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THE SHOPS OF THE ROMAN MINT OF ALEXANDRIA.

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During the fourth century A.D. the coins issued from the different mints of the Roman empire commonly bore, in addition to the name of the city where the mint was situated, a letter or number indicating the particular shop of the mint in which each coin was struck. In a recent article¹ I made a study of the tetradrachms issued at Alexandria during the first twelve years of the reign of Diocletian—i.e. till the date when the Egyptian currency was assimilated to that of the rest of the empire—to see what evidence could be found as to the existence of marks distinguishing the shops in this series: and I propose now to pass the whole of the Roman tetradrachm issues of Alexandria in brief review for the same purpose.

The bronze coinage will not be taken into account, as it practically ceased about a century earlier than the billon tetradrachms, and was always more irregular in its distribution: and, as the present investigation must depend to some extent on comparison of different periods, the best evidence will clearly be derivable from the fullest and most continuous series.

In the first place, the conclusions of the article already cited may be recapitulated. During three years of the period considered numerals were placed in the exergue of the reverse, to denote the shops, in the same manner as was done on the bronze coinage of the following century: and there appeared reason to suppose that, before the introduction of the numerals, a star in the field of the reverse was used as a shop-mark. The probable organisation of the mint, after the association of Maximian in the government during the second year of Diocletian, was

Years 2 (part)—6. Four shops, two striking for Diocletian, two for Maximian: one of each pair using the star as its mark.

Years 7—8 (part). Two shops, one of Diocletian, one of Maximian: the latter using the star.

Years 8 (part)—10 (part). Four shops, using numeral letters: two (A and Δ) of Diocletian, two (B and Γ) of Maximian.

Years 10 (part)—11. Two shops (?).

Year 12. One shop (?).

In the first year of Diocletian, and in the second till the association of Maximian, no shop-marks are ascertainable.

¹ 'The organisation of the Alexandrian Mint in the reign of Diocletian,' *J.E.A.* vol. iii, pp. 207-217.

It further appeared that the number of shops varied frequently and that the evidence did not show that this variation bore any relation to the total output of the mint : also that the outputs of the different shops were not necessarily equal, but at times one shop was much more active than another.

It might be thought that a simple way of distinguishing the issues of different shops, at a mint where several reverse-types were often in concurrent use, would have been to appropriate special reverse-types to each shop. But this was clearly not the case in the years when the shops were marked by numerals : shops A and Δ of Diocletian have the same reverse-types as a rule, and so have shops B and Γ of Maximian : and, though there is more difference between the reverses of the two emperors, some types are common to all four shops. At other periods a classification of the coinage between shops by reverse-types may be negated by the evidence of the use of different reverse-types with the same obverse-die : for instance, in year 4 of Valerian, when six reverse-types in all were employed—Helios, Homonoia, Nike, Tyche, Sarapis, and eagle—I have noted examples of an obverse-die being associated with different reverses in the following pairs—Homonoia and Nike ; Homonoia and Tyche ; Homonoia and eagle ; Tyche and eagle ; Sarapis and eagle : so that it would be out of the question to suppose that in this year particular reverse-types were appropriated to particular shops. And the constant tendency of the Alexandrian mint was to use fewer distinct reverse-types when the total output was larger : thus, in the busiest year the mint ever had—year 12 of Nero—only two reverse-types were used, while in many years of which the coins are comparatively rare from ten to twenty different reverse-types can be found : so that on general grounds it does not seem that the types of the reverses will give much guidance in discriminating between shop-issues.

We may now proceed to consider the tetradrachms of each reign, and see whether any points of distinction can be found for separating coins of a particular year into two or more series.¹

The tetradrachms of Tiberius are constant in their legend and in their types—the head of Tiberius on the obverse and that of the deified Augustus on the reverse. The earliest issue, of year 7, has both heads to r. : but afterwards the heads of obverse and reverse are in different directions, and, after year 11, in each year when tetradrachms were struck—years 14 and 18 to 23 inclusive—except in year 23, examples occur with the head of Tiberius r. and that of Augustus l. and vice versa : so there were two clearly marked parallel series. In year 21 a lituus is found in the field of the reverse of some

¹ No attempt is made, in rendering the inscriptions on the coins, to represent the true forms of the letters. E and Ω are used throughout for both square and round forms.

coins of both series : this seems a casual introduction, but is of some importance in relation to the issues of Claudius.

There are no Alexandrian tetradrachms of Caligula : under Claudius these coins were struck, in considerable quantity, in years 2 to 6 inclusive. The regular reverse type is Messalina with her children : in year 2 the bust of Antonia is also found. There are two possible clues for division of the issues. The coins with the Messalina-type fall into two classes, according as they have or have not a lituus in the field of the reverse : the class without the lituus is much the commoner in each year. Further, the legend on the obverse ends alternatively –AVTOK or –AVTOKP : this variation is not due to bad spacing on the part of the engravers, as the shorter legend occurs in cases where there is plenty of room for another letter. But the variations of these two distinguishing marks are not consistent : in years 2, 3, and 4, the coins without the lituus on the reverse regularly have the longer obverse legend, which is also that of the coins with the Antonia reverse-type, which never had the lituus : but in year 5 the shorter legend is the only one found, both with and without the lituus on the reverse : and in year 6, though both forms of legend are used, they occur indifferently with and without the lituus. On a few coins of year 4 the lituus is placed, not on the reverse, but on the obverse, behind the head of the emperor : these have the legend –AVTOKP. On the whole, the lituus seems to be the more consistently used of the two distinctions, and is more likely to be a shop-mark : though the practice of the first three years might be held to show that the variation of the legend was an equally important test, and in that case in year 5, when the issue was greatly reduced, the shops were combined and used the same form of legend, while in year 6, when the output increased again, the old combination was not renewed. Statistics from three large hoards (the numbers for which are given separately) will show the comparative size of the two series.

