.

A2.1 *Rev.* Ethnic parallel to outer awns.

7.52 SNGANS 451

A2.2 *Obv.* Die of A2.1.

Rev. Ethnic parallel to axis of ear.

7.66 Private collection; 6.95 SNG Munich 988 (overstruck)

Obv. ΛΕΥΚΙΠΠΟΣ Bearded head of Leukippos r., wearing Corinthian helmet; symbol behind head: large barley grain.

Rev. ΜΕΤΑΓΩΝ upward at r. 7-grained barley ear with tapering grains and compact awns; leaf to l. with pomegranate symbol above; API vertically upward below leaf.

A3.1 *Rev.* On some specimens a die break at the base of the ear obliterates the first half of the ethnic.

7.43 Paris 1170 (overstruck)

Obv. Similar head without legend; symbol behind head: bunch of grapes.

Rev. Ethnic in various forms. Similar barley ear, awns compact; leaf to l. or r. with poppy seed pod symbol above on two dies.

- A4.1 *Rev.* META upward at r. 7-grained ear; leaf to l. with symbol above.
8.00 BMC 82 (overstruck)
- A4.2 *Obv.* Die of A4.1.
Rev. ME upward at l. 7-grained ear of irregular grains; leaf to r.; no symbol or letters.
7.49 Private collection (overstruck on pegasus)
- A4.3 *Obv.* Die of A4.1, now somewhat worn; flaw across from eye to nostril.
Rev. META downward at r. 7-grained ear, the third and fourth grains on the l. side too small; almost straight leaf to l.; no symbol or letters.
7.85 Private collection (overstruck)
- A4.4 *Obv.* Die of A4.1, considerable wear on face and symbol.
Rev. META downward at r. 7-grained ear; poppy seed pod above leaf. Die of Noe-Johnson N.516.
Private collection
- A4.5 *Obv.* Die of A4.1, very worn.
Rev. META upward at l. 8-grained ear; almost straight leaf on r.
7.75 Private collection
- A4.6 *Obv.* Possibly die of A4.1 recut.
Rev. ME upward at l. 6-grained ear; leaf to r.
7.61 SNGANS 404
- Obv.* Head of Demeter r.; her hair is elaborately curled and held off her neck in a small stephane; she wears a necklace and triple-pendant earring; symbol behind head: lighted torch (cross-torch).
Rev. META upward at l. Barley ear similar to A3-4, usually of 7 grains, awns compact; leaf to r., FH above.
- A5.1 *Rev.* Ethnic in small neat letters, parallel to outer awns.
7.83 SNGLockett 411 ex Salonica hoard (IGCH 1980)
- Obv.* Bearded head of Leukippos r., wearing Corinthian helmet; symbol behind head: cross-torch.
Rev. As last.
- A5.2 *Obv.* Beard in tight curls along cheek; cross-torch below bowl of helmet.
Rev. Large broad ear; leaf almost touches lowest grain of ear.
7.84 Berlin Peytrignet
- A5.3 *Obv.* Die of A5.2.
Rev. Smaller ear; ethnic vertical; signature slants slightly upward.
7.90 SNGANS 405 (overstruck)
- A5.4 *Obv.* Die of A5.2.
Rev. Narrow ear, grains of uniform size.
7.69 BM ex SNGLloyd 382
- A5.5 *Obv.* Die of A5.2, beginning to wear around symbol.
Rev. Similar, but signature further from awns.
7.75 Private collection (overstruck)
- A5.6 *Obv.* Die of A5.2, very worn around symbol and helmet.
Rev. Ethnic starts below base of ear.
7.57 BM 1903/2-1-5 (overstruck on Dyrrhachium)
- A5.7 *Obv.* Die of A5.2, extremely worn.
Rev. Ethnic parallel to outer awns.
7.76 Coin Galleries FPL, May 1964, B7
- A5.8 *Obv.* Beard less curly along cheek; cross-torch higher relative to bowl of helmet.
Rev. Similar to A5.3, but signature horizontal.
7.62 SNGOxford 739 (overstruck)
- A5.9 *Obv.* Die of A5.8.
Rev. Irregular grains; large gap between awns at top.
7.50 SNGANS 407
- A5.10 *Obv.* Die of A5.8.
Rev. 5-grained ear; the awns fan out, large barbs.
7.76 Private collection (overstruck)
- A5.11 *Obv.* Die of A5.8, very worn.
Rev. 7-grained ear; ethnic very close to outer awns.
7.71 BM 1903/2-1-4 (overstruck)
- Obv.* Head of Herakles r., beardless but with sidewhiskers; lionskin covers head and neck and is knotted under chin; no symbol or letters.
Rev. META downward at r. Broad 6-grained barley ear, similar to A5.2, with leaf to l.; symbol and signature arc just off-flan on all examples.
- A6.1 7.62 Private collection (overstruck on Corinth)
- Obv.* Bearded head of Zeus r., wearing laurel wreath; symbol behind head: fulmen.
Rev. METAFON or META in small neat letters upward at l. Broad 6 or 7-grained barley ear; leaf to r., KAA above; poppy seed pod symbol above signature on one die only.
- A6.2 *Rev.* METAFON 6-grained ear; poppy seed pod symbol. Die flaws across base of ear and leaf.
7.76 BMC 89
- A6.3 *Obv.* Die of A6.2. Die break above eye.
Rev. METAFON 7-grained ear with curved leaf; no symbol.
7.42 SNGANS 412; 7.49 SNGANS 413 (overstruck)

- A6.4 *Obv.* Die of A6.2, the break more pronounced on one specimen, not visible on another.
Rev. ΜΕΤΑΓΩΝ Similar, but leaf straighter.
7.79 Private collection; 7.88 Berlin ex Fox (overstruck)
- A6.5 *Obv.* Similar to A6.2, but features coarser; symbol almost off-flan. Possibly a copy, although the weight is good.
Rev. ΜΕΤΑ 7-grained ear.
7.82 Berlin ex Imhoof
- Obv.* Head of Apollo facing three-quarters l., hair in tight curls; he wears a laurel wreath with the leaves woven from l. to r. around head; ΚΑΑ behind neck. Dotted border.
Rev. ΜΕΤΑ downward at r. Broad 6-grained barley ear with tiny barbs on the awns; leaf to l. on which sits coiled serpent, its head erect; ΦΙΛ[Ο] below leaf.
- A6.6 7.63 Robinson, *Gulbenkian Coll.*, Pt. 1 (Lisbon, 1971) 70
- Obv.* ΔΑΜΑΤΗΡ Head of Demeter r., wearing necklace, triple-pendant earring and wreath of two barley ears and two leaves; her hair is tucked into the wreath behind; a filmy veil covers the back of her head, and folds are visible under her chin; Κ behind head. Dotted border.
Rev. ΜΕΤΑ in small neat letters upward at l. 7-grained barley ear with leaf to r.; a bird with wings open stands on the leaf; snake below leaf; signature horizontally below ethnic at base of ear: ΚΑΑ (recut ΑΠΙ) or ΑΠΙ.
- A6.7 *Obv.* Die flaws in front of mouth and chin.
Rev. ΚΑΑ; bird's head level with fourth grain of ear.
7.44 Weber 768
- A6.8 *Obv.* Die of A6.7, the flaws larger and new flaws visible under eye and behind head.
Rev. Die of A6.7, the signature recut ΑΠΙ over ΚΑΑ.
7.53 SNG Lloyd 387
- A6.9 *Obv.* Die of A6.7, the flaws further developed.
Rev. Similar, but bird's head level with third grain of ear; ΑΠΙ.
7.6 Vienna 4050
- Obv.* ΛΕΥΚΙΠΓΩΣ Bearded head of Leukippos r., wearing Corinthian helmet; symbol behind head: parazonium; Κ below neck tranche. Dotted border.
Rev. ΜΕΤΑ in small neat letters upward at l. 7-grained barley ear; leaf to r. on which stands a kalyx krater; signature horizontally below ethnic at base of ear: ΟΝΑ.
- A6.10 7.55 Private collection
- Obv.* ΘΑΡΡΑΓΩΡΑΣ Male head with sidewhiskers and long hair l., wearing Corinthian helmet; Κ behind head. Dotted border.
Rev. ΜΕΤΑ upward at r. 7-grained barley ear; leaf to l. on which stands an oinochoe (?); signature horizontally below ethnic at base of ear: ΟΝΑ.
- A6.11 7.67 Private collection
- Obv.* ΔΑΜΑΤΗΡ Head of Demeter l., wearing necklace, triple-pendant earring and wreath of three barley ears and two pairs of leaves; her hair, in luxuriant curls, falls loosely to her shoulders, a few locks are visible under her chin; symbol in l. field: cross-torch; Κ behind head. Dotted border.
Rev. ΜΕΤΑ upward at r. 7-grained barley ear; leaf to l., crab above; ΑΡΧΙΓ upward below leaf.
- A6.12 7.78 SNG Lloyd 390
- Obv.* Head of Demeter r., similar to A6.7 but without legend; ties of wreath or extension of veil falls behind head and below neck tranche; Α behind head, Π below chin. Dotted border.
Rev. ΜΕΤΑ in small neat letters downward at r. Chunky 7-grained barley ear; long leaf to l., above which tripod with raised superstructure and three handles; short leaf to r., above which ΓΡΟ.
- A7.1 *Obv.* Large head; three curls at nape of neck.
Rev. Signature below lowest grain of ear. Braces on legs of tripod.
7.88 SNG Lloyd 389
- A7.2 *Obv.* Die of A7.1, earring blurred.
Rev. Tapering ear; Α of ethnic just above Π of signature.
7.9 SNG Oxford 745
- A7.3 *Obv.* Die of A7.1.
Rev. Large tripod with large handles, no braces on legs of tripod. Die flaws round Α of ethnic.
7.77 Naville 13, 27 June 1928, 92.
- A7.4 *Obv.* Rounder features; two curls at nape of neck; almost touches chin.
Rev. Grains of r. side larger than those on l.; tripod not horizontal.
7.88 SNG Oxford 744
- A7.5 *Obv.* Die of A7.4.
Rev. Die of A7.2 with break on l. side of ear.
Vatican
- A7.6 *Obv.* Die of A7.4.
Rev. Die of A7.1.
7.70 BMC 121

A7.7 *Obv.* Similar, but no veil visible under chin; Γ close to neck.
Rev. Die of A7.4.
 7.66 Private collection

A7.8 *Obv.* Die of A7.7.
Rev. Die of A7.1.
 7.67 Berlin ex Löbbecke

A7.9 *Obv.* Die of A7.7.
Rev. Very large tripod.
 7.72 Paris, *de Luynes* 501 (doublestruck)

Obv. Head of Demeter l., wearing necklace, triple-pendant earring, stephane and wreath with two barley ears, which are almost vertical behind the stephane, and two narrow leaves; her hair is tucked into the wreath behind; a filmy veil covers the back of her head and hangs in almost transparent folds behind. The head is encircled by two spears of barley on long curling stalks, each with two leaves; Σ beneath chin, Α behind head.
Rev. META upward at l. 7-grained barley ear with long leaf to r., symbol above; signature, ΓΡΟ, either above short leaf to l. as A7.1ff. or upward below the long leaf.

A7.10 *Rev.* Broad chunky ear, similar to A7.1ff.; crested Corinthian helmet above leaf; ethnic in small neat letters; short leaf to l. with ΓΡΟ above.
 7.84 *SNG*Lloyd 370

A7.11 *Obv.* Die of A7.10.
Rev. Elongated ear, the awns compact but fanning out toward the top; ant stands on leaf, which brushes lowest grain of ear; ethnic in large letters; ΑΓ below leaf at base of ear.
 7.74 Private collection

A7.12 *Obv.* Die of A7.10, apparently recut (hair and eye sharper).
Rev. Similar to A7.11 but 8-pointed star above leaf and traces of another between Ε and Τ of ethnic; ΓΡΟ below leaf at base of ear.
 7.67 Private collection

Obv. Head of Tharragoras r., wearing Corinthian helmet without crest or flap, but with clip for attaching plume on two dies; the curls of hair below the ear are clearly sidewhiskers, compare A6.11; Σ behind head or under chin.

Rev. META upward or downward at l. 6 or 7-grained barley ear; leaf to r. with trophy above, Γ below.

A7.13 *Obv.* No clip; Σ behind head.
Rev. META downward at l. in small neat letters, 7-grained tapering ear.
 Private collection

A7.14 *Obv.* Pcllet behind head; Σ below chin.
Rev. Die of A7.13.
 7.645 Berlin ex Fox

A7.15 *Obv.* Die of A7.14.
Rev. META in small neat letters upward at l. 6-grained ear.
 7.77 Berlin ex Imhoof

A7.16 *Obv.* Die of A7.14.
Rev. META in large letters similar to A7.11–12. Barley of 7 uneven grains; short leaf almost touches lowest grain of ear before curving back; large symbol and letter.
 7.76 Private collection

A7.17 *Obv.* Similar, but differences in cutting of hair and helmet; Σ closer to point of chin.
Rev. Die of A7.16.
 7.83 Private collection

A7.18 *Obv.* Die of A7.13.
Rev. Die of A7.16.
 Private collection

Obv. Head of Demeter r., similar to A7.4ff. though the features are finer and the folds of the veil hang in a different way behind the head. No signature. No border visible on preserved specimens.

Rev. META in small neat letters upward at l. Tapering 7-grained barley ear, the grains much smaller than previously; leaf to r. with large 2-handled krater above and ΦΙ below.

A8.1 7.91 *BMC* 125

Obv. Head of Demeter r., similar to A8.1 but with slight differences in the cutting of the hair. A line border is visible on one specimen, but most examples are struck on flans much smaller than the die.
Rev. META upward at l. 7-grained barley ear, similar to A8.1; leaf to r. on which stands oinochoe, ΦΙ below.

A8.2 *Obv.* Head smaller than A8.1.
Rev. Ethnic in small neat letters starting level with the top of the lowest grain of the ear.
 Vatican

A8.3 *Obv.* Head larger than A8.2; the barley ears in the wreath protrude above head.
Rev. Similar to A8.2, but topmost grains are tiny.
 7.95 *SNG*ANS 417

A8.4 *Obv.* Die of A8.3, flaw across face.
Rev. Similar to A8.3, but handle of oinochoe touches awns. Die break beginning to develop at base of symbol on some specimens.
 Naville 12, 18 Oct. 1926, 412

A8.5 *Obv.* Slight differences in curls above ear and at crown of head. Possibly die of A8.3 recut.
Rev. Die of A8.4, the break enlarged.
 Empedocles collection

- A8.6 *Obv.* Die of A8.5.
Rev. Ethnic and barley ear in coarser style, the grains knobby; symbol off-flan.
 ?Die break across upper left side of die.
 7.70 SNGANS 418
- Obv.* Head of Demeter r., as A6.7; signature (ΑΓ[Ο], Φ) under chin.
Rev. META, usually upward at r. (downward on A8.8). Barley ear with leaf to l. (except on one die), on which sits mouse; Φ below leaf.
- A8.7 *Obv.* Small head, the hair less exuberantly curly than A6.7 or 7.1; the veil is clearly shown covering the hair at the back of the head. One specimen (BMC 124) reads ΑΓΟ downward in front of chin. Fine dotted border.
Rev. Tapering 7-grained ear with leaf to l., awns compact; the mouse has a very short tail.
 7.61 BM 1841–106
- A8.8 *Obv.* Die of A8.7.
Rev. META downward. Similar ear but awns fan out; ethnic in neat closely spaced letters with die break on T.
 7.73 Private collection
- A8.9 *Obv.* Die of A8.7.
Rev. Broad 6-grained ear with many die flaws; letters of ethnic more widely spaced.
 7.58 SNGANS 419
- A8.10 *Obv.* Larger head of coarser workmanship, the hair more curly; veil hangs in thick fold behind head, extending slightly below neck tranche; heavy earring; Φ below chin. No border.
Rev. META in tiny letters upward at l. Broad 7-grained ear with leaf to r.; Φ below leaf under mouse and also on l. side of base of ear.
 7.59 Private collection
- A8.11 *Obv.* Die of A8.10, slight flaws on nose.
Rev. Die of A8.7.
 7.64 Naville 6, 28 Jan. 1924, 181.
- A8.12 *Obv.* Die of A8.10.
Rev. Die of A8.8.
 7.83 SNGANS 421
- A8.13 *Obv.* Die of A8.10, signs of wear.
Rev. Die of A8.9, the flaws further developed.
 7.64 Hirsch 22, 14 Nov. 1912, 4
- A8.14 *Obv.* Die of A8.10.
Rev. M smaller than the other letters. Tapering 7-grained ear with leaf to l.; awns irregularly spaced on r. side.
 7.44 SNGANS 422
- A8.15 *Obv.* Broader head of excellent style, the details very delicately rendered; three curls at nape of neck; the veil hangs in soft folds; there appears to be an ampyx (? of knotted barley stalks) in place of the second barley ear, then a leaf, barley ear and pair of leaves; ΑΓ below chin.
Rev. META in larger letters upward at r. Similar ear, but larger mouse whose tail hangs down.
 7.87 Paris, de Luynes 500
- A8.16 *Obv.* Die of A8.15.
Rev. Similar, but mouse's tail turns up; Φ above mouse.
 7.94 BMC 123
- A8.17 *Obv.* Die of A8.15.
Rev. Similar to A8.15; die flaw where mouse's tail touches awns.
 7.87 Private collection
- A8.18 *Obv.* Similar to A8.10, but 2 rows (each with 3 curls) at nape of neck. Signature, if any, off-flan on known specimens.
Rev. Die of A8.17, the flaws enlarged.
 7.86 Berlin ex Löbbecke
- A8.19 *Obv.* Similar to A8.15, but wears decorated stephane as well as wreath consisting of two barley ears and two leaves; ΑΓ in monogram below chin.
Rev. Similar; mouse has very long tail.
 7.59 SNGLloyd 386
- A8.20 *Obv.* Die of A8.19, blemish beginning to show on cheek.
Rev. Broad, coarse-grained ear, the central row prominent, especially the terminal grain; broad leaf; mouse's tail curves upward; below leaf and also at base of ear on r. side.
 Private collection
- A8.21 *Obv.* Die of A8.19, the die flaw on cheek clearly visible.
Rev. Ear similar to A8.19, large die flaws on leaf and on third grain in r. row.
 7.78 Cambridge, McClean 956
- A8.22 *Obv.* Similar, but without stephane; eyelids more prominent. Flaw below eye.
Rev. Die of A8.21, the breaks larger.
 7.93 SNGANS 423
- A8.23 *Obv.* Die of A8.22.
Rev. Die of A8.7.
 7.93 San Giorgio Ionico hoard
- A8.24 *Obv.* Die of A8.22, beginning to deteriorate.
Rev. Similar, but leaf curves away from ear.
 7.43 Naville 5, 18 June 1923, 485

A8.25 *Obv.* Die of A8.22.
Rev. Broad 6-grained ear, mouse's tail touches awns beside second grain.
 7.56 Hirsch 32, 14 Nov. 1912, 5

A8.26 *Obv.* Die of A8.22.
Rev. Die of A8.20.
 7.58 SNGANS 424

A8.27 *Obv.* Die of A8.22, somewhat worn; ear-ring apparently lengthened.
Rev. Similar to A8.25, but narrower ear, A of ethnic further from awns.
 7.82 SNGANS 425

A8.28 *Obv.* Die of A8.22, very worn.
Rev. Similar; large Φ .
 7.8 Schlessinger 13, 4 Feb. 1935 (Hermitage), 91

Obv. Head of Demeter r., similar to A8.15, but wears stephane and wreath consisting of single barley ear and one pair of leaves; earring has heavy central pendant; N under chin. Fine dotted border.