		Rev. without lituus.	Rev. with lituus.	Lituus on obv.
Year 2	.	49 : 24 : 11	8 : 1 : 6	
„ 3	.	81 : 34 : 18	10 : 12 : 3	
„ 4	.	41 : 24 : 8	6 : 3 : 1	11 : 9 : 2
„ 5	.	15 : 7 : 1	6 : 2 : 4	
„ 6	.	121 : 71 : 15	12 : 1 : 4	

A variation in the treatment of the emperor's head on some specimens should also be noted, in view of a similar phenomenon in a later reign. Occasionally one end of the ties of the wreath, instead of hanging straight down, which is the normal position in the Alexandrian portrait of Claudius, is brought forward across the neck. This is, however, very rare, and as the examples which I have

considered. They are drawn from the same three hoards as those cited for Claudius.

Year 9—	with star	. . . . .	8	:	—	:	1
	without star	. . . . .	—	:	—	:	2
Year 10	(A)	. . . . .	7	:	1	:	—
	(B)	. . . . .	167	:	71	:	98
	(C)	. . . . .	145	:	64	:	92
Year 11	(B)	. . . . .	77	:	49	:	68
	(C)	. . . . .	101	:	50	:	49
	(D)	without simpulum	309	:	208	:	110
	(D)	with „	78	:	32	:	18
Year 12	(D)	Alexandria (without simpulum)	582	:	425	:	293
	(D)	Eagle (with simpulum)	30	:	19	:	6
Year 13	(D)	(without simpulum)	64	:	49	:	42

There is such wide variation in the number of coins of each type in any one year that it seems to be adverse to the conclusion that might be drawn from the number of types considered alone—that in year 10 there were three shops, using types (A), (B) and (C) respectively: in year 11 the place of (A) was taken by (D), and this type was shared by two shops, one of which had the simpulum as its distinctive mark: in year 12 the ‘simpulum’ shop continued, but only one other group was struck, the three other shops possibly combining to produce the enormous output of the Alexandria reverse-type: while in year 13 one shop may have still used (D) and others the new obverse-type. This is

(E) ΝΕΡΩΚΛΑΥΚΑΙΣΣΕΒΓΕΡΑΥ Bust l. rad. wearing aegis

which is the main obverse type of year 13 and the only one of year 14, and in both years is associated with a set of reverse-types derived from the Greek oecumenical games—Zeus Olympios, Zeus Nemeios, Poseidon Isthmios, Hera Argeia, Apollo Aktios, and Apollo Pythios: also, in year 13, the heads of Augustus and Tiberius and the imperial galley occur. The issues of year 13 of this series show no differentiating marks: but in year 14 all types are found with and without a star on the reverse, and this star may well be a shop-mark. The specimens of this series in the three hoards used above are:

Year 13	. . . . .	423	:	306	:	222	
„ 14	(without star)	. . . . .	119	:	60	:	70
„ „	(with star)	. . . . .	124	:	66	:	56

so that in year 14 at any rate there seems to have been a fair balance between the issues with and without the star. On the other hand, in year 13 the number of coins with obverse (E) is greatly in excess of

those with obverse (D), though the disproportion is not so extreme as that between the two types of year 12.

The coinage of Galba has been fully described in a previous article,¹ and reference may be made to that for the classification. But the conclusions then reached appear to require modification as regards the subject of the present paper. In the first issue of Galba, which comprises practically all the tetradrachms of year 1, the legend of the obverse ends alternatively -AV or -AVT, examples of all types being about equally common with either ending. I formerly suggested that the variation was due to careless workmanship: but I am now inclined to think that it was intentional, as in the case of the ending of the obverse legend of Claudius, and may have been designed to distinguish the shops. Further, the coins of year 2, after a rare and anomalous group, have a stable obverse legend, but are differentiated by a symbol in the field of the reverse, some bearing a star and others a simpulum. I regarded these symbols as marking distinct issues, of which that with the simpulum was the later: but they might well be shop-marks, a symbol on the reverse being used as a distinction in the second year instead of a variation in the obverse legend as in the first. The numbers of 'star' and 'simpulum' coins found in hoards are about equal.

A few examples of 'simpulum' coins occur in the issues of Otho, under whom the mint continued to use the same five reverse-types as for Galba: but normally his tetradrachms bear no symbol on the reverse, those with a simpulum being only about one in ten. There is no variation in his obverse-legends.

The obverse-legend of Vitellius is also constant, and only one reverse-type—Nike—is used for him. This type is, however, alternatively to right or to left, and, on the analogy of the coins of Tiberius, this variation may be regarded as a shop-mark. The type to l. is much the commoner: on an average seven specimens of it occur for one of the type to r.

The tetradrachms of Vespasian show very little variation. The obverse legend is constant in each year, though altered after year 1: and the reverses have no symbols. The types on the reverse are the same in each of his first three years—standing figures of Eirene, Eleutheria, Nike, Roma, and Alexandria, and the bust of Titus: only the last occurs afterwards, in year 8. The sole possible mark of distinction that I know is in the treatment of the ends of the tie of the wreath on the emperor's head: sometimes both ends hang straight down, sometimes one is brought forward on the neck. An isolated instance of such a variation has been noted in the reign of Claudius: it may be regarded as more important in the issues of Vespasian, especially in year 2, when the output of the mint was

¹ 'The Alexandrian Coinage of Galba,' *N.C.* 1909, p. 274.

largest : a hoard contained, for the first three years respectively, 6, 48, and 4 specimens with one end forward to 1, 26, and 1 with both ends straight.

Coins of Titus are rare, and only of years 2 and 3 : his obverse-legends show no modifications, but in year 3 a star is sometimes found in the field of the reverse. The number of specimens in one hoard was—year 2, 9 ; year 3 (without star) 19, (with star) 3.

The tetradrachms of Domitian are so few¹ that they may be disregarded for the present purpose : the mint was mainly occupied with the issue of bronze coins.

Under Nerva there was a fairly large output of billon ; but there are no marks of differentiation either on obverse or reverse.

No tetradrachms were struck for Trajan till his fifth year : and thereafter, although issues were made in every year except 13 and 17, they were usually very small till year 15. The coins of years 5 and 6 are more numerous than those of any of the next eight years : but on none of them is there anything that could be regarded as a shop-mark. In year 15 the point of breakage of the obverse-legend is occasionally varied : normally it runs AVTTPAIANC EBΓEPMΔAKIK, but about one specimen in thirty has -CE B- : this is probably an accidental variation, and occurs also in year 16. More importance may be attached to the division of the obverse-legend in years 18, 19 and 20 : the commonest form in years 18 and 19 is AVTTPAIANAPI CEBΓEPMΔAKIK, but the break is also made at the points -AN API-, -A PI-, and -CE B- : the numbers of examples of these respectively, in hoards I have examined, are 18, 2, 1, and 5 belonging to year 18, and to year 19 13 of -API CEB- and 1 of -CE B-. The head of the emperor on these coins is laureate, but in year 19 a radiate head is found with the same legend, which is always of the form -API CEB-. Later, in years 19 and 20, the title ΠΑΡ is added to the legend, which is always associated with a radiate head : the breakage-point is (a) -API CEBΓ-, (b) -APIC EBΓ-, (c) -APICE BΓ, (d) -APICEB Γ-, of which the specimens in the hoards cited above were :—in year 19, (a) 5, (b) 2, (c) 5, (d) 1 ; in year 20, (a) 4, (b) 11, (c) 17, (d) 16, together with 3 of a new form, -CEBΓ EP-. This evidence in itself would not be conclusive as to attaching any meaning to the variations, but reason will be shown later for regarding them as possibly indicative of distinct shops. On all the tetradrachms of the last three years there is a star in front of the bust on the obverse : but, as this symbol is invariably present, it cannot be regarded as a shop-mark. There is very occasionally a departure from the normal in the treatment of the ends of the wreath-tie, but too rarely for any significance to be traced.

¹ For the comparative size of the issues of tetradrachms from the mint of Alexandria reference may be made to the tables appended to my paper on

'The Roman Coinage of Alexandria' in *Historical Studies*, ii, *British School of Archaeology in Egypt*, 1911.

For the early coinage of Hadrian reference may be made to a recent article,¹ from which it will be seen that in year 2 there were several forms of obverse-legend employed, each of which showed some variation in the breakage-point: also on some issues there is a star on the obverse. Either or both of these might be regarded as shop-marks; and I should be inclined to treat the former at any rate as such. In year 3 the breakage-point of the obverse-legend is constant; the star still occurs on the obverse, and there seem to be two parallel series, with and without star, using the same reverse-types. Similarly in year 4, when a new obverse-type comes in, two series may be distinguished, the differentiating mark being a crescent on the obverse: in years 5 and 6 however, though the same type is continued, and the issues were fairly large, the crescent is always present, and so ceases to be a differentiation. A fresh mark is found in year 8, when one series still has the crescent, and another a serpent in its place. But after this, from year 9 to year 16, the obverse-type shows no variation, and no symbol occurs: coins of these years are common, but there is no obvious clue for separating the outputs of different shops: the reverse-legend in years 9, 10 and 11 is divided irregularly, but I have not been able to trace any method in the variation. Fresh obverse-types come in in years 17 and 19: it is not till year 20, however, that parallel series can again be distinguished, the differentiation in this case being in the form of the obverse-legend, which is alternatively (A) AVTKAICTPAIAN AΔPIANOCCEB and (B) AVTKAICTPA AΔPIANOCCEB, both occurring with the same reverse-types. In year 21 the latter form is again found, with (C) AVTKAICTPAIA AΔPIANOCCEB as an alternative; and both are used with the head of the emperor either r. or l. A similar variation in the position of the head, with legend (B) only, occurs in year 22. If these series are parallel, however, there is some disproportion between the number issued in each series, according to the statistics derived from five hoards—

Year	20.	Leg. (A)	Head	l.	.	.	20
		„ (B)	„	l.	.	.	106
„	21	„ (B)	„	r.	.	.	55
		„ „	„	l.	.	.	20
		„ (C)	„	r.	.	.	3
		„ „	„	l.	.	.	6
„	22.	„ (B)	„	r.	.	.	48
		„ „	„	l.	.	.	6

The coinage of Antoninus Pius, unlike that of Hadrian, presents a most complicated variety of obverse-types. The portrait of the emperor may be to right or left, a head or a bust, and, in the latter

¹ 'The Alexandrian Coinage of the Early Years of Hadrian,' *N.C.* 1917, p. 31.