Rev. META upward at l. 7-grained barley ear with leaf to r.; comic mask above leaf; AΓH retrograde between ear and leaf.

A9.1 7.40 Berlin ex Löbbecke (overstruck)

Obv. Die of A9.1.
Rev. META upward at r. Small 6-grained barley ear with almost straight leaf to l.; protome of pegasus above leaf; AΓH horizontally at base of ear on r. side.

A9.2 7.67 Private collection (overstruck on left-facing pegasus); 7.67 SNGANS 427 (overstruck on pegasus of Anactorium)

Obv. Bearded head of Leukippos r., wearing Corinthian helmet with flap covering neck; behind head: NI. Helmet has clips for attaching plumes; it is worn rather straight on the head, not tipped back. Dotted border.

Rev. Die of A9.2.

A9.3 7.33 SNGANS 428; 7.60 Cambridge, McClean 951; 7.65 Vienna 4113 (all overstruck on Leucas)

Obv. Die of A9.3.
Rev. META in small letters upward at l. 7-grained barley ear with leaf to r.; AΓH above leaf and crescent above signature.

A9.4 7.84 Private collection

CLASS B

(a) Distaters

Obv. Bearded head of Leukippos r., wearing Corinthian helmet, the bowl of which is decorated with a quadriga to r., driven by Nike; above the cleft of the helmet is a tiny hippocamp r.; symbol

behind head: protome of lion r.; AΓH between lion and helmet. Dotted border.

Rev. METAFONTINΩN in small neat letters upward at r. 7-grained barley ear with leaf to l.; club upright above leaf; AMI below leaf.

B1.1 *Obv.* Hair showing beneath helmet at nape of neck, not rendered as separate curls; large symbol.

Rev. Knots on club widely spaced.
 15.60 Naville 16, 3 July 1933, 165

B1.2 *Obv.* Die of B1.1, small die flaw in front of head of hippocamp and a break above horses' heads.

Rev. Similar, but lower knots on club closer together.

15.88 Private collection ex Jameson 306

B1.3 *Obv.* Die of B1.1, slightly more worn.
Rev. Similar, but fatter grains and handle of club closer to awns.

15.90 Münzhandlung Basel, 1 Oct. 1935, 321

B1.4 *Obv.* Similar to B1.1, but four distinct locks of hair show below helmet at nape of neck; smaller hippocamp.

Rev. Similar to B1.3, but club further from awns.

15.29 SNGANS 431

B1.5 *Obv.* Die of B1.4, die flaw between lion and helmet.

Rev. Similar to B1.3; uppermost grain of l. row is larger than that in r. row.

15.86 Paris 1164

B1.6 *Obv.* No locks of hair show below helmet; symbol smaller.

Rev. Die of B1.5.

15.84 Naville 16, 3 July 1933, 167

B1.7 *Obv.* Die of B1.6.

Rev. Uppermost grains of ear are not symmetrical; club almost touches awns.

15.69 Bernalda hoard (IGCH 1958)

(b) Staters

Obv. Bearded head of Leukippos r., wearing Corinthian helmet with plain bowl; symbol behind head: lion-head r. with protruding tongue; AΓ in monogram below chin.

Rev. META upward at r. (upward at l. on B2.36) in small neat letters. Tapering 6 or 7-grained barley ear with leaf to l. (except B2.36); club upright above leaf; below leaf: AMI. The dies are often hard to distinguish because the barley ears are very regular and the style unusually consistent.

B2.1 *Obv.* Large head and helmet; 3 locks of hair at nape of neck; symbol close to head.
Rev. Long 6-grained ear, the awns compact.

7.78 SNG Lockett 409

- B2.2 *Obv.* Die of B2.1.
Rev. Similar, but shorter leaf and club less upright. Die flaw on curve of leaf.
7.79 *BMC* 78
- B2.3 *Obv.* Die of B2.1.
Rev. 7-grained ear. Die flaw smudges awns on r. side.
7.8 Private collection
- B2.4 *Obv.* Similar to B2.1 but without distinct locks of hair at nape of neck.
Rev. Similar, letters of ethnic more widely spaced.
7.86 *SNGANS* 434
- B2.5 *Obv.* Die of B2.4.
Rev. Long leaf curves gently; awns very compact.
7.79 Glasgow, *Hunterian* 24
- B2.6 *Obv.* Similar head, with differences in hair and beard.
Rev. Shorter leaf, more sharply angled; short club.
7.89 *SNGCop* 1208
- B2.7 *Obv.* Smaller head with 4 locks of hair at nape of neck. Monogram close to chin.
Rev. Topmost grain much smaller than others. Die flaw on inner curve of leaf.
7.65 *SNGOxford* 729
- B2.8 *Obv.* Similar, but 3 locks of hair; monogram further from chin.
Rev. Grains asymmetrical at top of ear.
7.93 Cahn 71, 14 Oct. 1931, 86
- B2.9 *Obv.* Die of B2.8. Die break starting below chin.
Rev. Club parallel to axis of ear.
7.89 Glasgow, *Hunterian* 23
- B2.10 *Obv.* Die of B2.8. Die break extends from monogram to middle of neck.
Rev. Similar to B2.8, but longer leaf; irregular gaps between awns at upper l. Die flaw on A of ethnic.
7.55 Paris 1175
- B2.11 *Obv.* Similar, but curls of beard differently cut.
Rev. Die of B2.10 with further flaws on ethnic.
7.71 Naville 16, 3 July 1933, 169
- B2.12 *Obv.* Die of B2.11.
Rev. Long leaf almost straight; club parallel to axis of ear, tip almost touching awns.
7.69 *SNGANS* 439
- B2.13 *Obv.* Similar, but 2 locks of hair at nape of neck.
Rev. M of ethnic close to lowest grain; curved leaf.
7.85 Boston, Brett 116
- B2.14 *Obv.* Locks indistinct at nape of neck; large symbol. Die break starting across base of neck.
Rev. Ear tapers sharply; leaf almost straight from stalk to club. Many small flaws.
7.97 *SNGANS* 440
- B2.15 *Obv.* Die of B2.14, the break enlarged.
Rev. Similar to B2.7, but gap between awns at apex.
7.91 *SNGOxford* 732
- B2.16 *Obv.* Tiny locks of hair show below helmet.
Rev. Broader ear, curved leaf close to awns; club touches awns.
7.85 *SNGANS* 436
- B2.17 *Obv.* Small head, neck tranche almost straight; monogram close to chin.
Rev. Short, stubby ear; leaf curves gently.
7.81 Cambridge, *McCLean* 953
- B2.18 *Obv.* Die of B2.17 with break behind symbol.
Rev. Curly leaf; club slants away from ear.
7.76 Cambridge, *McCLean* 952
- B2.19 *Obv.* Protruding chin; 3 locks of hair at temple.
Rev. Leaf curves gently; club parallel to axis of ear.
7.87 *SNGLloyd* 378
- B2.20 *Obv.* Die of B2.19.
Rev. Small ear with gap between awns at upper r.; leaf almost straight. Die break at base of club.
7.98 Naville 15, 2 July 1930, 153
- B2.21 *Obv.* More rounded chin; small symbol close to head.
Rev. Ethnic starts below ear; signature slants at right angle to awns.
7.90 Cambridge, *SNGLewis* 180
- B2.22 *Obv.* Die of B2.21.
Rev. Large ear, the grains much coarser than earlier dies.
7.72 *SNGLloyd* 377
- B2.23 *Obv.* Helmet deeper between bowl and ear.
Rev. Grains smaller than B2.22, but ear still chunky; curved leaf.
7.61 *SNGANS* 437
- B2.24 *Obv.* Die of B2.23.
Rev. Ear more squat; club upright.
7.92 *SNGANS* 435
- B2.25 *Obv.* Lower edge of beard less tightly curled.

- Rev.* Chunky ear, the awns very compact; club slants away from awns.
7.76 *SNGANS* 432
- B2.26 *Obv.* Die of B2.25.
Rev. Similar to B2.17, but ethnic higher on die.
7.34 *SNGANS* 433
- B2.27 *Obv.* Die of B2.25, beginning to deteriorate.
Rev. Similar, but leaf less curly.
7.65 Paris, *SNGDelepiere* 329
- B2.28 *Obv.* Die of B2.25.
Rev. Distinctive gap between awns at apex.
7.87 Naville 1, 4 Apr. 1921 (Pozzi), 184
- B2.29 *Obv.* Die of B2.25.
Rev. Leaf makes more natural join with stem than usual. Die flaw (dot) beside third grain on l. side.
7.906 *SNGMunich* 985
- B2.30 *Obv.* Die of B2.25, now considerably worn.
Rev. Tapering ear; barbs on outside of awns.
7.74 *SNGANS* 442
- B2.31 *Obv.* Die of B2.25, very worn.
Rev. Squat ear; club touches awns. Die flaw at base of club.
7.74 *SNGOxford* 728
- B2.32 *Obv.* Die of B2.25.
Rev. Similar to B2.30, but barbs on inside of awns.
7.82 Paris 1174
- B2.33 *Obv.* ?Die of B2.25, very worn indeed.
Rev. 7-grained ear with slight asymmetry of grains at apex; similar to B2.10, but A of ethnic further from awns.
7.51 *SNGOxford* 731
- B2.34 *Obv.* Similar to B2.25, but monogram further from chin and neck; curls differently arranged.
Rev. Die of B2.30.
7.65 *SNGOxford* 727
- B2.35 *Obv.* Small head, 2 locks of hair at nape of neck; symbol very close to helmet.
Rev. Similar to B2.13, but 6 grains.
7.61 Private collection
- B2.36 *Obv.* Similar to B2.24, but larger curls in beard.
Rev. META upward at l. 7-grained ear with leaf to r.
7.91 Paris, Chandon de Briailles 67
- Obv.* ΛΕΥΚΙΓΓΟΣ Bearded head of Leukippos r., wearing Corinthian helmet with plain bowl; symbol behind head: dog scated l. with one paw raised; Σ below neck tranche.
- Rev.* META upward at l. 6 or 7-grained barley ear with leaf to r.; bird r. with open wings stands on leaf; AMI below. The barley ears are much less regular than in B2 and the dies consequently much easier to distinguish.
- B3.1 *Obv.* ΛΕΥΚΙ/ΓΓΟΣ Beard composed of many small delicate curls; 3 curls at temple.
Rev. Curved leaf joins stem at right angle; knobbly grains; bird's wings fully extended. Die flaws below A of ethnic and on leaf below signature.
7.885 Berlin ex Löbbecke
- B3.2 *Obv.* Die of B3.1, somewhat worn.
Rev. Ethnic closely spaced; grains uneven; leaf curves very gently.
7.84 Cambridge, *SNGFitzwilliam* 498
- B3.3 *Obv.* ΛΕΥΚΙΓ/ΓΟΣ. Beard composed of large curls, no locks at temple; Σ retrograde.
Rev. Ethnic in tiny letters; two small round grains at apex of ear, above which the awns slant to l.
7.93 BMC 80
- B3.4 *Obv.* Die of B3.3.
Rev. Bird's wings less fully extended.
7.97 Cambridge, *SNGFitzwilliam* 494
- B3.5 *Obv.* ΛΕΥΚΙ/ΓΓΟΣ Σ. Similar to B3.1 but no locks at temple; dog's back and tail almost touch Leukippos's neck.
Rev. Even grains; signature slants downward at right angles to awns.
7.94 Glasgow, *Hunterian* 25
- B3.6 *Obv.* Die of B3.5.
Rev. 6-grained ear; ethnic parallel to axis of ear; bird's wings fully extended.
7.70 Naville 1, 4 Apr. 1921 (Pozzi), 499
- B3.7 *Obv.* Die of B3.5.
Rev. Similar to B3.2, but ethnic starts lower relative to ear.
7.75 Paris 1169
- B3.8 *Obv.* ΛΕΥΚ/ΙΓΓΟΣ Broad head, the beard very full.
Rev. Die of B3.6.
7.87 BMC 79
- B3.9 *Obv.* Die of B3.8.
Rev. Long ear; small bird with wings not fully extended.
7.92 Cambridge, *McClellan* 949
- B3.10 *Obv.* Die of B3.8.
Rev. Grains more upright in l. row than r.; broad furled leaf.
7.89 *SNGANS* 447
- B3.11 *Obv.* ΛΕΥΚΙ/ΓΓΟΣ Similar, but ear shown clearly, not covered by beard and helmet.

- Rev.* Ethnic in small letters parallel to outer awns; 7-grained ear; narrow leaf curves gently.
7.87 Brussels
- B3.12 *Obv.* Die of B3.11.
Rev. Grains even; bird's r. wing fully extended, l. wing (or die flaw) visible in front of breast.
7.93 SNGANS 443
- B3.13 *Obv.* Die of B3.11.
Rev. Grains uneven, two tiny grains at apex; broad furled leaf; signature in letters larger than ethnic.
7.75 Egger 40, 2 May 1912, 158
- B3.14 *Obv.* ΛΕΥΚΙΓ/ΓΟΣ
Rev. Ethnic in tiny letters; leaf curves close to awns; bird has wings folded.
7.67 Naville 6, 28 Jan. 1924, 179
- B3.15 *Obv.* Die of B3.14.
Rev. Similar to B3.14, but ethnic closer to awns, signature slants upward.
7.92 Cambridge, SNGFitzwilliam 495
- B3.16 *Obv.* Die of B3.14 with die flaw between bowl and eyehole of helmet.
Rev. Die of B3.13. Die flaws.
7.88 Private collection
- B3.17 *Obv.* ΛΕΥΚ/ΙΓΓΟΣ Small head, tip of vizor beneath K of legend.
Rev. 7 grains plus two small round grains at apex, as B3.2; bird's wings partially open.
7.80 Cambridge, SNGFitzwilliam 497
- B3.18 *Obv.* Die of B3.14, the die flaw further developed.
Rev. Die of B3.17.
7.64 Paris 1167
- B3.19 *Obv.* Die of B3.14.
Rev. Die of B3.12.
7.94 Egger 40, 2 May 1912, 159
- B3.20 *Obv.* ΛΕΥΚΙ/ΓΓΟΣ Hair at nape of neck not shown as distinct locks.
Rev. Leaf curves away from ear, bird on tip far from awns. Die flaw between M of ethnic and ear.
7.83 SNGANS 445
- B3.21 *Obv.* Die of B3.20.
Rev. Ethnic close to awns; uneven grains; bird close to awns.
7.78 Paris 1168
- B3.22 *Obv.* Die known only in poor condition, especially round eyehole of vizor; legend not visible on any specimens; large symbol. Possibly a recutting of another die, but the details differ from all others known.
- Rev.* Similar, but ethnic less compact.
7.72 Paris, SNGDelepierre 330
- B3.23 *Obv.* ΛΕΥΚ/ΙΓΓΟΣ Small symbol.
Rev. Similar, but stem longer between leaf and ear.
7.63 Naville 14, 2 July 1929, 36
- B3.24 *Obv.* Die of B3.23.
Rev. Similar, but awns more compact.
7.97 SNGLloyd 379
- B3.25 *Obv.* ΛΕΥΚΙΓ/ΓΟΣ Large symbol, the dog's tail curved right back on itself.
Rev. Die of B3.24.
8.03 Bourgey 5, Dec. 1932, 32
- B3.26 *Obv.* Die of B3.25.
Rev. Similar to B3.3, but awns are vertical at apex and bird's wings are less fully extended.
7.90 Paris, Valton 57
- B3.27 *Obv.* Die of B3.25.
Rev. Similar to B3.14, but bird's wings fully extended.
7.77 SNGANS 448
- Obv.* Bearded head of Leukippos r., wearing Corinthian helmet with plain bowl; AMI behind head.
Rev. META upward at l. 7 or 8-grained barley ear, awns compact; broad leaf to r. with fulmen above.
- B4.1 *Obv.* No hair visible below helmet.
Rev. 8 knobbly grains.
7.78 Private collection
- B4.2 *Obv.* Die of B4.1.
Rev. Long narrow 7-grained ear; ethnic extends from bottom to top of grains.
7.92 Hess Leu, 16 April 1957, 32
- B4.3 *Obv.* 3 tiny locks of hair below helmet; AMI slopes slightly downward.
Rev. Die of B4.2.
Naville 15, 2 July 1930, 152
- B4.4 *Obv.* 2 locks of hair below helmet, ear clearly shown.
Rev. Tapering 7-grained ear. Die flaw on outer side of leaf.
7.76 Private collection

CLASS C

Obv. Head of Demeter r., wearing necklace, triple-pendant earring (except C1.24) and wreath of three barley ears and two pairs of leaves; her hair, in luxuriant curls, falls loosely to her shoulders, a few locks are visible under her chin; ΔAI under chin (except C1.1: Ξ behind head). Dotted border visible on some dies/specimens. For type compare A6.12.

Rev. META upward at l. (except C1.55–56) Barley ear; leaf to r. with plough above (except C1.1: bucranium), MAX below.

- C1.1 *Obv.* Large head with full cheeks, no locks of hair below chin; no signature under chin but Ξ behind head. Many small die flaws. *Rev.* Small 6-grained ear; filleted bucranium in place of plough; MAX below. 8.00 BM ex Helbing 7 Apr. 1913 (Zschesche & Koder), 105
- C1.2 *Obv.* Similar, but ΔAI below chin. *Rev.* Ethnic in small neat letters. 7-grained ear; plough touches leaf and is at a right angle to awns. 7.89 Jameson 316
- C1.3 *Obv.* Die of C1.2. *Rev.* 6-grained ear, awns compact; plough floats above leaf. Die flaw on awns immediately above top grains of ear. 7.93 Private collection
- C1.4 *Obv.* Die of C1.2. *Rev.* Ethnic closely spaced; leaf curves more gently. 7.95 Naville 16, 3 July 1933, 178
- C1.5 *Obv.* Smaller head with locks of hair visible below chin; large curl at crown of head above leaf. Dotted border. *Rev.* Ethnic extends length of grains; awns very compact. 7.93 Weber 769
- C1.6 *Obv.* Die of C1.5. *Rev.* Ethnic in larger letters with exaggerated serifs; larger ear with awns less compact; short leaf. 7.92 SNGANS 470
- C1.7 *Obv.* Similar, but large curl below leaf at crown of head. *Rev.* Die of C1.5 with die flaw at top of r. row of grains. Platt, 3 Apr. 1933, 16
- C1.8 *Obv.* Die of C1.7. *Rev.* Similar to C1.6, but MAX parallel to base of plough. 7.79 SNGANS 469
- C1.9 *Obv.* Large head similar to C1.2, but locks of hair below chin. Dotted border. *Rev.* Die of C1.5, the flaw further developed. 7.87 Naville 17, 3 Oct. 1934, 59
- C1.10 *Obv.* Die of C1.9. *Rev.* Squat ear with tapering leaf. 7.82 SNGMunich 1000
- C1.11 *Obv.* Die of C1.9. *Rev.* Short squat ear, the leaf curves away from ear. Die break above apex of ear. 7.26 Naville 5, 18 June 1923, 471
- C1.12 *Obv.* Die of C1.9. *Rev.* Axis of ear slightly crooked; leaf curves close to ear; large plough close to awns. 7.65 SNGOxford 768 ex Salonica hoard (IGCH 1980)
- C1.13 *Obv.* Die of C1.9. The die break from forehead to back of head has gradually developed over preceding specimens to final stage here. *Rev.* Plough very low, at right angle to awns. 7.79 SNGANS 473
- C1.14 *Obv.* Smaller head, similar to C1.7, but S-curl protrudes just below upper leaf of wreath. *Rev.* Small 6-grained ear with large symbol; leaf curves gently. 7.92 SNGANS 472
- C1.15 *Obv.* Die of C1.14. *Rev.* Leaf more curved; plough lower relative to ear. 7.81 Cambridge, SNGLewis 187
- C1.16 *Obv.* Die of C1.14, flawed round mouth. *Rev.* Fatter 7-grained ear; ethnic in larger letters. 7.90 Vienna 4031
- C1.17 *Obv.* Die of C1.14, worn. *Rev.* Ethnic spaced M ET A. Die flaws on awns on l. side. 7.57 Hess 207, Dec. 1931, 68
- C1.18 *Obv.* Similar, but curl protrudes above head as extension of lower leaf of wreath. *Rev.* Narrow 7-grained ear, awns compact. 7.92 SNGANS 471
- C1.19 *Obv.* Similar, but curl further forward and lower leaf shorter. *Rev.* Similar to C1.5 but ethnic more closely spaced. 7.92 Berlin ex Fox
- C1.20 *Obv.* Die of C1.19. *Rev.* Die of C1.12, worn. 7.91 SNGANS 468
- C1.21 *Obv.* Die of C1.19, worn under chin. Flaw in front of nose. *Rev.* Long narrow ear, grains uneven. Die flaw on r. row. 7.77 Egger 40, 2 May 1912, 161
- C1.22 *Obv.* Die of C1.19. *Rev.* Ethnic widely spaced; chunky ear with broad leaf; plough further from awns than usual. 7.75 Paris 1206
- C1.23 *Obv.* Die of C1.19, flaws further developed.

- Rev.* Similar, but plough closer to awns.
Die flaw above AX of signature.
7.55 Naville 5, 18 June 1923, 470
- C1.24 *Obv.* Similar, but single-pendant earring.
No curl at crown. Dotted border.
Rev. Die of C1.23, the flaw larger.
7.73 SNGCop 1227
- C1.25 *Obv.* Die of C1.24.
Rev. Narrower ear of even grains. Die
flaws on plough and awns on r. side.
7.70 SNGANS 475
- C1.26 *Obv.* Die of C1.24, die flaw across eye.
Rev. Short 6-grained ear; leaf starts lower
on stem.
Arolsen
- C1.27 *Obv.* Die of C1.24.
Rev. Larger ear; leaf curves close to ear.
Die flaws obscure ethnic.
7.87 Cambridge, SNGFitzwilliam 516
- C1.28 *Obv.* Die of C1.24.
Rev. Plough almost touches awns; leaf
almost straight.
7.77 Gans, 19 Apr. 1960 (Bauer) 67
- C1.29 *Obv.* Die of C1.24, badly worn.
Rev. Chunky ear; leaf curves close to
awns; large gap between awns at apex.
Many die flaws.
7.93 Vinchon, 27 Feb. 1961, 28
- C1.30 *Obv.* Similar, but large curl protrudes
above head between lower and upper
leaves of wreath.
Rev. Ethnic in large letters; tapering ear.
Die flaw between A of ethnic and awns.
7.83 Paris, de Luynes 494
- C1.31 *Obv.* Die of C1.30 with flaws behind head.
Rev. Ethnic in small letters parallel to ear.
7.83 Egger 45, 12 Nov. 1913, 153
- C1.32 *Obv.* Die of C1.30.
Rev. Leaf joins stem immediately below
ear and touches lowest grain.
7.95 Private collection
- C1.33 *Obv.* Die of C1.30, flaws further develop-
ed.
Rev. Long leaf curves away from ear;
plough at right angle to awns.
7.90 Leiden
- C1.34 *Obv.* Similar, but curl at back of head
closer to crown.
Rev. Die of C1.33, flaws on second grain
on l. side and topmost grain on r. side
enlarged.
7.28 SNGANS 481
- C1.35 *Obv.* Die of C1.34, the die deteriorating on
the face.
- Rev.* Chunky ear similar to C1.6, but
plough at different angle; two awns rise
from 6th grain in r. row.
7.45 SNGOxford 772
- C1.36 *Obv.* Similar, but differences in curls at
back of head. Dot behind head.
Rev. Die of C1.35.
Private collection
- C1.37 *Obv.* Similar but no protruding curl at
crown.
Rev. Ethnic in small letters; narrow ear.
Die flaw over plough.
7.61 SNGANS 482
- C1.38 *Obv.* Die of C1.37.
Rev. Similar, but leaf curls closer to ear;
top 3 grains in r. row are very small.
7.80 Hirsch 14, 27 Nov. 1905, 100
- C1.39 *Obv.* Die of C1.37.
Rev. Ethnic spaced ME TA; M above base
of ear.
7.82 Naville 5, 18 June 1923, 473
- C1.40 *Obv.* Die of C1.37.
Rev. Ethnic in large letters. Die flaw
across awns at apex on l. side.
7.76 SNGANS 483
- C1.41 *Obv.* Die of C1.37 much flawed, especially
under nose.
Rev. Narrow tapering ear; leaf rises almost
straight, close to lowest grain; plough at
right angle to awns.
7.91 Berlin 18669
- C1.42 *Obv.* Die of C1.37, flaws enlarged.
Rev. Leaf curves close to awns, plough
more horizontal.
7.90 Grabow, 27 July 1939, 64
- C1.43 *Obv.* Similar to C1.37, but hair beside ear
curls differently and does not touch ear-
ring.
Rev. Chunky ear; awns profuse at apex;
plough close to awns.
7.67 Ciani/Vinchon, 6 Feb. 1956 (Hindamian), 94
- C1.44 *Obv.* Similar to C1.37, but lower leaf of
wreath closer to back of head.
Rev. Die of C1.39.
7.82 Naville 16, 3 July 1933, 179
- C1.45 *Obv.* Similar, but large curl at back of
head immediately above hair swept back
almost straight from ear.
Rev. Die of C1.39, rather worn.
de Nicola FPL, Mar. 1962, 206
- C1.46 *Obv.* Die of C1.45.
Rev. Long leaf joins stem well below ear;
large symbol. Die break from plough to
signature.
7.90 Glendining, 3 Dec. 1929 (Nordheim), 686

- C1.47 *Obv.* Die of C1.45.
Rev. Third grain in r. row is out of line. Large die flaw under A of ethnic.
Seaby, 15 July 1929, 108
- C1.48 *Obv.* Hair curlier, not so windswept; curl protrudes at crown. Dot behind head.
Rev. Similar to C1.39, but M below base of ear.
7.66 Private collection
- C1.49 *Obv.* Die of C1.48.
Rev. Compact ear, 6 grains in central row. Dot in field between plough and awns.
7.89 Ciani/Vinchon, 6 Feb. 1956 (Hindamian), 93
- C1.50 *Obv.* Die of C1.48.
Rev. Small tapering ear of 6 uneven grains.
7.76 SNGANS 484
- C1.51 *Obv.* Apparently die of C1.48, with flaws on face.
Rev. Chunky 7-grained ear; long leaf curves close to awns; plough at right angle to awns; MAX horizontal.
7.72 SNGOxford 770
- C1.52 *Obv.* Four strands of hair between back of head and lower leaf of wreath. Die flaw at mouth.
Rev. Long 7-grained ear; base of plough extends at handle end toward awns.
7.87 Hamburger, 27 May 1929, 60
- C1.53 *Obv.* Similar to C1.52, but S-eurl between lower barley ear and upper leaf of wreath. Dot behind head.
Rev. Coarse-grained ear; elongated plough at right angle to awns.
7.71 SNGOxford 766
- C1.54 *Obv.* Die of C1.53.
Rev. Die of C1.52.
7.75 SNGANS 474
- C1.55 *Obv.* Similar to C1.19, but two S-curves back-to-back below crown.
Rev. META upward at r. Leaf to l.; plough of different design, in which beam is attached directly to stilt rather than to stock (i.e. not *autogon*), resting on leaf tip; JM below.
Private collection
- C1.56 *Obv.* Die of C1.55.
Rev. Similar to C1.55, but plough of standard design above leaf; M|AX below.
7.82 SNGANS 477
- C1.57 *Obv.* Die of C1.55.
Rev. Similar to C1.54, but signature closer to curve of leaf.
7.92 Naville 14, 2 July 1929, 39
- C1.58 *Obv.* Die of C1.55, very worn around eye.
Rev. Ethnic close to awns; short leaf curves away near base of ear.
Platt, 26 Mar. 1922 (Luneau), 127
- C1.59 *Obv.* Similar to C1.55 but S-curves turn upward.
Rev. Die of C1.58.
7.96 Naville 16, 3 July 1933, 177
- C1.60 *Obv.* Die of C1.59.
Rev. Leaf rises very close to awns, almost straight as far as symbol; plough close to leaf.
7.76 Paris 1204
- C1.61 *Obv.* Die of C1.59.
Rev. Die of C1.56.
7.38 SNGCop 1228
- C1.62 *Obv.* Die of C1.59.
Rev. Tapering regular ear, neatly cut; plough horizontal.
7.88 Naville 5, 18 June 1923, 469
- C1.63 *Obv.* Die of C1.59, considerably worn and flawed.
Rev. Long ear with uneven grains; leaf follows awns; plough close to leaf and awns.
7.92 Coin Galleries FPL, June 1965, D3
- C1.64 *Obv.* Die of C1.59.
Rev. Similar to C1.62, but narrower ear, signature lower.
7.91 Robinson, *Gulbenkian Coll.*, Pt. 1 (Lisbon, 1971) 73
- C1.65 *Obv.* Head with very high crown; lower barley ear minimal.
Rev. Small ear; dot between plough and leaf.
7.71 Jameson 1869 ex Hirsch 33, 17 Nov. 1913, 148
- C1.66 *Obv.* Similar, but larger barley ear; lobe of ear with curl above are distinctive.
Rev. Ethnic in large letters; small tapering ear; gap between awns at apex.
7.80 Schlessinger 13, 4 Feb. 1935 (Hermitage), 87
- C1.67 *Obv.* Die of C1.66.
Rev. Die of C1.65.
7.69 Private collection
- C1.68 *Obv.* Similar to C1.45, with hair swept back beside ear, earring also slanting backward; distinctive eurl at crown.
Rev. Grains uneven on l. side; plough at right angle to awns and further from them than usual.
7.9 Paris 1205
- C1.69 *Obv.* Die of C1.68.
Rev. Ethnic in large letters; 6-grained ear with coarse barbs.
7.88 Cambridge, SNGFitzwilliam 517

- C1.70 *Obv.* Small head, similar to C1.7, but locks of hair visible under chin are different; flawed along neck and chin.
Rev. Small tapering ear, the grains on l. side smaller than those on r.; leaf curves gently.
7.85 *SNGOxford* 767
- C1.71 *Obv.* Die of C1.70, flawed along neck and chin.
Rev. Narrow 7-grained ear, awns compact.
Milan 4935
- C1.72 *Obv.* Die of C1.70, the flaws further developed.
Rev. Die of C1.68.
7.80 *SNGOxford* 771
- Obv.* Head of Demeter facing three-quarters r., wearing necklace, triple-pendant earrings; her hair falls loosely to her shoulders, but is restrained by a tiny stephane decorated with a rosette and by a wreath of alternating barley ears and pairs of leaves; the eyes have very prominent pupils which give the effect of a wide-eyed stare; ΑΓ in field r. beside neck.
Rev. META in small neat letters upward at l. 7-grained barley ear similar to the general style of C1; leaf to r. with bucranium above, ΑΘΑ below.
- C2.1 *Obv.* Wreath composed of small barley ear/pair of leaves/barley ear/stephane/barley ear/leaf/barley ear (reading from l. to r.); hair somewhat stringy beside r. ear.
Rev. Neatly engraved ear; leaf joins stem well below ear.
8.00 Paris, *de Luynes* 506
- C2.2 *Obv.* Similar, but first barley ear in wreath more prominent; hair beside ear curlier, swept back from face.
Rev. Die of C2.1.
Private collection
- C2.3 *Obv.* Die of C2.2.
Rev. Ethnic in larger letters; leaf curves up close to ear; bucranium almost touches awns. Many die flaws on l. side.
7.89 *SNGCop* 1220
- C2.4 *Obv.* Die of C2.2.
Rev. Similar to C2.1, but longer and broader leaf; symbol higher relative to ear.
7.94 BM ex Payne Knight
- C2.5 *Obv.* Similar, but additional leaf pair below first barley ear in wreath.
Rev. Die of C2.1.
7.85 *BMC* 117
- C2.6 *Obv.* Die of C2.5.
Rev. Similar to C2.4, but leaf tapers where it joins stem.
7.75 Cahn, 6 May 1930, 53
- C2.7 *Obv.* Die of C2.5.
Rev. Die of C2.4.
7.98 Cambridge, *SNGFitzwilliam* 502
- C2.8 *Obv.* Die of C2.5.
Rev. Leaf curves away gently, almost touching lowest grain.
7.92 Berlin ex Gansauge
- C2.9 *Obv.* Die of C2.5.
Rev. Die of C2.3 with breaks enlarged.
7.83 Cambridge, *SNGFitzwilliam* 504
- Obv.* Head of Athena r., wearing Corinthian helmet with long neck-flap; rather straggly locks of hair emerge around lower edge of helmet; ΣΑ behind head.
Rev. META upward at l. 7-grained barley ear; leaf to r. on which stand owl with wings closed and grasshopper; ΑΘΑ upward between leaf and ear.
- C3.1 *Obv.* Three locks of hair curl outward below ear; Σ touches tip of neck-flap.
Rev. Broad ear; ethnic in large letters; large symbol.
7.87 *SNGANS* 465
- C3.2 *Obv.* Die of C3.1.
Rev. Tapering ear without additional awns at apex; small symbol.
7.30 *SNGANS* 466
- C3.3 *Obv.* Two locks of hair below ear; Α touches back of helmet.
Rev. Die of C3.2.
7.95 *SNGLloyd* 393
- Obv.* Head of Demeter l., wearing necklace, triple-pendant earring and wreath of three barley ears and two pairs of leaves; a few locks of hair are visible under chin. Dotted border.
Rev. META in large untidy lettering upward at r. Coarse-grained barley ear; leaf to l., with tongs above, ΑΘΑ below.
- C4.1 *Obv.* Very curly hair: 4 S-curly at back of head.
Rev. 7 highly modelled grains on l. and 6 on r. row; awns wide apart with abundant coarse barbs; broad furled leaf; tongs touch awns.
7.70 Paris, *de Luynes* 495
- C4.2 *Obv.* Die of C4.1. Some specimens show die flaw above eye.
Rev. Long, tapering 7-grained ear, awns more compact.
7.80 Naville 5, 18 June 1923, 478
- C4.3 *Obv.* Die of C4.1.
Rev. Similar to C4.1, but tongs further from awns.
7.96 Naville 6, 28 Jan. 1924, 195
- C4.4 *Obv.* Similar to C4.1, but features are coarser; fewer curls at back of head; short earring.

- Rev.* Ethnic in uneven letters, A almost touching awns; pointed ear.
7.85 BMC 106
- C4.5 *Obv.* Die of C4.4.
Rev. Similar to C4.3, but ethnic differently spaced. Many die flaws.
7.91 Spinks 53422
- C4.6 *Obv.* Die of C4.4.
Rev. Narrow ear with many awns, very compact.
de Nicola FPL, Mar. 1963, 149
- C4.7 *Obv.* Similar to C4.1, but only two S-curves at back of head and two locks of hair visible under chin.
Rev. Die of C4.5, the breaks enlarged.
7.91 Berlin ex Fox
- C4.8 *Obv.* Die of C4.7.
Rev. Die of C4.6.
7.87 BM 1906-11-3 ex Parkes Weber
- C4.9 *Obv.* Similar to C4.1, but fewer curls at back of head; earring ends at jaw-line; three locks of hair, almost horizontal, below chin.
Rev. Similar to C4.6, but awns more splayed and tongs slant away from ear.
7.85 SNG Lloyd 392
- C4.10 *Obv.* Die of C4.9, flaw above ear.
Rev. Similar to C4.1, but ethnic curves away from ear and tongs slope toward awns.
7.90 Robinson, *Gulbenkian Coll.*, Pt. 1 (Lisbon, 1971) 75 ex Naville 13, 2 July 1930, 91
- C4.11 *Obv.* Similar, but earring slopes backward; hair smoother below crown.
Rev. Similar to C4.9, but tapering grains and larger symbol.
7.8 Cahn 65, 15 Oct. 1929, 21
- C4.12 *Obv.* Die of C4.11.
Rev. Similar to C4.10, but awns more compact and symbol further from awns.
7.63 Salonica hoard (*IGCH* 1980), illus in Evans, *NC* 1918, pl. 5, no. 6
- C4.13 *Obv.* Head larger than preceding dies, with longer face; large earring; neck tranche deeply concave. Line border.
Rev. Similar to C4.11. Die flaws around ethnic, joining T and A.
7.83 SNG Oxford 753
- C4.14 *Obv.* Die of C4.13.
Rev. Die of C4.12.
7.88 Dewing 387
- C4.15 *Obv.* Die of C4.13.
Rev. Long tapering ear, awns very compact.
Hermitage
- C4.16 *Obv.* Similar, but rounder face; earring slopes backward; no locks of hair visible under chin.
Rev. 5 large grains and 2 tiny grains on each row; awns splayed.
7.89 Vienna 4080
- C4.17 *Obv.* Die of C4.16.
Rev. Similar, but awns more compact; E of ethnic above other letters. Die flaws on awns to r. of apex.
7.905 Berlin ex Löbbbecke
- C4.18 *Obv.* Similar to C4.7, but earring lighter; head contained within dotted border.
Rev. Die of C4.11.
7.91 Private collection
- C4.19 *Obv.* Die of C4.18.
Rev. Die of C4.9.
Trade
- C4.20 *Obv.* Die of C4.18, broken at mouth.
Rev. Die of C4.17, flaw developing across awns on r. side of apex.
7.84 Naville 15, 2 July 1930, 167
- C4.21 *Obv.* Similar to C4.7, but barley ears lie flatter, though they break dotted border; longer, finer earring.
Rev. 7 grains in l. row, the third tiny; 6 grains in r. row.
7.87 Naville 16, 3 July 1933, 181
- C4.22 *Obv.* Die of C4.21.
Rev. Similar to C4.12, but only 6 grains. Die break obscures symbol.
7.82 SNGANS 460
- C4.23 *Obv.* Die of C4.21.
Rev. Uneven 7-grained ear, the awns unevenly spaced on r. side.
7.89 Vienna 4078
- C4.24 *Obv.* Die of C4.21.
Rev. Ethnic in large letters. Irregular 7-grained ear, the grains uneven and separate and the top 3 very small; tongs have thick pivot (?die flaw).
7.91 SNG Manchester 214
- C4.25 *Obv.* Two locks of hair under chin.
Rev. Die of C4.24.
7.96 Santamaria, 12 Oct. 1949, 192
- C4.26 *Obv.* Die of C4.25.
Rev. Ethnic in large letters. Tapering ear, awns compact; small symbol, away from awns; M of ethnic close to ear.
7.7 BMC 107
- C4.27 *Obv.* Die of C4.25.
Rev. Die of C4.24.
7.90 Ratto, 21 June 1929 (Rogers), 34