case, in front or back view : it is usually laureate, but often in years 2 and 3, and occasionally in years 11 and 12, bare, and in year 23 sometimes radiate : and in most years there are two or more of these varieties used concurrently. The legends are even more confusing in their divisions : in year 2 the full normal legend is AVTKTAIAAΔP ANTΩNINOCEVCEB, which is also used in year 3 : but most coins of year 3 have AVTKTAIAAΔP ANTΩNINOC, and this continues through year 4 into year 5 : then in the course of year 5 a fresh legend appears, ANTΩNINOC CEBEVCEB, and this is used for the rest of the reign. But these legends are arranged in a manner which is particularly curious in the earlier forms : the fixed point is that the name ANTΩNINOC always begins in front of the head or bust of the emperor, and the rest follows with an apparently capricious break : thus such readings as BAVTKTAIAAΔP ANTΩNINOCEVCE or TKTAIAAΔP ANTΩNINOCΔV constantly occur : with the later legend there is not the same unnatural look in such schemes as ANTΩNIN OCCEBEVCEB. To provide further variations, the emperor's name was frequently in years 9 to 11 spelt ANTΩNEINOC, and the form EVCCB occurs for EVCEB : mistakes and retrograde legends are also numerous. In view of all these facts, it seems hopeless at present to trace any shop distinctions in the tangle of obverse-types of Antoninus Pius : the subordinate issues of Marcus Aurelius as Caesar are almost equally confused, although the types of Faustina II under Antoninus are fairly stable.

For the same reasons the coinage of Aurelius and Verus cannot be satisfactorily classified : though one of the elements of complication found under Antoninus is not present, as the legends, normally MAVPHAIIOC ANTΩNINOCCEB and ΔAVPHAIIOC OVHPOCCEB, are almost invariably divided naturally, there is a tendency with the titles of both emperors to drop one, two or three letters at the end of each half of the legend, thus giving such forms as -AVPHAIO, -AVPHAI, or -AVPHA, and -OCCE, -OCC, or -OC : and both are represented by a head or a bust, in front or back view, to right or to left, laureate or bare-headed.

After year 10 of Aurelius, there was a gap of ten years in the billon issues of the Alexandrian mint, except for a few coins struck in year 17 : and when it recommenced the production of tetradrachms in year 21 of Commodus, it seems to have recovered its stability to some extent. The portrait of the emperor is regularly a laureate head to right, and the only variation in the obverse is in the spelling of the legends. In 21 to 23 the normal form is MAVPHKOMM ANTΩNINOCCE but this is modified by the substitution of -AVP- for -AVPH-, -KOMMO or -KOM for -KOMM, and -OCC or OC for -OCCE : and as two or more of these alternatives may come on the same coin, there is a considerable range of possible readings : I have noted eleven. In year 24 the legend is changed to

MAKOMANTΩ CEBEVCEB, which is only varied by -KO- for -KOM- in years 24 and 25, and -EVCEBHC for -EVCEB in year 26¹: thereafter it is constant till year 31, when a new style is adopted of AAIAAVPKOM CEEVCEEVTV, the second half also appearing as EVCECEEVTV.

The very rare Alexandrian issues of Pertinax and Pescennius Niger do not furnish any evidence for our purpose: and there is not much to be derived from those of Septimius Severus, whose tetradrachms are also uncommon except in years 2 to 6. The legend of years 2 and 3 is AVTKACEΠTCEOV HPOCΠEPTCEB, which is varied by being broken -CEO VHP- or -CE OVHP-: in year 4 it is AVTKACEΠCEVHEV CEΠEPTCEBAPAAΔI, and this also shows variety in the breakage-point, -EVCE ΠEPT- occurring. There are a fair number of coins of Domna of years 2 to 6, but on these the legend is constant. After year 6 the issues of Severus and Domna, and likewise those of Caracalla, Geta, and Macrinus, are too sporadic and rare to be of any use here.

With the accession of Elagabalus billon coinage begins to be plentiful again. In the obverse-types of the emperor himself there is little variation: the legend is normally AKAIAPMAAVP ANTΩNINOC EVCEB, the last word being under the head, but in year 1 the break at the bottom is sometimes -EV CEB or -EVC EB, and in year 2 -E VCEB occurs as well as these two varieties: after this the legend is constant, though in year 5 the portrait is a bust instead of a head: there is also some change in the treatment of the ends of the wreath-tie, both of which at first hang down, but in year 2 one is occasionally curled upwards: in year 3 one is brought forward sometimes, and this is the regular arrangement in year 4: the two schemes are about equally common in year 5. The subordinate coinage of Julia Paula (years 3 and 4), Aquilia Severa (years 4 and 5), Annia Faustina (year 5), Julia Soaemias (years 4 and 5) and Alexander Caesar (year 5) have no variations at all in their obverses. But that of Julia Maesa is different in this respect: in year 2 the legend is, like that of Elagabalus in the same year, variable, and has two main forms: one, IOVAIA MAICACEB, is stable, but the other, normally IOVMAICA CEBMHCTPA, sometimes reads IOVA- for IOV-, CE- for CEB-, or -MHT- for -MH-: in year 3 the regular legend is IOVAMAICA CEBMHTCTPA, with the variant -MH-: the same continues in year 4: and in year 5 it becomes IOVAMAICACEBMHTCTPA or -CEBAMHCTPA. It is difficult to trace any significance in these changes: and the exact relation of the subordinate coinage to those of the emperor is not clear: it may be noted that the reverse types of Maesa in year 2 are distinct from those of Elagabalus, and in year 3 several reverse-types are shared by Maesa and Paula which do not occur on coins

¹ I omit obvious engraver's blunders, which are rather frequent in this reign.

of Elagabalus : but in years 4 and 5 the same reverse-types are used for all members of the imperial house. The output in the names of Maesa and Paula in the years when they had their own reverses was comparatively larger than that for any of the other subordinate issues, except that for Alexander Caesar, as will be seen from the following list of specimens in four hoards.