- C4.28 *Obv.* Pendants of carrying almost touch necklace.
Rev. Similar to C4.26, but larger symbol; **M** of ethnic further from ear.
7.58 Naville 5, 18 June 1923, 477
- Obv.* Head of Demeter l., wearing necklace, triple-pendant earring and barley wreath; her hair falls loosely to her shoulders, a few locks are visible under her chin; **ΔΩΠΙ** under chin on one die (C5.1). Fine dotted border visible on some dies.
Rev. **META** upward at r. Barley ear, leaf to l. or r. with hayfork above, **ΔA** or **AΔ** below.
- C5.1 *Obv.* Long rather masculine face; hair falls almost straight to shoulders; wreath of single pair of leaves and two barley ears; **ΔΩΠΙ** under chin. Dotted border.
Rev. 7-grained ear, the grains regular in size; awns wide apart with conspicuous barbs; long leaf to l.; fork parallel to awns; **ΔA** vertically downward with 4 dots below letters.
7.77 *SNGANS* 452
- C5.2 *Obv.* Die of C5.1.
Rev. Shorter, more tapering 7-grained ear; fork vertical above leaf; **ΔA** horizontally.
7.95 Private collection
- C5.3 *Obv.* Die of C5.1.
Rev. Tapering ear with compact awns; short leaf; handle of fork between leaf and ear, close to base of ear; **AΔ**.
7.89 BM 1949/4-11-91
- C5.4 *Obv.* Die of C5.1.
Rev. Similar, but handle of fork at an angle to the head; **AΔ**. Die break along top of ethnic.
7.93 Private collection
- C5.5 *Obv.* Head similar to C4.1 with very curly hair; wreath of two pairs of barley ears and two pairs of leaves; no signature. Dotted border.
Rev. Die of C5.4, the breaks enlarged.
7.84 *BMC* 112
- C5.6 *Obv.* Die of C5.5.
Rev. Similar to C5.3, but fork has shorter tines; **ΔA**.
7.81 *SNGLLoyd* 391
- C5.7 *Obv.* Die of C5.5, beginning to deteriorate around face.
Rev. Slender, tapering ear; handle of fork is curved; **ΔA**.
Salonica hoard (*IGCH* 1980), illus in Evans, *NC* 1918, pl. 5, no. 7
- C5.8 *Obv.* Longer face, similar to C4.16 but wreath as C5.5.
Rev. Long, slender ear; handle of fork longer and at an angle with the head.
7.80 Paris 1199
- C5.9 *Obv.* Die of C5.8.
Rev. **META** retrograde, parallel to awns upward at l. 9-grained ear with leaf to r.; fork with long handle rests on tip of leaf; **ΔA** below.
7.87 Cambridge, *SNGFitzwilliam* 506
- C5.10 *Obv.* Similar to C5.5, but different curls at back of head and beside earring.
Rev. Die of C5.9.
7.84 BM 1914 ex Spink
- C5.11 *Obv.* Die of C5.10.
Rev. Similar to C5.9, but ethnic more widely spaced and **A** almost touches awns. 8-grained ear; **AΔ**. Die flaws at base of l. row and middle of r. row.
7.855 Berlin ex Löbbbecke
- C5.12 *Obv.* Similar to C5.5 and 5.10, but differences in hair (e.g., first tiny curl on cheek above ear turns inward rather than outward); upper barley ear in wreath extends beyond its pair and breaks dotted border.
Rev. **META** in large letters upward at r. 7-grained ear, the grains diminishing markedly in size; long leaf to l. passes close to lowest grain; fork has many curved tines and looks more like a brush; **ΔA**.
7.67 *SNGANS* 453
- C5.13 *Obv.* Die of C5.12.
Rev. Similar; knobby grains; awns compact and barbs barely indicated; fork has curved handle; **ΔA**.
7.88 Private collection
- C5.14 *Obv.* Die of C5.12 with flaw between eye and nose.
Rev. Long leaf, curving only at the very tip; **ΔA**.
7.90 *SNGANS* 455
- C5.15 *Obv.* Similar, with differences in curls at back of head; upper barley ear does not extend beyond its pair.
Rev. Die of C5.14.
7.75 *SNGCop* 1223
- C5.16 *Obv.* Similar to C5.10, but locks below chin in single mass.
Rev. Two lowest grains very prominent; awns compact; **ΔA**.
7.95 Glasgow, Coats collection 2798
- C5.17 *Obv.* Die of C5.16, die break across forehead beginning on some specimens.
Rev. Ethnic in large letters; fork has only 4 tines.
7.65 *SNGANS* 456

- C5.18 *Obv.* Die of C5.16, break enlarged.
Rev. Similar, but tip of handle of fork closer to leaf; ΔA .
 7.87 Glasgow, *Hunterian* 37
- Obv.* Head of Demeter l., wearing necklace, triple-pendant earring and wreath of two pairs of barley ears and two pairs of leaves; her hair falls loosely to her shoulders but the curls have become stringy and lifeless; heavy-lidded eye. Dotted border.
Rev. **META** in clumsy letters upward at r. 7-grained barley ear, the awns compact and the barbs barely indicated; leaf to l. with griffin r. above and ΛY below.
- C6.1 *Obv.* Large leaves in wreath yet contained within border; earring slopes backward.
Rev. Tapering ear with irregular grains; awns close together, without barbs; griffin's l. foreleg raised; ΛY .
 7.85 *BMC* 108
- C6.2 *Obv.* Similar to C6.1, but leaves and barley ears in wreath break the border; two S-curves back-to-back below crown; earring hangs vertically.
Rev. Die of C6.1.
 7.69 Private collection
- C6.3 *Obv.* Die of C6.2.
Rev. Ethnic close to awns; chunky ear with irregular grains in r. row; small griffin with forelegs together.
 7.89 Cambridge, *SNGFitzwilliam* 509
- C6.4 *Obv.* Die of C6.2 with die flaw across earring.
Rev. More slender ear; griffin leaps up.
 Platt, 23 Apr. 1934, 25
- C6.5 *Obv.* Similar to C6.2, but one S-curl below crown; no locks visible under chin.
Rev. Die of C6.4.
 7.45 *SNGLockett* 421
- C6.6 *Obv.* Similar, but broad leaves in wreath; distinctive curls at back of head.
Rev. Die of C6.3.
 7.58 *SNGOxford* 762
- C6.7 *Obv.* Die of C6.6.
Rev. Uneven grains, the top two in r. row small and spiky; small stout griffin leaps up.
 7.48 Paris 1194
- C6.8 *Obv.* Die of C6.6.
Rev. Ethnic in large letters; broad ear in high relief, awns less dense but no barbs; griffin's forelegs together parallel to fourth grain.
 7.649 *SNGMunich* 997
- C6.9 *Obv.* Similar to C6.1, but more elaborate wispy curls around face; more rounded chin.
- Rev.* Die of C6.8.
 7.98 *BMC* 109
- C6.10 *Obv.* Large reversed S-curl protrudes between lower barley ear and leaf; upturned nose.
Rev. Ethnic in small letters; many awns; leaf curves close to awns; griffin leaps up, forelegs together parallel to fourth grain; ΛY .
 7.88 *SNGANS* 489
- C6.11 *Obv.* Die of C6.10, flawed across cheek and neck.
Rev. Similar, but ethnic further from awns; griffin's forelegs apart parallel to third grain; ΛV .
 7.82 *SNGOxford* 761
- C6.12 *Obv.* Die of C6.10.
Rev. Narrow ear, uneven grains and compact awns; symbol obscured on only specimen.
 7.91 Naville 13, 27 June 1928, 95
- C6.13 *Obv.* Similar to C6.2, but brow not as deep; different arrangement of curls; head contained within border.
Rev. Die of C6.11.
 Morgenthau, 10 Oct. 1934, 87
- C6.14 *Obv.* Die of C6.13.
Rev. Die of C6.10.
 7.79 Cambridge, *SNGFitzwilliam* 510
- C6.15 *Obv.* Barley ears break border; head tilted slightly upward; S-curves at back of head close together.
Rev. Griffin's forelegs parallel to fifth grain; ΛY .
 7.78 Robinson, *Woodward Coll.* (Oxford, 1928), 25
- C6.16 *Obv.* Die of C6.15.
Rev. Large ear; griffin does not touch awns, its forelegs together parallel with third grain.
 7.88 *SNGOxford* 760
- Obv.* Head of Demeter l., very similar to C6.
Rev. **META** in untidy letters upward at r. 7-grained barley ear; leaf to l. on the curve on which Artemis-Hekate runs r., carrying long torch; ΛY below leaf. The dies are not easy to distinguish.
- C7.1 *Obv.* Two S-curves above crown, three below; carrying has prominent central pendant. Die flaw across eyeball.
Rev. Chunky ear; leaf almost touches lowest grain; no barbs on awns. Flaws on r. side of ear and T of ethnic.
 7.73 *SNGOxford* 758
- C7.2 *Obv.* Die of C7.1.
Rev. Signature slopes upward. Die flaw between lowest grain and M of ethnic.
 7.63 Naville 15, 2 July 1930, 170

- C7.3 *Obv.* Single S-curl protrudes above crown (close to lower leaf), three below; earring less heavy, reaches necklace.
Rev. Die of C7.2, the breaks at base of ear enlarged.
7.74 BMC 113
- C7.4 *Obv.* Similar to C7.3, but S-curl closer to upper leaf; curl at crown and three curls below.
Rev. Die of C7.1.
7.87 Paris, SNGDelepierre 338
- C7.5 *Obv.* Similar, but smaller barley ears in wreath; hair more profuse under chin. Die break beginning on forehead.
Rev. Shorter ear, the leaf further from lowest grain.
Trade (de Falco)
- C7.6 *Obv.* Die of C7.5, the break across top of head enlarged.
Rev. Similar, but leaf closer to ear; Artemis' legs closer together.
7.70 SNGOxford 757
- C7.7 *Obv.* Curls different under chin and at back of head.
Rev. Die of C7.5.
7.72 Naville 16, 3 July 1933, 184
- C7.8 *Obv.* Die of C7.7.
Rev. Small letters; ear of uneven grains; barbs on awns; symbol further from ear than usual.
7.89 Private collection
- C7.9 *Obv.* Die of C7.7.
Rev. Distinctive spacing of awns on r. side.
7.79 Naville 12, 18 Oct. 1926, 434
- Obv.* Head of Demeter r., wearing necklace, single- or triple-pendant earring, and wreath of three barley ears and two pairs of leaves which largely obscures the crown of the head; EY below chin. Dotted border.
Rev. META in clumsy letters upward at l. Barley ear, usually tapering very sharply; leaf to r. with 16-pointed star above; AY at base of ear below ethnic.
- C8.1 *Obv.* Wreath, especially leaves, larger than hitherto though back of head still visible; central pendant of earring very prominent.
Rev. ET of ethnic almost touch at top; axis of star parallel to that of ear.
7.73 Naville 16, 3 July 1933, 180
- C8.2 *Obv.* Die of C8.1.
Rev. Sharply tapering ear, third grain on l. now slightly out of line.
7.86 SNGANS 502
- C8.3 *Obv.* Lighter earring; curl on top of head close to upper leaf.
Rev. Die of C8.2 with slight flaw across M.
7.27 SNGANS 501
- C8.4 *Obv.* Die of C8.3.
Rev. Similar, but ethnic closer to awns; axis of star tilts away from ear.
7.72 SNGANS 500
- C8.5 *Obv.* Die of C8.3. Die break at back of head.
Rev. Ethnic higher relative to AY and ear.
7.91 Naville 1, 4 Apr. 1921 (Pozzi), 193
- C8.6 *Obv.* Wreath much larger, obscuring all hair at back of head; central pendant of earring is very prominent and slopes backward.
Rev. Die of C8.5.
7.613 SNGMunich 1003
- C8.7 *Obv.* Die of C8.6, flawed near mouth and around earring.
Rev. E of ethnic abnormally large. Barley ear does not taper; star further from awns.
7.57 BM 1936/6–6–18
- C8.8 *Obv.* Die of C8.6.
Rev. Ethnic very close to signature.
7.83 SNGANS 499
- C8.9 *Obv.* Similar to C8.6, but head generally larger and wreath in particular is very prominent.
Rev. Lettering messy, especially AY; uneven grains; long broad leaf; no symbol visible on only specimen.
7.62 Naville 1, 4 Apr. 1921 (Pozzi), 195
- C8.10 *Obv.* Similar to C8.3, but wreath (smaller than 8.6) covers top of head.
Rev. Die of C8.3.
7.91 Naville 1, 4 Apr. 1921 (Pozzi), 192
- C8.11 *Obv.* Die of C8.10.
Rev. Ethnic in small letters; star rather small, base parallel to fourth grain.
7.88 Naville 15, 2 July 1930, 162
- C8.12 *Obv.* Die of C8.10.
Rev. Die of C8.8.
7.61 Paris 1210
- C8.13 *Obv.* Die of C8.10, somewhat worn.
Rev. Angular leaf; large signature close to ethnic.
7.71 Naville 12, 18 Oct. 1926, 427
- C8.14 *Obv.* Head of slightly different style, the effect less accomplished: cheeks fuller, hair stringy, the locks below chin hang almost straight; wreath as C8.1 does not obscure hair.
Rev. Die of C8.13.
Trade (SPN cast)

- C8.15 *Obv.* Die of C8.14.
Rev. Ear similar to C8.7, but star closer to awns.
7.84 Cambridge, *SNGLewis* 186
- C8.16 *Obv.* Similar to C8.14, but earring slants backward; barley ears in wreath larger.
Rev. Similar, the ethnic in very large letters, especially E.
7.96 Private collection
- C8.17 *Obv.* Crude head without locks under chin, perhaps a recutting of another die since the relief is comparatively much higher.
Rev. Die of C8.16.
7.96 Cambridge, *SNGFitzwilliam* 515
- C8.18 *Obv.* Die of C8.17.
Rev. Ethnic in tiny letters; small symbol; AY not aligned.
7.90 Ratto, 4 Apr. 1927, 212
- Obv.* Head of Demeter r., similar to C8.14; no signature. Dotted border.
Rev. META in untidy letters upward at l. Large barley ear of uneven grains; short leaf to r. on which stands Nike l. holding aloft a wreath; AY at base of ear below ethnic.
- C9.1 *Obv.* Broad face; the wreath does not obscure hair.
Rev. 7-grained ear, middle grains smaller than those above; Nike close to awns.
7.65 *SNGANS* 498
- C9.2 *Obv.* Small head; large leaves in wreath obscure all but wispy curls of hair on top of head; stringy locks fall to shoulders.
Rev. Similar, but ethnic extends full length of grains; Nike further from awns.
7.75 *SNGOxford* 763
- C9.3 *Obv.* Die of C9.2.
Rev. 8-grained ear; large gap between awns at apex.
7.94 Private collection
- Obv.* Head of Demeter l., wearing necklace, triple-pendant earring and wreath of three barley ears and two pairs of leaves; hair very stringy and style generally poor; ΔEX retrograde under chin. Border of very fine dots.
Rev. META upward at r. Barley ear with leaf to l.; lighted altar stands on tip of leaf; AY (sometimes retrograde) at base of ear below ethnic.
- C10.1 *Obv.* Small face, almost no chin; wreath very prominent; hair hangs almost straight to shoulders.
Rev. Ethnic close to awns. Tapering 7-grained ear, the awns more numerous and compact on r. side than on l.
7.91 *BMC* 115
- C10.2 *Obv.* Die of C10.1.
Rev. Squat 6-grained ear; the awns fan out, barbs barely visible; AY.
7.80 *BM* 1947/4-6-46
- C10.3 *Obv.* Fuller face with more chin and curlier hair.
Rev. Die of C10.1.
7.66 *SNGANS* 504 (doublestruck)
- C10.4 *Obv.* Die of C10.3.
Rev. META retrograde. Chunky 7-grained ear; altar close to awns.
7.94 *SNGANS* 503
- Obv.* Head of Demeter r. (C11.1-2) or l. (C11.3-11), wearing necklace, earring and wreath of three barley ears and two pairs of leaves.
Rev. META in uneven letters upward at r. 7-grained barley ear, leaf to l. with fly (C11.1), amphora (C11.2-9) or alabastron (C11.10-11) above, ΔI (C11.1, C11.10-11) or ΦI below.
- C11.1 *Obv.* Head r., similar to C7.2 reversed.
Rev. Uneven grains; awns widely spaced with barbs clearly indicated; fly symbol above leaf, ΔI below.
7.80 *BMC* 101
- C11.2 *Obv.* Die of C11.1.
Rev. Large 7-grained ear, the topmost grains asymmetrical; amphora above leaf, ΦI below.
7.78 Berlin ex Friedlander
- C11.3 *Obv.* Head l., eye deepset, full cheeks, round chin.
Rev. Die of C11.2.
7.87 *BMC* 114
- C11.4 *Obv.* Die of C11.3.
Rev. Ethnic lower on die, leaf closer to awns; smaller symbol.
7.89 *SNGANS* 486
- C11.5 *Obv.* Similar to C11.3, but jaw squarer; wreath set unusually far back from brow.
Rev. Die of C11.3.
7.86 Cambridge, *SNGFitzwilliam* 512
- C11.6 *Obv.* Die of C11.5, die flaw beginning parallel to back of head.
Rev. Fifth grain in l. row abnormally thin; symbol closer to awns.
7.66 *SNGANS* 487
- C11.7 *Obv.* Die of C11.5, die flaw enlarged.
Rev. Die of C11.4, beginning to deteriorate.
7.82 *SNGOxford* 759
- C11.8 *Obv.* Similar to C11.3, but large curl below lower pair of leaves at back of head.
Rev. Die of C11.7, worn.
7.56 Berlin 132/1885

C11.9 *Obv.* Die of C11.8.
Rev. A of ethnic almost touches awns; long tapering ear.
 7.70 Paris 1198

C11.10 *Obv.* Die of C11.8.
Rev. Long 7-grained ear; leaf to l. with alabastron vertical above, ΔI below.
 7.87 Private collection

C11.11 *Obv.* Die of C11.8, worn.
Rev. Similar, but symbol seems to slant outward.
 7.95 SNGANS 488

CLASS D

Obv. Head of Demeter l., wearing necklace, single-pendant earring and wreath of three barley ears and two pairs of leaves; behind head ΔI (D1.1) or K (D1.3).

Rev. META upward at l. Barley ear with leaf to r., spindle above.

D1.1 *Obv.* ΔI behind head, obscured by die flaw.
Rev. Barley ear of 6 coarse round grains, awns compact.
 7.66 SNGOxford 776 ex Salonica hoard (IGCH 1980)

D1.2 *Obv.* Die of D1.1.
Rev. 7-grained ear; 16 awns.
 7.97 Private collection (plated)

D1.3 *Obv.* Die of D1.1.
Rev. 7-grained ear; the awns (21) fan out more.
 7.60 SNGANS 507 ex Salonica hoard (IGCH 1980)

D1.4 *Obv.* Similar, but fuller face; K behind head.
Rev. Die of D1.3 with flaws on ethnic and l. side of awns.
 7.80 Cambridge, SNGFitzwilliam 507

Obv. Head of Demeter l., wearing necklace, ?triple-pendant earring and wreath of two pairs of barley ears separated by two pairs of long leaves. The head is matronly rather than youthful. No signature.

Rev. META downward at r. (D2.1) or upward at l. Barley ear with 9 or 10 tiny grains, awns compact and heavily barbed; leaf to l. (D2.1) or r. with cock standing on tip; no signature.

D2.1 *Obv.* Hair above ear swept back in two large locks below lower barley ear, the upper one shorter than the lower; upper barley ears virtually parallel to one another.

Rev. META in large letters, heavily drilled. 10-grained barley ear, the husks dividing

the grains clearly indicated; leaf to l. on which stands cock r.

7.73 Private collection

D2.2 *Obv.* Similar, but upper barley ears at a slight angle to each other.

Rev. META in small letters, the A with broken cross-bar. 9-grained barley ear; leaf to r. on which stands cock l.

7.82 Private collection (doublestruck); 7.45 SNGANS 514 ex Salonica hoard (IGCH 1980)

D2.3 *Obv.* Similar, but differences in curls at back of head and locks of hair above ear.

Rev. Similar, but cock further from awns.

7.61 SNGANS 513

D2.4 *Obv.* Die of D2.3.

Rev. META deeply incised, the A with straight cross-bar. 10-grained ear, leaf to r., symbol (?not cock) just off-flan on only known specimen.

7.90 Winterthur

Obv. Head of Demeter l., without usual necklace and barley wreath; soft, fleshy features.

Rev. META in crudely cut letters upward at r. Barley ear with leaf to l. on which stands satyr r., playing pipes.

D2.5 *Rev.* META in tiny letters. Barley ear of 6 coarse round grains; the leaf almost horizontal; awns widely spaced, the barbs much larger on r. side.

7.68 Private collection (reverse slightly doublestruck)

Obv. Head of Demeter r., wearing necklace and barley wreath.

Rev. As before.

D2.6 *Obv.* No visible ear or earring; hair flat and stringy with no curls at all at back of head; 3 barley ears in wreath. Possibly D3.1 recut.

Rev. Die of D2.5; die flaws at upper r. and below leaf.

7.78 BMC 104

D2.7 *Obv.* Die of D2.6.

Rev. Similar, but ethnic in large untidy letters; grains of ear more elongated; satyr leans backward.

7.34 SNGLLoyd 395 ex Salonica hoard (IGCH 1980)

D2.8 *Obv.* Single-pendant earring; two pairs of barley ears in wreath, the leaves more symmetrical; hair curlier.

Rev. Generally neater: letters of ethnic regular; 7-grained ear, the awns evenly spaced.

7.87 Private collection

Obv. Head of Demeter r. similar to D2.6; Γ behind head.

Rev. META downward at r. Barley ear with leaf to l.; ram's head r. on leaf tip; FA between symbol and ear.

D3.1 *Obv.* Lower leaf in wreath does not extend as far as top of awns of adjacent barley ear; large expanse of straight hair at back of head.

Rev. Ethnie in small letters, A with straight cross-bar.

7.82 Private collection

D3.2 *Obv.* Longer leaf in wreath; smaller expanse of hair at back of head.

Rev. Ethnie in large letters, A with broken cross-bar.

7.75 Cambridge, McClean 989

Obv. Head of Demeter r. similar to D2.8; ΔI behind head, recut TAP in monogram (D3.5).

Rev. META, the A with broken cross-bar upward at l. Barley ear of small grains; leaf to r. on which stands krater on tall base; FA between ear and symbol.

D3.3 *Obv.* ΔI behind head.

Rev. Ethnie in small letters; short ear of 7 grains and short leaf; signature parallel with third grain.

7.64 SNGANS 510 ex Salonica hoard (IGCH 1980)

D3.4 *Obv.* Die of D3.3.

Rev. Ethnie in large letters; longer ear and leaf; signature parallel with fourth grain.

7.78 Private collection

D3.5 *Obv.* Die of D3.3, the signature recut TAP in monogram.

Rev. Ethnie in large letters; 8-grained ear.

7.97 Private collection

Obv. Head of Demeter r. similar to D2.8; ΔI behind head.

Rev. META downward at r. Barley ear, the awns compact; leaf to l. with wing above, FA below.

D3.6 *Obv.* Die almost identical to D2.8, but slight differences in curls and barley ears as well as signature.

Rev. A with broken cross-bar in ethnie. 7-grained ear.

7.73 Private collection

D3.7 *Obv.* Die of D3.6.

Rev. Ethnie in tiny letters higher on die. Smaller 6-grained ear.

7.86 Private collection

D3.8 *Obv.* Die of D3.6.

Rev. Ethnie in large letters, A with straight cross-bar.

7.76 Cambridge, McClean 988

Obv. Head of Demeter r. similar to D3.6, but smaller; ΔI behind head.

Rev. META in small letters downward at r. Barley ear of 6 grains similar to D2.7, the awns fan out as D3.8; leaf to l., on which stands tall candelabrum; FA below leaf; thyrsos between ethnie and ear.

D3.9 7.36 SNGANS 508 ex Salonica hoard (IGCH 1980); 7.91 Private collection (?obverse deepened)

Obv. Head of Demeter r. similar to D3.9; two pairs of barley ears and two pairs of leaves in wreath; ΔI behind head.

Rev. META in small letters. Barley ear of 7 grains plus a tiny extra grain at top; awns fan out, heavily barbed; leaf to l. on which stands tall narrow amphora; FA below leaf.

D3.10 7.73 Private collection

D3.11 *Obv.* Curls different on top of head above lower barley ear.

Rev. Die of D3.10.

7.29 SNGOxford 789 ex Salonica hoard (IGCH 1980)

Obv. Bearded head of Herakles l. (D4.1) or r., with short curly hair bound with wreath; lion-skin tied around neck and club over shoulder.

Rev. META upward at l. Tapering barley ear; leaf r., barely curving at tip; symbol and signature off-flan on most specimens.

D4.1 *Obv.* Head l. with relatively few large curls.

Rev. 6-grained ear; 2-handled kantharos on base stands on leaf; ΦI below leaf.

7.65 Private collection

D4.2 *Obv.* Head r. with relatively few large curls.

Rev. ?Die of D4.1.

7.33 BM ex Salonica hoard (IGCH 1980)

D4.3 *Obv.* Similar, but many more smaller curls.

Rev. Ethnie less widely spaced; tapering barley ear of 11 tiny grains; ?handle of kantharos visible above leaf.

7.86 Herzfelder 1957

Obv. Bearded head of Leukippos r., wearing crested Corinthian helmet with plume, laurel wreath round bowl; ΔI between plume and neck.

Rev. META upward at l. Barley ear with leaf to r., triskeles above leaf, ΦI below.

D4.4 *Rev.* Ethnie in large letters, the A with broken cross-bar; tapering 7-grained ear, slight gap between awns at top r.

7.85 Private collection

D4.5 *Obv.* Die of D4.4.

Rev. Ethnie in smaller letters; awns asymmetrical; symbol further from awns.

7.04 SNGANS 515

- D4.6 *Obv.* Shorter nose, beard cut differently.
Rev. Similar to D4.4, but awns not spaced.
7.35 SNGCop 1217
- Obv.* Head of Demeter r. similar to D3.3, but two pairs of barley ears and two pairs of leaves in wreath; ΔI behind head.
Rev. META downward at r., the A with slightly broken cross-bar. Barley ear of 6 round grains similar to D1.1; awns straight, barbed, neatly cut; leaf to l. on which sits 2-handled krater; ΦI below leaf.
- D4.7 7.81 Private collection
- Obv.* Head of Demeter r. similar to D4.6, but the die more deeply incised, the curls rendered rather crudely; ΔI behind.
Rev. META, the A with broken cross-bar upward at l. Barley ear of small grains; leaf to r. with cornucopiae containing two barley ears above, ΦI below; ant upward at base of ear below ethnic.
- D4.8 *Obv.* Barley ears of wreath almost hidden among curls; very long central pendant of earring; two corkscrew curls emerge above signature.
Rev. Ethnic parallel to axis of ear. Tapering 7-grained ear, the lowest pair larger than those above, awns compact.
7.52 SNGOxford 786 ex Salonica hoard (IGCH 1980)
- D4.9 *Obv.* Die of D4.8.
Rev. Tapering 7-grained ear, very crudely cut; the awns fan out untidily.
7.86 Private collection
- D4.10 *Obv.* Die of D4.8. Die break across top of head.
Rev. 7 even-sized grains, the awns further apart with large gaps at apex.
7.77 Private collection ex SNGLockett 426 ex Salonica hoard (IGCH 1980)
- D4.11 *Obv.* Similar, but hair much curlier.
Rev. Awns very compact.
7.85 BMC 99
- D4.12 *Obv.* Die of D4.11.
Rev. Ethnic in smaller letters; awns less compact; base of cornucopiae parallel with lowest grain of ear.
7.79 SNGANS 516
- D4.13 *Obv.* Hair at back of head less curly, no corkscrew curls. Die flaw across cheek.
Rev. Die of D4.12.
7.79 SNGOxford 780 ex Salonica hoard (IGCH 1980)
- D4.14 *Obv.* Die of D4.13.
Rev. Die of D4.11.
7.84 SNGOxford 782 ex Salonica hoard (IGCH 1980)
- Obv.* Head of Demeter r. similar to D4.13ff.; ΔI behind head.
Rev. META, the A with broken cross-bar upward at l. Barley ear; leaf to r. on which stand two tall narrow amphoras with star above (not visible on most specimens); ΦI below leaf.
- D4.15 *Obv.* Similar to D4.13, but S-curly at back of head.
Rev. Ethnic parallel to awns. Short 6-grained ear. Die flaws on fourth grain in l. row and between T and A of ethnic.
7.52 Glasgow, Hunterian 42
- D4.16 *Obv.* Die of D4.15.
Rev. Ethnic parallel to axis of ear. Longer 7-grained ear. Flaw on leaf below signature.
7.99 SNGOxford 791 ex Salonica hoard (IGCH 1980)
- D4.17 *Obv.* Die of D4.15.
Rev. Ethnic in small letters. Untidy 7-grained ear, the awns irregularly spaced on l. side.
7.80 Private collection
- Obv.* Head of Demeter r.; Γ behind head.
Rev. META downward at r. Tapering barley ear with leaf to l. on which stands pig r.; ΦI below leaf.
- D4.18 *Obv.* Head similar to D4.7.
Rev. Ethnic in large letters; 7-grained ear tapering to a point; many awns, very compact.
7.35 BM ex Salonica hoard (IGCH 1980)
- D4.19 *Obv.* Head with receding chin, similar to D4.8 and 4.11.
Rev. Ethnic in small letters; 6-grained ear; pig parallel to second grain.
7.92 Private collection
- Obv.* Head of Demeter r. similar to D4.19; wreath behind head. Die flaw beginning above ear.
Rev. META, the A with broken cross-bar, upward at l. Tapering 7-grained ear, the awns irregularly spaced on l. side; long leaf to r. with head of Helios above, ΦI below.
- D5.1 7.86 Private collection
- Obv.* Die of D5.1, but recut with billhook in place of wreath behind head. Die flaw enlarged.
Rev. META, the A with broken cross-bar, upward at l. Short 7-grained ear, many extra awns at apex; leaf to r. with elaborate helmet or petasos above, ΦI below.
- D5.2 7.78 Private collection
- Obv.* Head of Demeter r. similar to D4.8; ? no signature or symbol.
Rev. META Short barley ear; leaf to r. on which sits sphinx wearing polos and with foreleg raised.

- D5.3 *Obv.* Short single-pendant earring; no symbol visible.
Rev. A with straight cross-bar. Barley ear of 6 tiny grains; sphinx seated l. with r. foreleg raised.
 7.88 Private collection
- D5.4 *Obv.* Die of D5.3.
Rev. Ethnic spaced META. Barley ear of 5 irregular grains; sphinx seated r.
 8.02 Paris 1208A
- D5.5 *Obv.* Similar, but ? arm behind head or die break over symbol or signature.
Rev. Die of D5.4.
 NSc 91 (1966), pl. 9/10 42 (not actual size)

GOLD

Achaean standard

- Obv.* Head of ?Hera r., wearing stephane, pendant earring and necklace; her hair is partially gathered under the stephane, then falls in curly locks to her shoulders. Dotted border.
Rev. ΜΕΤΑΓΩΝ upward at l. 6-grained barley ear with curly leaf to r., bird with wings folded standing r. above.

Third-stater

- G1 2.62 Private collection

Sixth-stater

- Obv.* As G1.
Rev. META As G1 but no symbol visible.
 G2 1.31 Private collection

- Obv.* NIKΑ Female head facing three-quarters r., wearing earrings and necklace; her hair is swept back from her face, perhaps held in an invisible stephane, then falls in loose locks on either side of her neck. Dotted border.
Rev. ΜΕΤΑΓΩΝ upward at l. 6-grained barley ear with leaf to r.; no symbol visible.

Third-stater

- G3 2.61 Private collection

- Obv.* Similar head, without legend.
Rev. As G3, except that the awns of the ear are widely spaced and lack barbs; two-handled krater above leaf, obscured by die break.
 G4 2.63 SNG Lockett 405

Attic standard

- Obv.* ΛΕΥΚΙΠΠΟΣ Bearded head of Leukippos r., wearing crested Corinthian helmet, the bowl of

which is decorated with a Skylla r., hurling a rock.
Rev. Two 6-grained barley ears, parallel to one another; each with leaf on outer side of stalk; M and E above leaves; ΣΙ between stalks.

Third-stater

- G5.1 *Rev.* l of signature not parallel to adjacent stalk.
 2.87 Private collection
- G5.2 *Obv.* Die of G5.1.
Rev. Barley ears are not quite parallel, but fan out very slightly from stalks. There is a large die break across the stalk and flaws on the l. row of grains of the ear on l.
 2.81 Münzen und Medaillen, 6 Oct. 1978, 59
- G5.3 *Obv.* Similar to G5.1, but differences in cutting of plume, ear and beard.
Rev. Similar to G5.1, but leaf at r. appears less curved at tip; l of signature parallel to adjacent stalk.
 2.77 Robinson, *Gulbenkian Coll.*, Pt. 1 (Lisbon, 1971) 72 ex Bernalda hoard (IGCH 1958)

Uncertain denomination

- Obv.* ΛΕΥΚΙΠΠΟΣ Bearded head of Leukippos r., similar to G5 except that helmet plume divides into two at nape of neck; ⊙ behind head. Dotted border.
Rev. META horizontally, above two 7-grained barley ears that fan out as G5.2; ant above leaf at l., locust on leaf at r.
 G6 3.25 Private collection; 3.32 Naples, Fiorelli 2276

FRACTIONS

Drachms ("reduced")

- Obv.* Owl, wings folded, standing r. on olive branch; ΣΙ in field at l.
Rev. META upward at l. 6-grained barley ear with leaf to r., caduceus above.
- F1.1 *Obv.* Owl has 5 tail feathers.
Rev. Leaf curves close to base of ear.
 3.20 Jameson 327
- F1.2 *Obv.* Owl has 4 tail feathers; lower r. leaf of spray curls downward.
Rev. Die of F1.1.
 3.12 SNG Lloyd 396
- F1.3 *Obv.* Die of F1.2.
Rev. Ethnic lower on die (M slightly below base of ear).
 Private collection

Triobols (?)

- Obv.* Head of Demeter r., wearing barley wreath, necklace and earring; her hair falls loosely to her shoulders; compare C1.

Rev. META upward at l. Barley ear with leaf to r.; Γ below.

F2.1 *Obv.* Hair in tight curls at nape of neck.
Rev. Tapering ear with regular grains.
0.95 SNGANS 525

F2.2 *Obv.* Die of F2.1.
Rev. Break across top of plough.
1.045 SNGMunich 1006

F2.3 *Obv.* No curls at crown.
Rev. Die of F2.2.
1.076 SNGMunich 1005

F2.4 *Obv.* Die of F2.3.
Rev. Die break across awns at r.
0.99 Private collection

F2.5 *Obv.* Die of F2.3.
Rev. Broader ear; slight flaw on third grain in l. row.
1.07 Paris, *de Luynes* 510

F2.6 *Obv.* Die of F2.3.
Rev. Tapering ear; plough has long stem.
0.92 SNGANS 526

F2.7 *Obv.* Similar to F2.3, but curl at crown; locks at nape of neck less curly.
Rev. Coarse, 6-grained ear; leaf passes close to base of ear.
1.20 Sambon-Canessa, 27 June 1927, 340

F2.8 *Obv.* Die of F2.7.
Rev. Tapering ear; plough has short stem.
1.15 Berlin ex Friedlaender

F2.9 *Obv.* Die of F2.7.
Rev. Die of F2.5.
1.14 SNGLLoyd 400

F2.10 *Obv.* Die of F2.7.
Rev. Die of F2.4.
1.12 Berlin ex Peytrignet

F2.11 *Obv.* Coarser features (recut?).
Rev. Awns have more obvious barbs, grains slightly irregular.
0.96 Berlin ex Löbbecke

Diobols (?)

Obv. Head of Athena r., wearing crested Attic helmet decorated with Skylla or hippocamp (details indistinct).

Rev. META upward at l. Barley ear with leaf to r., club above.

F3.1 0.80 Vienna 4144

Obv. Head of Athena r., wearing crested Attic helmet decorated with hippocamp.

Rev. META upward at l. Barley ear with leaf to r., owl and locust above.

F4.1 0.93 SNGANS 529

F4.2 0.71 SNGANS 528

Obv. Head of Zeus Ammon r.

Rev. META upward at l. Barley ear with leaf to r., owl and locust above, Γ below.

F5.1 *Obv.* Small head, the hair in neat "kiss-curls" along forehead.
Rev. Three awns at apex are perpendicular.

1.03 Private collection ex SNGLockett 432

F5.2 *Obv.* Larger head, face more modelled and hair more unruly.

Rev. Awns at apex arc splayed.

0.86 Berlin Löbbecke

Obv. Head of Zeus Ammon r., laureate (but wreath often scarcely visible).

Rev. ME upward at l. Barley ear with leaf to r., tripod above.

F6.1 *Obv.* Die of F5.2.

Rev. No ethnic visible; 6 large grains, legs of tripod widely spaced.

0.89 Berlin 9143

F6.2 *Obv.* Much finer style, three locks of hair at nape of neck.