	Year 2.	Year 3.	Year 4.	Year 5.
Elagabalus . . .	46	52	96	30
J. Paula . . .	—	14	1	—
A. Severa . . .	—	—	1	3
A. Faustina . . .	—	—	—	6
J. Soaemias . . .	—	—	0	0
J. Maesa . . .	10	12	0	0
Alexander Caes. . .	—	—	—	29

The series of Severus Alexander begins with some very stable types. The legend on the obverse in year 1 is AKAIMAPAVP-CEVHPAAEΞANΔPOCEVCEB, running round usually without a break, but occasionally interrupted -OC EVCEB, the last word being under the bust : the latter form of the legend is the normal one in year 2 : in year 3 a second break is introduced above the head at the point -VHP AA-. The portrait is throughout a bust to right, but is varied each year, becoming older in appearance : this annual modification continues into year 4. In years 3 and 4 the breakage point above the head is sometimes -VH PAA- or -V HPAA- : and -AV- occurs in place of -AVP-. The original form of legend without a break is also used in year 4, with a smaller bust, the lettering being so arranged that no part is below the bust : this continues into year 5. A very similar bust is found in years 5 and 6, with the legend AKAIMAAVPCEVAEΞANΔPOCEV : but this legend, unlike the previous one, shows many variations, in the use of -KA- for -KAI-, -MAP- for -MA-, -AV- for -AVP-, and the endings -OC, -OCE, -OCEVC, -OCEVCE, or -OCEVCEB, besides some obvious blunders : there are at least 19 different forms. In year 5 also an obverse-type of very distinct style, with the legend AKAIMAVPCEOVHPAAEΞANΔPOCEVCEB, was introduced, and used during years 6 and 7 : I have discussed this elsewhere,¹ and it may certainly be regarded as representing a break in the traditions of the mint and belonging to a special set of workmen and probably to a separate shop. In year 7 what may be called the ordinary series has the bust in front view, that of all previous years being in back view : the legend is AKAIMAPAVCEVAEΞANΔPOCEV, with variants of -MA- for -MAP-, -AVP- for -AV-, and -OC or -OCEVC for -OCEV : this type covers also years 8 and 9. The disposition of the bust in the type of year 10 which is used till year 13 returns to that of the earliest series : the legend is AKAIMAPAVPCEV

¹ 'Some Alexandrian Coins,' *J.E.A.* 1917, p. 178.

ΑΛΕΞΑΝΔΡΟCEV, with common variations in the termination as -OC, -OCE, and -OCEVC: there are also rarer instances of -KA- for -KAI-, -MA- for -MAP-, and -AV- for -AVP-, and occasional misspellings. The legend is the same, with the same variations (except -OCEVC) in the termination, in year 14, when the bust is again turned to the front. The subordinate issues of Orbiania are unimportant: but those of Mamaea show an interesting parallelism with her son's. Her types are at first stable: in year 3 the legend is IOVMAMAIAN MHTCTPCEB, in year 4 IOVMAMAIAN CEBMHTCTPA, the N being occasionally omitted in the latter year: in year 5 there are, as in the case of Alexander, two issues, one with the legend IOVAIMAMEACEBMHTCTPA, and another with IOVAIMAMHACEMHTCTPA: in year 7 the legend becomes IOVMAMEA C E B A MHTCTP: then, after one or two apparently exceptional types, in year 10 a fresh series begins with the legend IOVMAMAIACEB MHTECEBKCTPA, which, like the contemporary series of Alexander, has regular variations in the termination of -CT or -CTP, besides such forms as MHT- for MHTE-, -CB- for -CEB-, and -CEK- for -CEBK-, with more obvious misspellings. This series goes on to year 13, and in year 14 the same legend is used but without a break. The blunders in the legends are so numerous that any conclusions drawn from the variants can only be accepted with hesitation: but the parallel treatment of the terminations in the legends of Alexander and Mamaea from year 10 onwards seems significant.

The issues of Maximinus and his son are more easily classified. The obverse legend of the emperor in years 1 and 2 is AVTOMAEI-MINOCEVCCEB: in years 3 and 4 the form -EVCEB is also used, both forms being associated with the same reverse-types and about equally numerous. The coinage of Maximus Caesar begins in year 2, with the legend ΓΙΟΒΛΟVHPMAEIMOCKAI: in year 3 there is also a second form, with the spelling -OHP- for -OVHP-: in year 4 a variant is produced by the ending -KA for -KAI. The simultaneous introduction of alternative legends both for father and son is important.

The Alexandrian coins of Gordian I are fairly common, and have a legend with a variant termination, AKMANΓOPΔIANOCCEMAΦP-EVCEB or -EVCE being found in much the same proportion of specimens and with the same types on the reverse. The issues of Gordian II, Balbinus, and Pupienus are too rare to furnish any evidence: but those of Gordian III as Caesar are commoner, and also show alternative terminations of the legend, which runs MANTΓOPΔIANOCKAIC or -KAICA.

The tetradrachms of Gordian III as Emperor fall into two groups. The first runs from year 2 to year 5, and the obverse legend is AKMANΓOPΔIANOCEVC or -EVC, very rarely -EVCEB: the portrait is a bust to right, in back view on one of the series of year 2,

in front view on the other and on those of the next three years. In year 5 the legend is changed to AKMANTΓOPΔIANOCEVC or -EV: in years 6 and 7 the termination is always -EV, but the legend is broken in most cases at the points -Γ OPA- or -ΓO PA-, rarely -ΓOP Δ-: the unbroken form occurs frequently in year 6, but rarely in year 7. These facts suggest that the variation in the break of the legend was intended to serve the same purpose on the later coins as the variation in the termination: the number of specimens of the different types found in two hoards will illustrate the point.