Rev. ME Neat 6-grained ear.

1.16 Berlin ex Fox

F6.3 *Obv.* Very fine style, laurel wreath clearly visible.

Rev. Die of F6.2.

1.30 SNGLLoyd 397

F6.4 *Obv.* Similar, but slight differences in cutting of hair and beard.

Rev. 5-grained ear, large tripod.

0.93 SNGANS 520 ex Jameson 304

Obv. Head of Apollo Karneios l.; ΣA below chin.

Rev. META upward at l. Barley ear with leaf to r.; owl and locust above, Γ below.

F7.1 *Obv.* Signature horizontal.

1.16 Private collection ex SNGLockett 431

F7.2 *Obv.* Signature at slight angle to chin.

Rev. Die of F7.1.

1.08 Paris, *de Luynes* 514

Obv. Head of Apollo Karneios l.

Rev. Ethnic not visible. Barley ear with leaf to r., tripod above.

F8.1 1.05 Canessa, 22 May 1922 (Brandis), 85

Obv. Head of Zeus Ammon r.

Rev. META or ME upward at l. Barley ear with leaf to r., plough above.

F9.1 *Obv.* Crudely engraved, long nose.

Rev. ME Uneven grains.

0.94 Vienna 4148

- F9.2 *Obv.* Die of F9.1.
Rev. META Delicate 6-grained ear, tiny grains.
0.61 Cambridge, *McClellan* 944
- Obv.* Head of Zeus Ammon r.
Rev. META retrograde upward at l. Barley ear with leaf to r., locust above.
- F10.1 *Obv.* Die of F9.1.
0.64 *SNGCop* 1238
- Obv.* Head of Zeus Ammon r.
Rev. Herakles kneeling r., strangling lion.
- F11.1 *Obv.* Die of F9.1.
0.89 Private collection ex *SNGLockett* 435
- Obv.* Head of Apollo Karneios l.
Rev. ME upward at l. Barley ear with leaf to r., plough above.
- F12.1 *Obv.* Short horn.
Rev. Die of F9.1.
1.0 *BMC* 156
- F12.2 *Obv.* 4 rows of locks at back of head.
Rev. Plough touches awns; grains higher at l. side of apex.
0.98 Berlin ex *Imhoof*
- F12.3 *Obv.* 5 rows of locks at back of head.
Rev. Die of F12.2.
0.805 Berlin ex *Löbbecke*
- F12.4 *Obv.* Horn turns gently downward toward jaw.
Rev. Regular 7-grained ear; plough has long stem.
0.63 Private collection
- Obv.* Head of Apollo Karneios l.
Rev. META upward at l. Barley ear with leaf to r., locust above.
- F13.1 *Obv.* Die of F12.3.
Rev. 5-grained ear, ethnic close to ear.
1.02 Paris 1223
- F13.2 *Obv.* Die of F13.1.
Rev. Broad 7-grained ear, leaf follows ear; symbol high on die.
0.96 *SNGKlagenfurt* 258
- F13.3 *Obv.* Horn ends at jaw.
Rev. Ethnic parallel to awns; 6-grained ear, the awns with distinct barbs.
0.83 Private collection
- Obv.* Head of Apollo Karneios l.
Rev. Herakles standing r., wrestling with lion.
- F14.1 0.70 *BMC* 158
- F14.2 0.71 *BM Ford*
- Obv.* Head of Apollo Karneios l.
Rev. Herakles kneeling r., wrestling with lion; locust above.
- F15.1 *Vlasto* 1357
- Obv.* Head of Athena r., wearing plain Corinthian helmet with long neck-flap.
Rev. Barley ear with leaf to r., plough above.
- F16.1 *Rev.* Die of F12.4.
0.82 *BMC* 162
- Obv.* Head of Athena r., wearing Corinthian helmet with long neck-flap.
Rev. META upward at l. 7-grained barley ear with leaf to r., locust above.
- F17.1 0.76 Private collection
- Obv.* Head of Athena r., wearing Attic helmet decorated with Skylla.
Rev. META upward at l. 6-grained barley ear with leaf to r., plough above.
- F18.1 *Obv.* Good style.
Rev. Regular grains.
Vienna 4137
- F18.2 *Obv.* Crude style, perhaps further marred by flaws.
Rev. Short leaf, irregular grains.
0.74 Berlin 9142
- F18.3 *Obv.* Tail of Skylla slightly less curled.
Rev. META retrograde.
0.76 *SNGFitzwilliam* 520
- Obv.* Head of Athena r., wearing Attic helmet decorated with hippocamp.
Rev. Ethnic, if any, off-flan on only known specimen. Barley ear with leaf to r., plough above (indistinct).
- F19.1 1.12 Vienna 4140
- Obv.* Head of Athena r., wearing Corinthian helmet, no neck-flap.
Rev. No ethnic visible. Coarse-grained barley ear with leaf to r., plough above.
- F20.1 0.9 *SNGFitzwilliam* 529
- Obv.* Head of Athena r., wearing Corinthian helmet, no neck-flap.
Rev. META Barley ear with leaf to r., cornucopiae above.
- F21 Most of the examples are too poorly struck for dies to be satisfactorily distinguished; there would appear to be at least a dozen different obverse dies: a selection showing varying treatments of hair and helmet is illustrated, but is far from exhaustive. On some reverses (e.g. *SNGANS* 537—not illustrated here) the barley ear has a leaf on either side of the stalk.
- a. Vienna; b. 1.04 *SNGLloyd* 401 ex Naville 6, 28 Jan. 1924, 199; c. 0.99 Naville 15, 2 July 1930, 178; d. 0.99 Private collection ex *SNGLockett* 430; e. 1.10 Private collection; f. 1.24 Private collection; g. 1.09 Private collection

Obv. ΜΕΤΑΓΟΝΤΙ Head of Athena r., wearing Corinthian helmet with long neck-flap. Dotted border.

Rev. No ethnic. Barley ear with leaf to r., cornucopiae above.

F22.1 *Obv.* Legend divided ΜΕΤΑΓΟΝ ΤΙ.
Paris, *de Lugnes* 513

F22.2 *Obv.* Legend divided ΜΕΤΑΓΟ ΝΤΙ.

1.19 Private collection ex *Jameson* 323

(Note that there are probably several reverse dies for F22, but the condition of the pieces again precludes die identification.)

Obv. Head of Athena r., wearing crested Attic helmet decorated with Skylla.

Rev. Ethnic illegible. 7-grained barley ear with leaf to r., no symbol visible.

F23.1 *Obv.* Die perhaps damaged, or style coarse.
0.9 Paris, *de Lugnes* 508

Obv. Head of Demeter r., wearing barley wreath or stephane.

Rev. ΜΕΤΑ upward at l. Barley ear with leaf to r., owl above.

F24.1 0.99 *SNGANS* 527

Appendix: Plated Coins and Forgeries

DISCUSSION

In his discussions of plated and other suspect pieces Noe¹⁰⁵ followed Vlasto in distinguishing between ancient forgeries, “barbaric imitations” of very poor style, and “trial strikes” of more plausible appearance, occasionally apparently die-linked to the “official” series. The latter coins frequently showed signs of plating, whereas the barbaric imitations were often of debased silver; in both cases the weights were much below the norm for the series (usually under 7g).¹⁰⁶ For Part 2, Noe included some of the plated pieces and copies alongside the regular coins; he specifically mentions N.333–34, 338, 394 and 438 as plated;¹⁰⁷ note also the “barbaric imitations” N.343–44, 399, 417, 432, 457 and 523, while others were relegated to the final plates headed “Plated Coins” (N.530–47). A number of other possibly questionable pieces were included in the main catalogue without comment, although their weights are low and the quality of engraving inferior (e.g., N.339–42, 388–89).

Among these plated issues there are a couple of instances of hybrids, where the obverse is copied from one issue and the reverse from another (N.540, 542); in one case an obverse of Metapontum is also known with a reverse of Croton (N.541 and *Jameson* 428/*SNGANS Brullium* 349); in another, an inappropriate ethnic has been added (N.531–32: *Taerimon*). Otherwise most of these irregular pieces are obvious copies of a particular issue, imitating more or less successfully the details of the head on the obverse and the placing of the legend and (where appropriate) the symbol on the

reverse. By no means every issue is copied, especially where there are many varieties of reverse symbol as in Classes VII and VIII, but almost every obverse type is to be found among the doubtful pieces. Suspicions are aroused first by the style (generally cruder than the originals), then by the low weights and sometimes by irregularities in the flans (the inner core is sometimes revealed where the surface silver has burst — as nos. 12, 16 below — or where the edge has been tested with a file or knife). Many are known from only a single specimen and can be dismissed without much heart-searching as ancient or modern forgeries.

The pieces that cause the longest hesitation are those that appear to be die-linked, whether to “official” pieces or to each other.¹⁰⁸ Noe suggests in the catalogue that the reverse of the full-weight piece N.335 is struck from the same die as the plated coins N.333–34, but in the text he says that it is “almost identical” — which is a very different matter.¹⁰⁹ On the other hand, at least one of the examples of N.336, *SNGANS* 287, is of very low weight and is described as “plated?” although it appears to have been struck from the same dies as the full-weight examples. This Apollo Karneios issue is the most puzzling of Part 2 since only one obverse die out of eight is unquestionably genuine — it is struck with three reverses, N.335–37, the majority of specimens weighing at least 7.8g — but even so there are doubtful coins like the ANS piece among them. Of the others, four die-pairs are linked together in sequence (N.338–41), one of the specimens certainly plated and the rest of low weight; another three that share an obverse die (N.343–44,

¹⁰⁵ Noe-Johnston, pp. 59, 67–69.

¹⁰⁶ This distinction is abandoned by G. K. Jenkins in his discussion of the imitations of Gela, *The Coinage of Gela* (Berlin, 1970), pp. 288–91, and by C. Boehringer, “Die barbarisierten Münzen von Akragas, Gela, Leontinoi und Syrakus im 5. Jahrhundert v. Chr.,” in *Atti IV Convegno Centro Napoli, AIN Suppl.* 20 (1975), pp. 157–79, at p. 158.

¹⁰⁷ Noe-Johnston, p. 67.

¹⁰⁸ Michael Crawford, “Plated Coins—False Coins,” *NC* 1968, pp. 55–59, points out that it was possible to make perfectly plausible dies from genuine coins, although on closer inspection counterfeited dies may prove to be slightly smaller because of the process of reproduction.

¹⁰⁹ Noe-Johnston, p. 59.

plus *SNGFitzwilliam* 479) produced coins that are not obviously plated though they are of crude workmanship and somewhat low weight (7.45–7.64g); yet another is the die-pair mentioned above, N.334, which shares a reverse die with N.333, all specimens apparently plated. Two other pieces, of poor style and low weight, are not linked to any of the others (N.342, *SNGCop* 1188).

How are we to explain such a preponderance of substandard pieces? Some of the flans are irregularly shaped and may be of low weight because they have been adjusted and overstruck, though there are no visible undertypes. The rather poor engraving may be the handiwork of an inexperienced die-cutter rather than a forger (the quality is hardly outstanding even on N.335–37). Is the series to be considered as “official” but produced at a time when supervision of the mint was lax and standards low (perhaps allowing some “unofficial” use of dies)? Or should all except the high-weight specimens of N.335–37 be dismissed as forgeries (which might incidentally explain why there are so few specimens of the type in hoards and none in *IGCH* 1900)?¹¹⁰

Several other suspect pieces in Part 2 are die-linked together, though not to the same extent as the Apollo Karneios issue: N.388 = 389 (obverse); N.544 = 545 (obverse); N.546 = 547 (obverse); N.539 = 540 (obverse) = 541 (reverse) = *Jameson* 428 (obverse, with reverse of Croton). Almost all of these are known in only a single specimen and are presumably forgeries.

For Part 3 there is a similar pattern of plated pieces/copies, with at least one dubious die-pair for most issues and a few hybrids (no. 2: mule of two Leukippos issues, the obverse as A5 and the reverse as A3; no. 6: mule of a Tharragoras obverse with a Part 2 reverse; no. 34: mule of types of a late Demeter [as D2.8ff.] and a plough reverse [as C1]). There are often several examples extant per die-pair (e.g., nos. 4–5, 20–21), which indicates that many of the pieces were in fact struck. The one example which appears to reproduce two genuine dies (no. 18) may have been cast from a genuine coin.

¹¹⁰ Jenkins (above, n. 106), p. 288, B6 describes a copy of a Gelan tetradrachm where the reverse was apparently struck from a regular die, R18 “perhaps

Plated pieces are relatively most common among the types of the small later issues with symbols griffin, Artemis-Hekate, altar and especially Nike. Like the Apollo Karneios issue of Part 2, there are more suspect than genuine examples of the Nike issue: only C9.1–3 (all die-linked) are full-weight and not plated, while nos. 27–30 are plated. One of the obverse dies involved appears with a variety of reverse symbols: the Demeter head is an extremely close copy of C8.10, and it turns up with tongs (no. 21), star (no. 25), satyr (no. 32), as well as Nike (no. 29). The same satyr reverse occurs with a different obverse die (no. 33), in turn muled with a plough reverse appropriate to C1 (no. 34). The style throughout is fairly plausible, though the weights are much too low. After some hesitation another satyr piece has been retained in the main catalogue although the weight of the only known specimen is on the low side and the Demeter head faces left instead of right, apparently copying the obverse of the spindle issue. On the other hand, the reverse is apparently die-linked to D2.6; if rejected, this leaves only D2.6–8 as indubitably genuine die-pairs of the satyr issue. The spindle issue obverse is again copied on no. 31, despite the lack of visible symbol. It is interesting that small, relatively rare issues were so often copied, and that this spate of plated coins ceases abruptly with the spindle and satyr issues (no copies appear to be known of the many varieties of the final group of staters of Class D). If the suspect coins are modern, this would suggest that they were produced before the hoards containing many examples of these types appeared on the market in the 1930s.

Suspect specimens also exist of gold types and fractions. Despite Giesecke’s vigorous defense, no. 37 is an obvious forgery of particularly grotesque style and impossible weight. As noted, G6 itself may not be genuine, though the style is infinitely more plausible and the weight is the most disturbing feature. Similarly, some of the fractions retained in the catalogue should perhaps be rejected, but it is difficult to judge for certain when the surviving specimens are in poor condition.

stolen from the mint or [made] by casting from an official coin”.

Allusion has already been made to the divergence of scholarly opinion as to the status of plated pieces, which are relatively common among the issues of Magna Graecia.¹¹¹ Numismatists earlier in this century sought refuge in the notion of "trial strikes," which would account for the fact that there is often associated with an issue one die-pair of passable style used to strike low-weight/plated pieces. The logic of the argument is hard to follow, since a test carried out with substandard dies on substandard flans would not be very helpful to the personnel of the mint—why not use proper dies and flans and melt down the unsuccessful trial pieces? Even if the mint did go to the trouble of preparing special plated flans for such purposes, why should they have been kept and why should they have survived? It seems much more likely that some kind of deliberate deception was being practiced, whether by the mint or by private counterfeiters of varying degrees of skill.¹¹² The motives of the latter group are obvious enough. As to the mint, it is possible to conceive of circumstances in which a token coinage of sorts might have been issued, with a promise to redeem the substandard pieces when funds were available, though one would then expect the entire issue to be plated or debased and marked unambiguously to that effect. Other explanations are less honorable: Kraay¹¹³ postulated that the very common plated issues of Velia might have been struck to pass off on the less sophisticated tribesmen of the interior—and anyone else who was foolish enough to accept them. There is no solid evidence of the barbarians of S. Italy producing imitations in the manner of the Sicels in Sicily, whose coins circulated alongside regular issues (see the contents of the Agrigento hoard, *IGCH* 2086, almost entirely composed of imitations of types of Syracuse, Leontinoi and Gela mixed with genuine specimens); the Brettii and Lueani could easily have done likewise.

Counterfeiting was extremely common in the

ancient world to judge from the widespread attempts to deter the practice and punish offenders. Plated pieces quite often show marks of having been tested on the edge (see no. 6), suggesting that they had not passed undetected. Examples of plated pieces are known from every S. Italian mint, covering issues throughout the fifth and fourth centuries, but they are especially common from Croton and Velia. The Apollo/tripod issue of Croton, like some of the Metapontine issues, seems to have been predominantly plated or of poor alloy. The ANS collection even has a bronze core of a plated coin of one such (*SNGANS* 405), as well as a die-linked sequence of silver-covered specimens (*SNGANS* 399–402). According to Andrew Burnett,¹¹⁴ a thickly plated example of a Mars/horse's head Romano didrachm was found in the San Giorgio Ionico hoard, showing that these forgeries were probably made quite soon after the genuine issues were struck.

Among modern counterfeits of Metapontum, the three examples of Becker's work are readily identifiable (nos. 43–45). No. 9 (Leukippos) would appear to be a rather fanciful modern concoction. Like the latter two Becker efforts, it bears only superficial resemblance to any actual issues. Much more serious for scholarly purposes is the information revealed by Ravel that a Sicilian forger was very active in the 1930s, producing high-quality counterfeits with dies cast from coins; he came to be controlled by one of the major Italian dealers, who passed off his work mixed in with genuine pieces, all ostensibly from hoards. These coins could be distinguished by the lack of patina and the pitting of the surface.¹¹⁵

The list that follows is by no means exhaustive, in particular as regards specimens passing through dealers' hands. The major published collections have been included, though they may also possess obvious counterfeits in their trays which were not deemed worthy of publication.

Coinage (London, 1972), pp. 262–65; F. C. Thompson and A. K. Chatterji, "Ancient Greek Plated Coins," *Nature* 168 (28 July 1951), p. 158. It is clearly better adapted to counterfeiting, given the effort required.

¹¹³ *ACGC*, p. 200.

¹¹⁴ A. Burnett (above, n. 50), p. 140.

¹¹⁵ O.E. Ravel, *Numismatique grecque. Falsifications* (London, 1946).

¹¹¹ Noe-Johnston, p. 91 with n. 14.