	Year	2.	3.	4.	5.	6.	7.
AKMANΓOPΔIANOCEVCEB	.	1	—	—	—	—	—
— EVCE	.	18	28	20	—	—	—
— EVC	.	4	8	27	9	—	—
AKMANTΓOPΔIANOCEVC	.	—	—	—	3	—	—
— EV	.	—	—	—	34	26	5
— Γ OPA —	.	—	—	—	—	11	20
— ΓO PA —	.	—	—	—	—	16	33
— ΓOP Δ —	.	—	—	—	—	—	2

The coins of Tranquillina show less variation: they belong to years 5, 6, and 7, and usually have the legend CABTPANKVΛΛEINACEB, sometimes broken -NK VA- or -NKV Λ- in year 6, and ending -CE on one or two examples of year 5.

The foregoing classification of the issues of Gordian III into two groups is borne out by the evidence derived from those of Philip I. Here the first group, covering years 1 to 3, has a legend differentiated in the same manner as on the later coins of Gordian by changes in the breakage-point: the forms are AKMIOVΦIΛIΠΠOCEVCEB, unbroken, or broken -Φ IΛIΠΠ-, -ΦI ΛIΠΠ-, -ΦIΛ IΠΠ-, or -ΦIΛI ΠΠ-: very rarely the legend ends -EVCEVCEB. In the second group, covering years 4 to 7, the differentiation of the legend, which is always unbroken, is by the termination, varying between AKMIOVΦIΛIΠΠOCEVCEB, -EVCE, -EVC, -EV, and -E. The following statistics are drawn from the same two hoards as in the figures for Gordian:—

	Year	1.	2.	3.	4.	5.	6.	7.
AKMIOVΦIΛIΠΠOCEVCEB	.	8	88	48	—	—	—	—
— ΦIΛI Π —	.	5	—	—	—	—	—	—
— ΦIΛ IΠ —	.	24	5	3	—	—	—	—
— ΦI ΛIΠ —	.	18	16	23	—	—	—	—
— Φ IΛIΠ —	.	—	5	3	—	—	—	—
AKMIOVΦIΛIΠΠOCEVCEB	.	—	—	—	8	—	—	—
— EVCE	.	—	—	—	22	—	4	1
— EVC	.	—	—	—	49	31	32	—
— EV	.	—	—	—	10	38	34	—
— E	.	—	—	—	—	24	18	—

The legends on the coins of Otacilia Severa follow the same scheme as those of her husband. In years 2 and 3 the normal form is

ΜΩΤΣΕΟΒΗΡΑϸΕΜΣΤΡΑ, sometimes varied by a break -OVH PA- : in years 4 to 7 the variation is in the termination, the first form, in years 4 and 5, being ΜΩΤΣΕΟΒΗΡΑϸΕΜΣΤΡΑ, -CTP, -CT, or -C̄, followed in years 5, 6 and 7 by ΜΩΤΣΕΟΒΗΡΑϸΕΜΣΕΒ or -CE. The first group of the issues of Philip II as Caesar, in years 2 and 3, shows no variation in the legend, which is ΜΙΟΒΦΙΛΙΠΠΟΚΣΕΒ : but in year 4 variation by termination begins, as in the cases of his father and mother, the alternatives being -KCEB, -KCE, and -KC : after his elevation as Augustus, his legend runs ΑΚΜΙΟΒΦΙΛΙΠΠΟΕΒΣΕ, -EVC, -EV, or -E. It is clear that the mint officials were following a definite scheme in the use of modified forms of the obverse legends in this reign.

A similar practice was adopted under Decius : in his first year three forms of legends occur regularly in association with all reverse-types, viz. :—ΑΚΓΜΚΤΡΑΙΑΝΟCΔΕΚΙΟΕΒ, -OCE, or -OC ; and in his second two, viz. :—ΑΚΓΜΚΤΡΑΙΑΝΟCΔΕΚΙΟΕ or -OC. A few coins of year 1 have the alternative legend ΑΚΓΜΚΔΕΚΙ ΟCΤΡΑΙΑΝΟΕΒ, or -ΔΕΚΙΟ C- : the ending -OCĒ is also found : but this series is rare, and its relation to the ordinary one cannot be definitely fixed. The legend of Etruscilla is similarly varied by termination, ΕΡΚΟΒΙΑΙΤΡΟΒΣΚΙΑΛΛΑΣΕΒ or -CE : so is that of Herennius Etruscus, ΚΕΡΕΕΤΡΜΕCΔΕΚΙΟΚΑΙϸΑ or ΚΑΙϸ : there seems to be no differentiation in the legends of Hostilian.

There is an interval of a year in the issue of tetradrachms at Alexandria between the second year of Decius and the third of Trebonianus Gallus, no coins of year 2 of Gallus being known. This is the only year in the period 216 to 296 in which the mint appears to have been absolutely idle.

[The opportunity may be taken to correct an error in the tables appended to my paper on the Roman coinage of Alexandria quoted above. Accepting the old chronology, which supposed the reign of Decius to have continued into a third Alexandrian year, I took A.D. 251-2 to represent Decius 3 and Gallus 1 : 252-3, Gallus 2 and Aemilian 1 : 253-4, Gallus 3, Aemilian 2, and Valerian 1 : and, as there are no coins of Decius 3, Gallus 1 or 2, or Aemilian 1, this left a gap of two years in the series. It is fairly certain that Decius fell in the early summer of 251, and Gallus probably disappeared from Alexandrian datings in August 253, the recognition of Aemilian at Alexandria being for a few days in August (year 1) and most of September (year 2) of 253. His only Alexandrian coins are of year 2. The tables should therefore show, as regnal years, Decius 2, Gallus 1 = 250-1 : Gallus 2 = 251-2 : Gallus 3, Aemilian 1 = 252-3 : Aemilian 2, Valerian 1 = 253-4 : and the entries for the two latter years in columns VI-XIII should be—

	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.
252-3 .	I	2	4	13	12	7	43	3
253-4 .	—	—	I	12	2	8	21	2]

When the coinage was resumed in year 3 of Gallus, his obverse-types and legends and those of Volusian show no variations. The same is the case in regard to the coins struck for Aemilian.

There is also no variation in the obverses of Valerian and his family : the early coinage, in fact, during the first eight years, when the mint was striking in the names of Valerian, Gallienus, Salonina, Valerian the younger, and Saloninus, is exceptionally homogeneous, as I have pointed out in a recent article,¹ and there do not appear to be any marks of differentiation which would serve to classify the coins under shops. It might be suggested that separate shops struck for the several members of the imperial house, as was probably the case for Diocletian and Maximian ; but the sets of reverse-types used for Diocletian and Maximian respectively show numerous differences in each year, while those of the family of Valerian are identical throughout, which is rather against the analogy : and I have noted one instance of the use of the same reverse-die with obverses of Gallienus and Valerian the younger. [Instances of the use of a reverse-die with different obverses are naturally much rarer than those of an obverse-die with different reverses, as the Alexandrian mint used up about eight reverse-dies to one obverse-die (see *N.C.* 1910, p. 338).] The latter fact might be explained by the supposition that one shop struck for Valerian and another for Gallienus, Salonina, and the Caesars ; but this, though not at variance with the statistics as to the proportionate issues in the different names given in the article mentioned above, is rather a wide excursion into conjecture. An alternative suggestion for classification into separate shop-issues, which will come up again in a later reign, is by reverse-types : but that is practically negatived here by the evidence of the use of different reverse-types with the same obverse-die, an instance of which in year 4 has already been given. After the break in the issues of Gallienus caused by the rebellion of Macrianus and Quietus (whose Alexandrian coinage is closely related to that of the preceding eight years), the homogeneity previously noted disappears, and there would be more justification for assuming, when coinage in the name of Salonina was resumed in year 11, that her coins were struck at a separate shop from those of her husband, as distinct reverse-types for emperor and empress are almost invariably adopted : and the issues for each, if an average of one year with another is taken, are about equal. But there are no further marks of differentiation as between coins of the same year, except in those of Gallienus of years 9 and 10 : and the special circumstances of these years are discussed in my former article.

The short reign of Claudius furnishes some evidence of rather interesting character. It extended over parts of three Alexandrian

¹ 'The Alexandrian Coinage of the Eighth Year of Gallienus,' *Ancient Egypt*, 1917, pt. iv.

years, beginning about March 268 and ending about March 270. During this period three obverse-types are found :—

- (A) AVTKKAA VΔIOCCEB Bust r. laur. in back view (year 1).
 (B) AVTKKAAV ΔIOCCEB do. (years 1, 2, and 3).
 (C) AVTKKAA VΔIOCCEB Bust r. laur. in front view (year 2).

There are marked differences in the portraiture of the emperor. In year 1 the work is very rough, in both (A) and (B), and the artists seem to have had very little idea of the model they were supposed to follow : in A the head has usually a dishevelled appearance, while the most characteristic feature of (B) is a curious sharp-pointed nose. In year 2 the work improves : the artistic successor of (A) is (C), which has a portrait conceived on the same general lines, though with the position of the bust changed, and of better execution : while (B) shows a progressive development, especially in the matter of nose : a few coins have the pointed nose of year 1, but on most the nose is strongly aquiline. In year 3, when (B) is the only type used, the style is the more developed one of year 2. The difference in portraiture coincides with a general difference in reverse-types. The combinations are :—

Year 1. *Obv. A.* Rev. :—bust of Helios : bust of Selene : Elpis l. : Nike r. with shield : Tyche reclining l. : eagle r. looking back.

Obv. B. Rev. :—Poseidon l. : Ares l. : Hermes l. : Homonoia l. : Nike r. : Horus and child : eagle r. looking back.

Year 2. *Obv. B.* Rev. :—Poseidon l. : Ares l. : Hermes l. : Elpis l. : Homonoia l. : Nike r. : Horus and child : eagle r. looking back : eagle r. palm across.

Obv. C. Rev. :—Dikaiosyne seated l. : Nike l. : bust of Hermanubis r. : jugate busts of Nilus and Euthenia r. : bust of Alexandria r. : eagle l. looking back.

Year 3. *Obv. B.* Rev. :—Athene l. : Nike r. : Tyche l. : eagle r. looking back : eagle r. palm across.