¹¹² The metallurgists who have studied the processes of plating involved concur that the technique was not suitable for large-scale production; see W. Campbell, *Greek and Roman Plated Coins*, ANSNM 57 (New York, 1933); L. H. Cope, "Surface-silvered Ancient Coins," in E. T. Hall and D. M. Metcalf, eds., *Methods of Chemical and Metallurgical Investigation of Ancient*

CATALOGUE

Staters and distater (no. 10)

1. *Obv.* Demeter head l., wearing barley wreath and triple pendant earring. Similar to A1.5.
Rev. M/ETA upward at r. Small caduceus at l., parallel to awns. Copy of A1.2.
6.10 Helbing, 24 Oct. 1927, 2555
2. *Obv.* Leukippos head r., torech behind. Copy of A5.2ff.
Rev. ΜΕΤΑΓΟ[N] upward at r., pomegranate at l. API upward at l. below leaf. Copy of A3.
5.44 SNGCop 1216
3. *Obv.* Zeus head r.; fulmen behind. Copy of A6.2 with the die break copied as a eurl over the eye.
Rev. ΜΕΤΑΓΟΝ upward at l. ΚΑΛ at r. Barley ear has two tiny extra grains at the top. Copy of A6.3.
7.04 Brussels, Hirsch 167; 7.21 Berlin ex Löbbecke
See also A6.5, possibly a copy.
4. *Obv.* ΔΑΜΑΤΗΡ. Demeter head, veiled, r. wearing triple-pendant earring; Κ behind head. Two eurls at nape of neck. Copy of A6.7.
Rev. ΜΕΤΑ upward at l. 7-grained ear, almost straight leaf to r.; above it, bird standing l. with wings open; beneath it, snake with head erect; ΚΑΛ in field l. at base of ear. Copy of A6.7.
7.01 Private collection ex Münzen und Medaillen, 17 June 1954, 1001; 7.24 Paris, *de Luynes* 499; 5.85 SNGANS 414; 6.39 SNGLockett 413; 6.41 Berlin ex Löbbecke; 110gr BM
5. *Obv.* Similar to (4), but in lower relief; three eurls at nape of neck.
Rev. Similar to (4). The die has been designed for a much larger flan so that the symbol is always off-flan.
6.8 Paris, *de Luynes* 502; 6.69 SNGMunich 989; 6.21 Vienna 4046; cf. Sambon-Canessa, 27 June 1927, 326
6. *Obv.* ΘΑΡΡΑΓΟΡΑΣ. Male head, bearded l., wearing Corinthian helmet; Κ behind. Copy of A6.11.
Rev. ΜΕΤΑ upward at l. Leaf to r., AY above; no visible symbol. Apparent die break at foot of Γ. Copy of N.497-98.
5.78 SNGMunich 991; 6.7 Berlin ex Imhoof, edge filed to test for plating.
7. *Obv.* Demeter head r., coarsely engraved. Copy of A7.6.
Rev. ΜΕΤΑ downward at r. Leaf to l.; above leaf, tripod. Leaf to r.; ΓΡΟ in tiny letters to r. at base of ear.
7.35 SNGLockett 414 ex Weber 776; cf. Naples, Santangelo 4031 and 4034 (different dies).
8. *Obv.* Similar; no signature visible. Copy of A8.15ff.
Rev. ΜΕΤΑ upward at r. Leaf to l., mouse above and Φ above mouse. Copy of A8.16, except that mouse's tail turns upward.
Private collection
9. *Obv.* Leukippos head, bearded r., wearing Corinthian helmet with neek-flap; ΕΓΙ below neek tranche. Copy of A9.3.
Rev. ΜΕΤΑ downward at r., the large letters obviously drilled. Large barley ear with irregular grains, leaf to r.; symbol at base of ear to l.; small 5-grained barley ear with leaf. No original.
BM 1927/12-2-1; private collection.
10. *Obv.* Leukippos head r. wearing Corinthian helmet; lion protome behind head; ΑΓΗ. Copy of B1 (distater).
Rev. ΜΕΤΑΓΟΝΤΙΝΩΝ upward at r. Leaf to l., elub above; AMI below. Copy of B1.
12.45 Paris 1165; 12.18 Sotheby, 15 Mar. 1897 (Montagu II), 20
11. *Obv.* Similar, lion head behind Leukippos head; Α beneath chin. Copy of B2.
Rev. ΜΕΤΑ upward at l. Leaf to r.; elub above; AMI below. Copy of B2.36.
Naples, Fiorelli 2435; 6.2 Hess, 6 Jan. 1926 (Löbbecke), 53
12. *Obv.* Similar, but no signature visible.
Rev. ΜΕΤΑ upward at r. Similar, but leaf to l. Copy of B2.1ff.
6.13 Naville 13, 27 June 1928, 84; Schlessinger 13, 4 Feb. 1935 (Hermitage), 84; 6.3 Naville 15, 2 July 1930, 154; 6.22 Münzen und Medaillen, 26 Oct. 1978, 60. Cf. 5.62 SNGANS 441; 6.8 SNGManchester 198; Naples 4155; Rome, Museo Nazionale 1023; BM (forgeries collection) ex Woodward (no reverse signature)
13. *Obv.* Similar, but no symbol or monogram.
Rev. Similar.
7.55 Paris 1178, flan broken to reveal empty core.
14. *Obv.* ΛΕΥΚΙΠΠΟΣ Leukippos head r., dog behind head; Α below neek. Copy of B3.
Rev. ΜΕΤΑ upward at l. Leaf to r.; bird with wings open above; AMI below. Copy of B3.
6.48 Egger 39, 15 Jan. 1912, 51; Berlin ex Löbbecke
15. *Obv.* Leukippos head r., AMI behind head. Copy of B4.1.
Rev. ΜΕΤΑ upward at l. 7-grained ear with curled leaf to r.; fulmen above. Copy of B4.
7.07 Paris 1177 (silver flaked off reverse to reveal bronze core, edge tested)
16. *Obv.* Demeter head r., wearing barley wreath and triple pendant earring; ΔΑΙ under chin. Copy of C1.
Rev. ΜΕΤΑ upward at l. Leaf to r.; plough above; MAX below. Copy of C1.2ff.

- 6.8 *SNGOxford* 769; Coin Galleries, 23 Oct. 1954, 231. Cf. 6.5 Sambon-Canessa, 27 June 1927, 329 and 7.95, 332; 6.79 *SNGAarhus* 127
17. *Obv.* Female head facing three-quarters r., wearing barley wreath and tiny stephane; $\Lambda\Gamma$ in field r. Copy of C2.
Rev. META upward at l. Leaf to r.; bucranium above; AO below. Copy of C2.
6.42 *SNGKlagenfurt* 251; 6.5 BM ex Parkes Weber; 7.35 Naples, Fiorelli 4022; 6.18 Vienna 4095. Cf. Naples, Santangelo 4021 and 4024
18. *Obv.* Demeter head l., wearing barley wreath and triple-pendant earring. Die of C4.21.
Rev. META upward at r. Irregular 7-grained ear, ethnic in large letters; leaf to l.; tongs above; $\text{A}\Theta\text{A}$ below. Die of C4.24.
6.4 Santamaria Hartwig, 7 March 1910, 230; Nussbaum, 8 July 1936, 13. Cf. 6.74 *SNGANS* 458, apparently dies of C4.1
19. *Obv.* Similar.
Rev. Similar, large-grained ear.
7.03 Naville 1, 4 Apr. 1921 (Pozzi), 188; 5.8 Leiden; 7.34 Berne 2636 (all same dies). Cf. 7.30 Sambon-Canessa, 27 June 1927, 335 *Hunterian* 34
20. *Obv.* Similar.
Rev. Similar, but signature slants upward.
6.54 *SNGANS* 462; 7.024 *SNGMunich* 993; 7.31 Boston, Brett 118; 7.25 Naples, Fiorelli 2377; 5.95 Berlin ex Imhoof; 6.6 Hess, 6 Jan. 1926 (Löbbecke), 55 (all same dies)
21. *Obv.* Demeter head r., as before. Copy of C8.10.
Rev. Die of (19).
7.55 Santamaria, 7 Mar. 1910 (Hartwig), 236
22. *Obv.* Demeter head l., as before. Copy of C5.
Rev. META upward at r. in large letters. 7-grained ear with leaf to l.; hayfork above; $\text{J}\Theta\text{A}$ beneath leaf-tip. Copy of C5.
6.65 Berlin ex Löbbecke. Cf. 7.18 Frankfort; 6.14 Nanteuil 166; 7.16 *SNGANS* 457 (not same dies)
23. *Obv.* Demeter head l., as before. Copy of C6.
Rev. META upward at r. Leaf to l.; griffin above; $\Lambda\Upsilon$ below. Copy of C6.
6.05 *SNGANS* 490; 7.68 *SNGANS* 492; 5.93 Naville 5, 18 June 1923, 480; 7.54 Vienna 4089; Naples, Santangelo 4045; 7.55 Sambon-Canessa, 27 June 1927, 337 (not same dies)
24. *Obv.* Demeter head l., as before. Copy of C7.7.
Rev. META upward at r. Leaf to l.; Artemis-Hekate above; $\Lambda\Upsilon$ below. Copy of C7.
6.13 Brussels, Hirsch 164; 6.85 Vienna 4091 (not same dies)
25. *Obv.* Demeter head r., as before. Die of (21).
Rev. META upward at l. Leaf to r.; star above; $\Lambda\Upsilon$ at base of ear. Copy of C8.
6.45 Paris 1211; 6.75 *SNGKlagenfurt* 250; 7.45 *SNG Manchester* 212; 7.32 Ciani/Vinchon, 6 Feb. 1956, 95 ($\Lambda\Gamma$ at base of ear); 7.39 *SNGANS* 505 (no symbol)
26. *Obv.* Demeter head l., as before. Copy of C5.17.
Rev. META upward at l. Leaf to r.; Nike with wreath above; $\Lambda\Upsilon$ at base of ear. Copy of C9.
6.47 *SNGOxford* 765; 6.62 *SNGLloyd* 394 = BM; 6.89 Cambridge, *McClellan* 983; Naples 4042
27. *Obv.* Demeter head r., as before. Copy of C9.1, except that earring hangs at a different angle and locks of hair differently disposed under chin.
Rev. Similar.
6.76 Vienna 4033; Naples, Santangelo 4054, cf. 4051-2
28. *Obv.* Similar, but larger features.
Rev. Similar to (26), but Nike's wreath touches awns.
7.13 Berlin 16974; 6.195 Berne 311; Naples, Santangelo 4053
29. *Obv.* Die of (21).
Rev. Die of (28).
6.7 *SNGANS* 497
30. *Obv.* Demeter head l., as before. Copy of C10.
Rev. META retrograde upward at r. Leaf to l.; altar above; $\Lambda\Upsilon$ retrograde at base of ear. Copy of C10.
7.58 Cambridge, *McClellan* 985; 6.55 Santamaria, 21 Nov. 1932 (Gusberti), 30
31. *Obv.* Demeter head l., as before. Copy of D1, but locks of hair at nape of neck are curlier, no signature.
Rev. META upward at l. Leaf to r.; no symbol visible.
7.15 Private collection ex *Jameson* 322; 7.04 *SNGANS* 518; 6.9 *SNGCop* 1221
32. *Obv.* Demeter head r., as before. Die of (21).
Rev. META upward at r. Leaf to l.; satyr playing pipes above. Copy of D2.8.
6.91 *BMC* 105
33. *Obv.* Similar. Copy of D2.8.
Rev. Die of (32).
Naples, Santangelo 4058; cf. Santangelo 4059 (different reverse die)
- See also D2.5, included in main catalogue, although doubtful.
34. *Obv.* Die of (33).
Rev. META upward at l. Leaf to r.; plough above; ΔAI below. Copy of C1.71.
6.73 *SNGOxford* 779
35. *Obv.* Demeter head l., as before. Copy of C7.
Rev. META upward at r. Barley ear of 5 knobbly grains, leaf to l.; star above ethnic,

club (handle downward) below; no signature visible.

BMC 116

36. *Obv.* Demeter head r., weakly modeled. Perhaps copy of C1.

Rev. META upward at l. Small 7-grained ear, long leaf to r.; no symbol or signature.

Private collection

Gold

37. *Obv.* Leukippos head r., wearing crested helmet decorated with Skylla; "shield" (i.e. copy of Este punch) behind. Dotted border. Copy of G6.

Rev. META above. Two barley ears slanting outward from stalks; insect above leaf at l. Copy of G6.

5.56 Berlin, illustrated by Giesecke, *Italia Numismatica* (Leipzig, 1928), pl. 13, G1

Note: It cannot be ruled out that G6 is itself counterfeit.

38. *Obv.* ΛΕΥΚΙΓΓΟΣ Similar, no symbol or border. Copy of G5.

Rev. ME on either side of two parallel barley ears; ΣI below. Copy of G5.

BM cast collection of forgeries

39. *Obv.* Demeter head r., hair in sakkos, pendant earring. Copy of G2?

Rev. META upward at l. Barley ear with leaf to r.; star above; Φ below. No original.

BM cast collection of forgeries

Fractions

40. *Obv.* Demeter head r., wearing barley wreath. Crudely cut. Copy of F2.

Rev. META upward at l. Barley ear with leaf to r., no visible signature or symbol.

0.68 Paris 1219

41. *Obv.* Athena head r., wearing plain Corinthian helmet without neck-flap. Copy of F21.

Rev. META upward at l. Barley ear with leaf to r.; cornucopiae above. Copy of F21.

BM cast collection of forgeries

42. *Obv.* Athena head l., wearing Corinthian helmet with neck-flap.

Rev. Similar to (41).

0.74 SNGFitzwilliam 521

Becker forgeries

43. *Obv.* Demeter head r. Copy of A8.11ff.

Rev. META upward at r. Leaf to l.; mouse above; Φ below.

G. F. Hill, *Becker the Counterfeiter* (London, 1924), pl. 1 no. 7

44. *Obv.* Demeter head r., hair tucked up under wreath in style of Part 2, but wreath of barley. No exact parallel.

Rev. META upward at r. Barley ear with leaf to l., no symbol or signature.

Hill no. 8 (16 mm, ?intended as a drachm)

45. *Obv.* Athena head r. wearing crested helmet decorated with hippocamp. Heavy dotted border.

Rev. META upward at l. Barley ear without stalk or leaf.

Hill no. 9 (19 mm)

Concordance

The volumes of *Sylloge Nummorum Graecorum* covering Metapontum which have been published to date are listed below, followed by a concordance between them and the present catalogue.

ANS — *American Numismatic Society*, Part 2 (New York, 1972).

Cambridge, F — *Fitzwilliam Museum, Leake and General Collections*, Part 1 (London, 1972).

L — *Lewis Collection in Corpus Christi College*, Part 1 (London, 1972).

Copenhagen — *Royal Collection of Coins and Medals, Danish National Museum*, Part 2 (Copenhagen, 1942).

Lloyd — *Lloyd Collection*, Parts 1–2 (London, 1933).

Lockett — *Lockett Collection*, Part 1 (London, 1938).

Munich — *Staatliche Münzsammlung*, Part 2 (Berlin, 1973).

Oxford — *Ashmolean Museum*, Part I (A) (London, 1962).

Other

A — *Newnham Davis Coins, Marischal College, Aberdeen* (London, 1936).

D — *Collection Jean et Marie Delepierre, Bibliothèque Nationale* (Paris, 1983).

E — *Collection Réna H. Evelpidis, Athènes*, Part 1 (Louvain, 1970).

K — *Sammlung Dreer, Klagenfurt im Landesmuseum für Kärnten*, Part 1 (Klagenfurt, 1967).

M — *Manchester University Museum (The Raby and Güterbock Collections)* (London, 1986).

S-GA — *Sweden, The Collection of King Gustaf VI Adolf* (Stockholm, 1974).

S-S — *Sweden, The Collection of the Royal Coin Cabinet, National Museum of Monetary History, Stockholm*, Part 1 (Stockholm, 1976).

T — *Münzsammlung der Universität Tübingen*, Part 1 (Berlin, 1981).

	ANS	Cambridge, F and L	Copenhagen	Lloyd	Lockett	Munich	Oxford	Other
A 1.1	399						741	
1.2	400			372	420			
1.3	401							
1.4							740	
1.5				371				
1.6								
1.7								
1.8								
1.9								M.213
1.10								M.204
1.11								
1.12								
2.1	451							M.202
2.2				373		988		
3.1								
4.1	402					987		
4.2								
4.3							738	
4.4								
4.5	403		1213					
4.6	404							
5.1	408				411			
5.2								
5.3	405–6					986		
5.4				382				
5.5								
5.6								
5.7								
5.8							739	
5.9	407			381				

PLATES

A



1.1



1.2



1.3



1.4



1.5



1.6



1.7



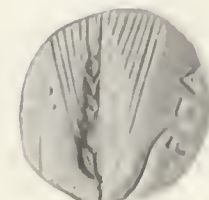
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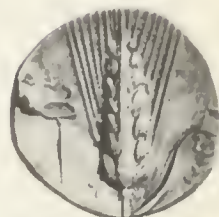
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1.10



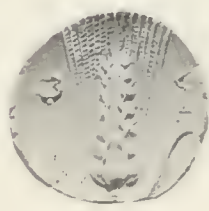
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1.12



2.1



2.2



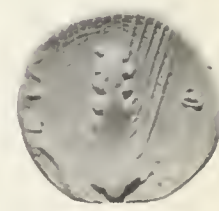
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4.1



4.2



4.3



4.4



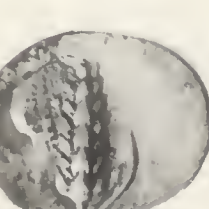
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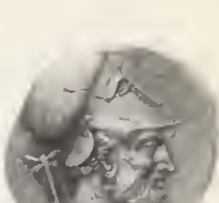
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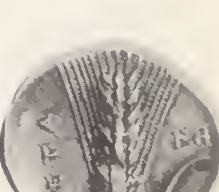
5.1



5.2



5.3

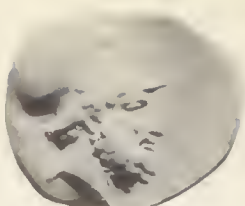




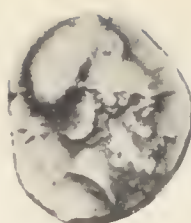
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5.5



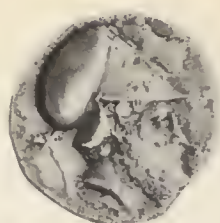
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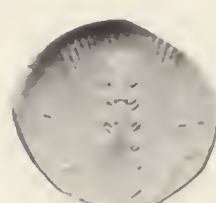
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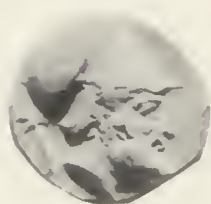
5.8



5.9



5.10



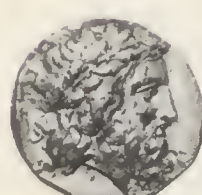
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6.1



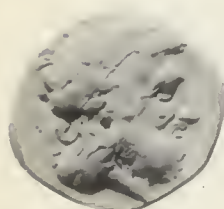
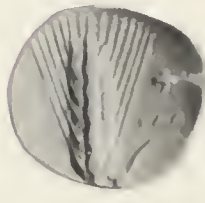
6.2



6.3



6.4



6.5



6.6



6.7



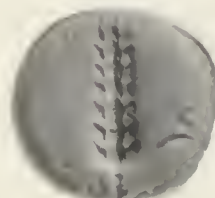
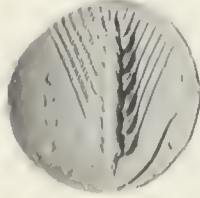
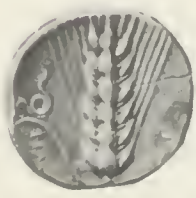
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6.9



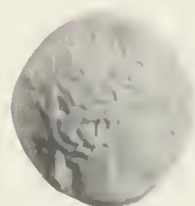
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6.11



6.12



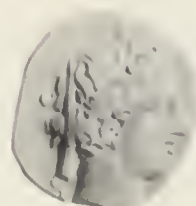
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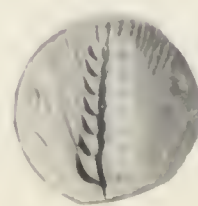
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7.3



7.4





7.5



7.6



7.7



7.8



7.9



7.10



7.11



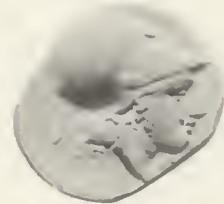
7.12



7.13



7.14



7.15



7.16



7.17



7.18



8.1



8.2



8.3



8.4



8.5



8.6



8.7



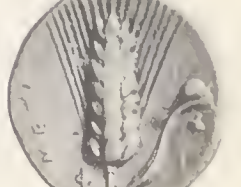
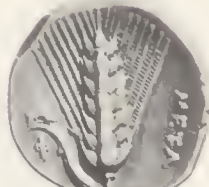
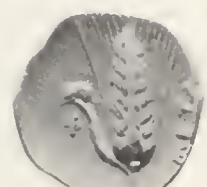
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8.9



8.10





8.11



8.12



8.13



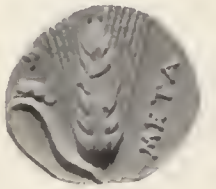
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8.15



8.16



8.17



8.18



8.19



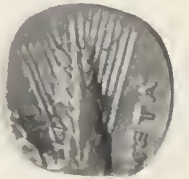
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8.21



8.22



8.23



8.24



8.25



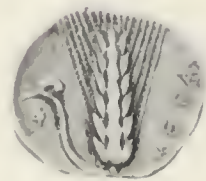
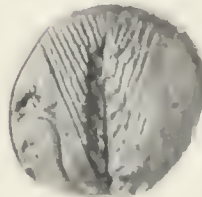
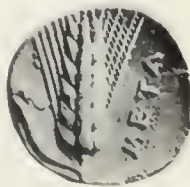
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8.27



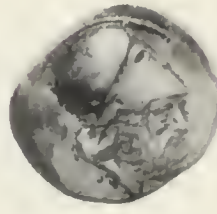
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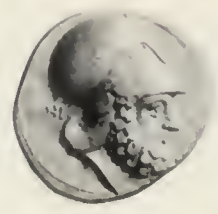
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9.2



9.3



9.4

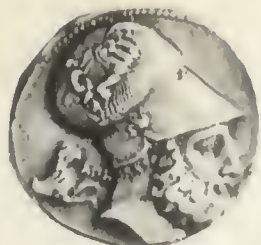


Class A: 8.11-9.4

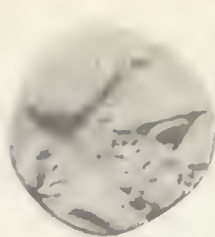
B



1.1



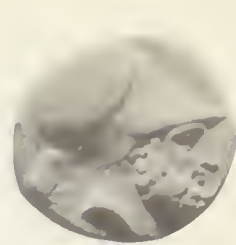
1.2



1.3



1.4



1.5



1.6



1.7



2.1



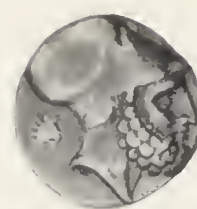
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2.3



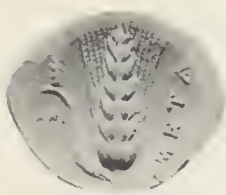
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2.5



2.6



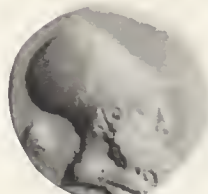
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2.8



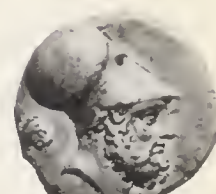
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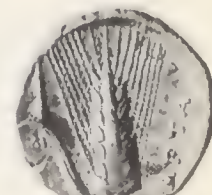
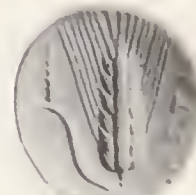
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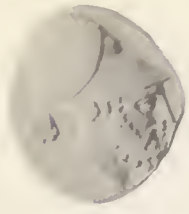


2.11



2.12

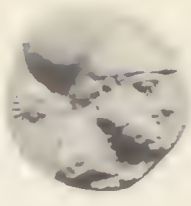




2.13



2.14



2.15



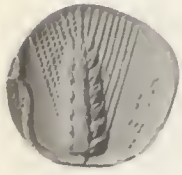
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2.17



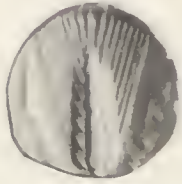
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2.19



2.20



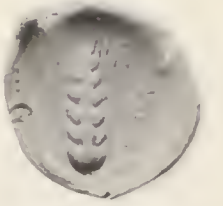
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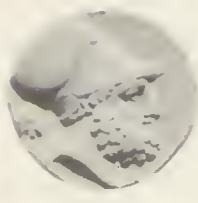
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2.24



2.25



2.26



2.27



2.28



2.29



2.30



2.31



2.32



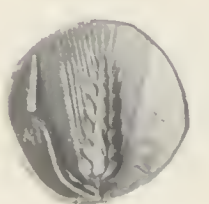
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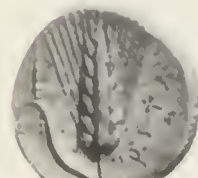
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2.35



2.36

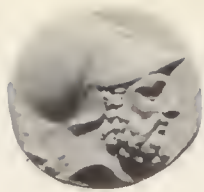




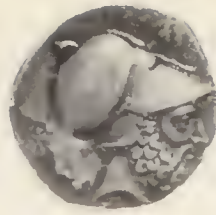
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3.25



3.26



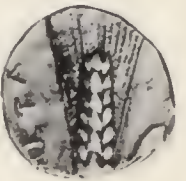
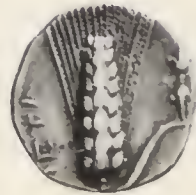
3.27



4.1



4.2



C



4.3



4.4



1.1



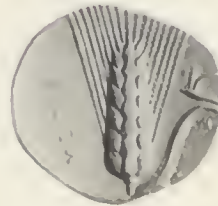
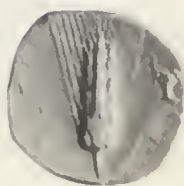
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1.3



1.4



1.5



1.6



1.7



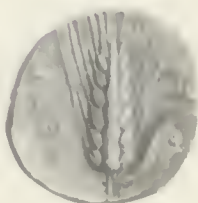
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1.9



1.10



1.11



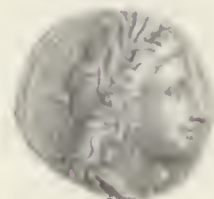
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1.13



1.14



1.15



1.16



Class B: 3.24-4.4; Class C: 1.1-1.16



1.17



1.18



1.19



1.20



1.21



1.22



1.23



1.24



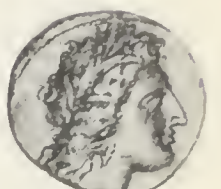
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1.26



1.27



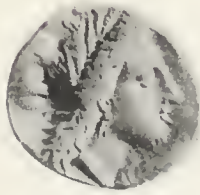
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1.29



1.30



1.31



1.32



1.33



1.34



1.35



1.36



1.37



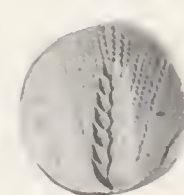
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1.39



1.40



Class C: 1.17-1.40



1.41



1.42



1.43



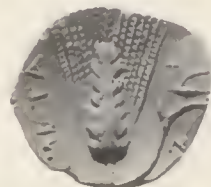
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1.45



1.46



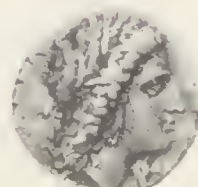
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1.48



1.49



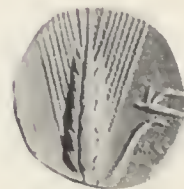
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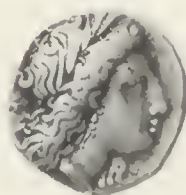
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1.52



1.53



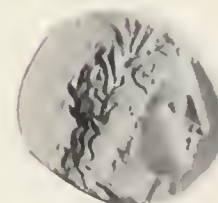
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1.55



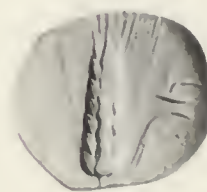
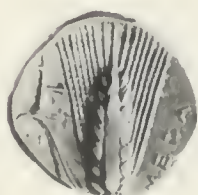
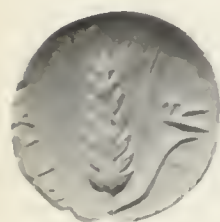
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1.58



1.59



1.60



1.61



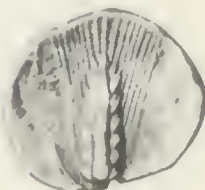
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1.63



1.64



Class C: 1.41-1.64



1.65



1.66



1.67



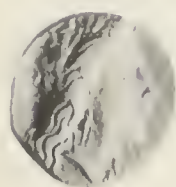
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1.69



1.70



1.71



1.72



2.1



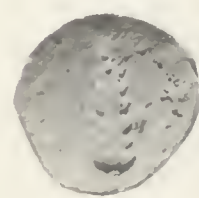
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2.3



2.4



2.5



2.6



2.7



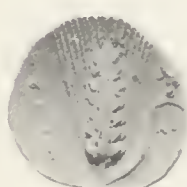
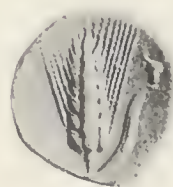
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2.9



3.1



3.2



3.3



4.1



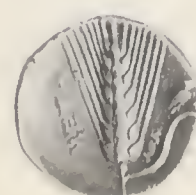
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4.3



4.4





4.5



4.6



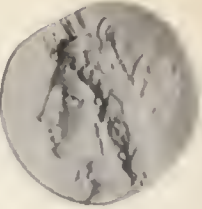
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4.8



4.9



4.10



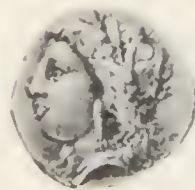
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4.12



4.13



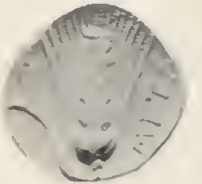
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4.15



4.16



4.17



4.18



4.19



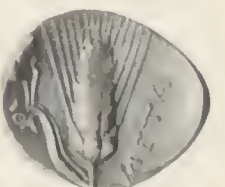
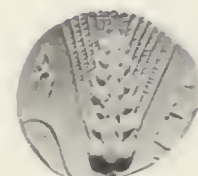
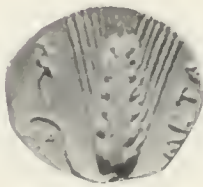
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4.22



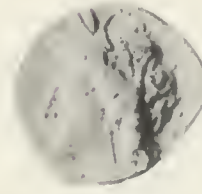
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4.25



4.26



4.27



4.28





5.1



5.2



5.3



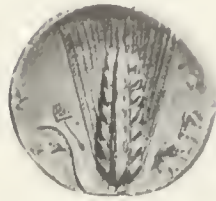
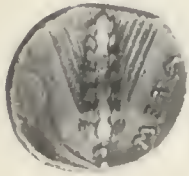
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5.5



5.6



5.7



5.8



5.9



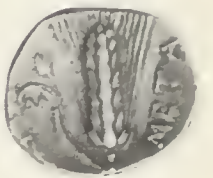
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5.11



5.12



5.13



5.14



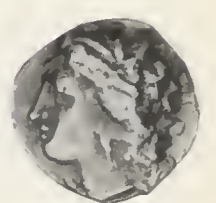
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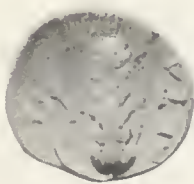
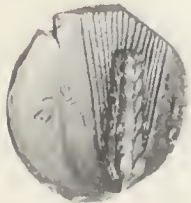
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5.17



5.18



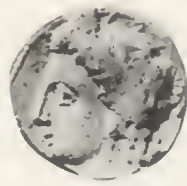
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6.2



6.3



6.4



6.5

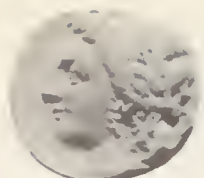


6.6





6.7



6.8



6.9



6.10



6.11



6.12



6.13



6.14



6.15



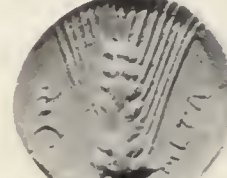
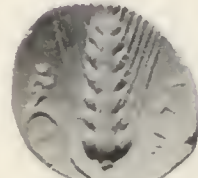
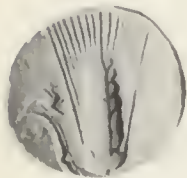
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7.1



7.2



7.3



7.4



7.5



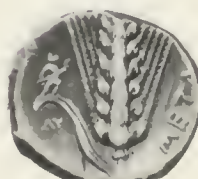
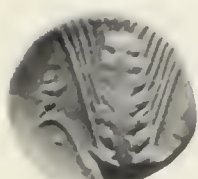
7.6



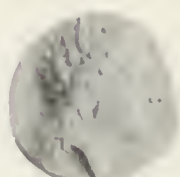
7.7



7.8



7.9



8.1



8.2



8.3



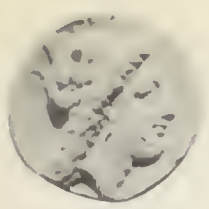
8.4



8.5



Class C: 6.7 8.5



8.6



8.7



8.8



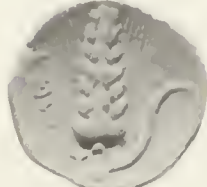
8.9



8.10



8.11



8.12



8.13



8.14



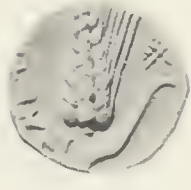
8.15



8.16



8.17



8.18



9.1



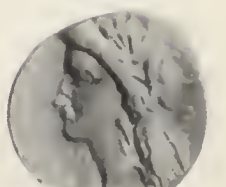
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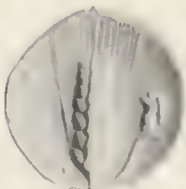
9.3



10.1



10.2



10.3



10.4



11.1



11.2



11.3



11.4





11.5



11.6



11.7



11.8



11.9



11.10



D



11.11



1.1



1.2



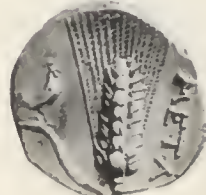
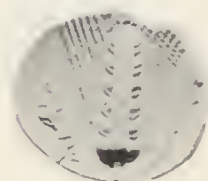
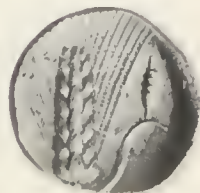
1.3



1.4



2.1



2.2



2.3



2.4



2.5



2.6



2.7



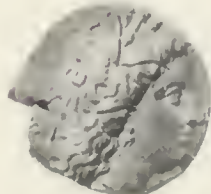
2.8



3.1



3.2



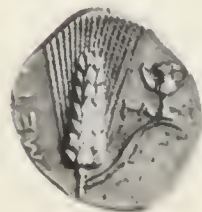
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3.4



3.5





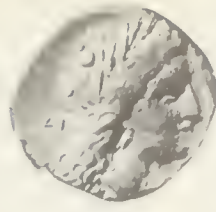
3.6



3.7



3.8



3.9a



3.9b



3.10



3.11



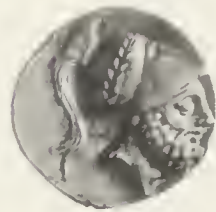
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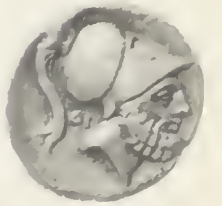
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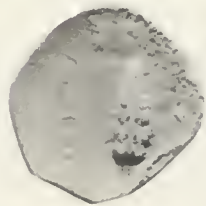
4.3



4.4



4.5



4.6



4.7



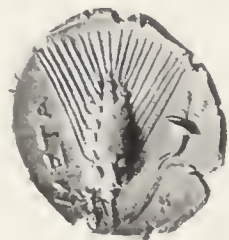
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4.9



4.10



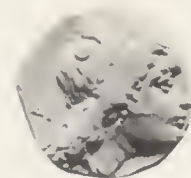
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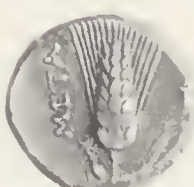
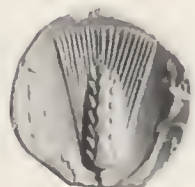
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4.13



4.14





4.15



4.16



4.17



4.18



4.19



5.1



5.2



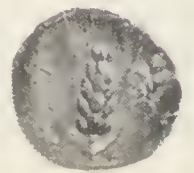
5.3



5.4



5.5



GOLD



1



2



3



4



5.1



5.2



5.3



6a



6b



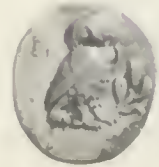
FRACTIONS



1.1



1.2



1.3



Class D: 4.15-5.5; Gold: 1-6b; Fractions: 1.1-1.3



Fractions: 2.1-21c



21d



21e



21f



21g



22.1



22.2



23.1



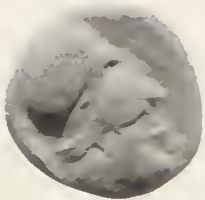
24.1



FORGERIES



1



2



3



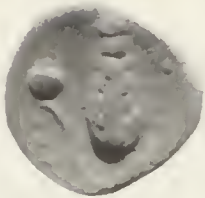
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5



6



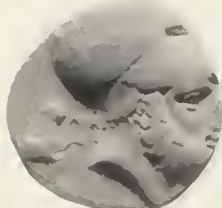
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8



9



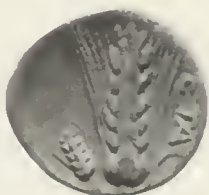
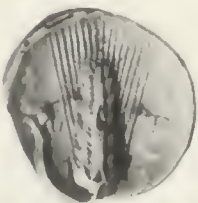
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12



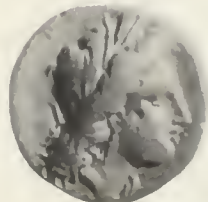
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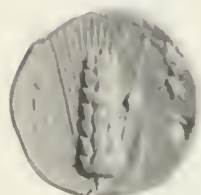
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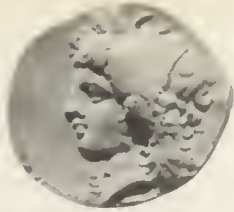


17





18



19



20



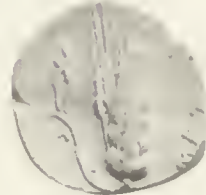
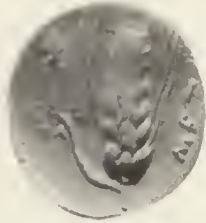
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22



23



24



25



26



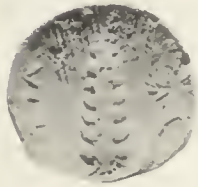
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28



29



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31



32



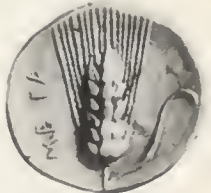
34



35



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41



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