It will be seen that A and B have in year 1 only the eagle reverse in common, and in year 2 Elpis, found with A in year 1, is used with B : while the only type which occurs on both B and C is Nike r. and this is differentiated in the pose of the figure and arrangement of the date : in the type associated with B, Nike has her right foot advanced, and the date is divided L B to left and right, while in that with C the left foot is advanced and the date is 1^B on the right. The reverses of B carry on from the fifteenth year of Gallienus, and are noticeable as including some unusual types revived or introduced in that year—Poseidon, Hermes, and Horus¹ : those of A are more the regular stock of the Alexandrian mint : while C has no reverses

¹ See 'The Alexandrian Coinage of the Eighth Year of Gallienus,' v.s. § 28.

inherited from A, but uses a number of familiar ones. On grounds of style and reverse-types, as well as of division of legend, there would appear to be considerable reason for regarding the coinage of Claudius as falling into two groups, one with obverses A and C, the other with obverse B. There is, however, a lack of balance in the comparative numbers of examples in the two groups: the specimens in a large hoard were—

Year	1	.	A	477	.	B	9
„	2	.	C	1048	.	B	747
„	3	.	—		.	B	636

If the groups are the outputs of distinct shops, that using B must have been almost idle during the first five months of the reign of Claudius, although its coins are more closely related in style to the latest issues of Gallienus than those of the other group: incidentally it may be noted that it used a greater variety of reverse-types than are found with A. On the other hand, it monopolized the coinage of the seven months of year 3. On the whole, however, I incline to think that the disproportion in output does not outweigh the considerations stated in favour of the hypothesis that there were two shops at work, differentiating their issues as shown above. The Alexandrian mint as a whole varied its activity from year to year, with sudden rises and falls of output: and its shops may well have had similar vicissitudes at different times, first one and then another furnishing a larger proportion or the whole of the new currency.

The coins struck for Quintillus follow closely on those of the third year of Claudius in respect of types and style, and offer no further evidence.

The joint issues of Aurelian and Vaballathus may conveniently be considered before those of Aurelian alone, most of which they precede in date. The association of the two rulers on Egyptian coinage lasted during parts of two years, the first and second of Aurelian and the fourth and fifth of Vaballathus. In each of these two years the tetradrachms fall into two distinct groups, the legends being

- A. Obv. :—AVTKΛΔAVPHΛIANOCCEB
 Rev. :—IACOVABAAAΛAΘOCAΘHNOVAVTCPΩ
- B. Obv. :—AKΛΔOMAVPHΛIANOCCEB
 Rev. :—IACOVABAAAΛAΘOCAΘHNVACP

In A the bust of Vaballathus is varied, being in front view in the first year, in back in the second: otherwise there is no change in the scheme of the portraiture as between the two years or groups. There is, however, some difference in execution, the work in B on both obverse and reverse being nearly always markedly better than in A, which sometimes has an almost barbarous head: it may be said that from an artistic point of view A is the successor of types A and

C, and B of type B, of Claudius. Coins of the two groups were issued plentifully in both years, the examples of A being rather more numerous. Two hoards give the following figures:—

	Group A.		Group B.	
Year 1=4	60	56	40	26
„ 2=5	92	102	62	68

The legend of Aurelian of group B is the only one found on the few coins struck for him alone in year 1, presumably before the agreement with Vaballathus¹: but on the rarer issues of year 2 after the defeat of Vaballathus the legends of both A and B forms occur, with about equal frequency: and similarly in year 3 there are the two varieties, A being rather commoner. But in year 4 B becomes the predominant form, and in many examples (though hardly ever with any reverse-type except an eagle one) there is a star in the field of the reverse, which does not occur with A. Hardly any instances of A are found in year 5: but the specimens of B with and without star on the reverse are alike common. (It may be noted that the bust of the emperor is turned to back view with legend A in years 4 and 5: in the earlier years it is in front view, with paludamentum across chest. The bust with legend B is similar to the latter in year 1 and the joint coins of year 2: afterwards the paludamentum is thrown back to display the cuirass). In years 6 and 7 B is the only form found, and the use of the star disappears: but coins are struck in the name of Severina, with the same reverse-types as those of her husband. In year 5 there is a marked improvement in the execution of the coinage: at the same time in the dates on the reverses the symbol L is replaced by the word ETOVC, which continues to be used for the two following years. It would appear that there were two forms of obverse-type in concurrent use during the greater part of the reign: and further, at a time when one form was predominant, a distinctive mark was added on the reverse of some coins. But the statistics from a large hoard show very little balance between the various forms.

Year	AURELIAN.			SEVERINA.
	Leg. A.	Leg. B.	Leg. B (with star).	
1	—	28	—	—
„ 2	9	3	—	—
„ 3	21	13	—	—
„ 4	29	11	43	—
„ 5	8	93	73	—
„ 6	—	197	—	30
„ 7	—	12	—	18

The short reign of Tacitus is chiefly of interest from a numismatic point of view as a link between those of Aurelian and Probus. In general style and scheme, including the use of ETOVC on the reverse,

¹ For the sequence of the issues of Aurelian and Vaballathus, see *Some Alexandrian Coins*, p. 184.

his coins carry on the tradition of the later years of his predecessor. The legend on the obverse as a rule is not broken, or divided—TAKI TOC—: a few specimens—about five per cent.—have a stop after KA—: but it is doubtful whether any distinction of issues could be based on these variations. In the choice of reverse-types, also, the limited field of the ETOVC coins of Aurelian is barely overstepped: there are six types of year 7 of Aurelian known, all of which are found either in year 5 or year 6 as well, and three in both: these six are also used under Tacitus, with one addition—the eagle r. looking back. But, in view of what will be said below, it is important to note that the bulk of the specimens belong to four of these types, and these four are the only ones known in the first year of Probus, and comprise practically the whole of the issues of his second. In a large hoard (the same as that cited above for Aurelian) the number of examples of each of the seven reverse-types of Tacitus was:—Athene (A.) 2; Dikaiosyne (A.P.) 46; Elpis (A.P.) 42; Nike (A.) 2; eagle r. looking back (P.) 41; eagle l. looking back (A.P.) 37; eagle r. palm across (A.) 2. (The letters A. and P. are added to show whether the types occur also in the seventh year of Aurelian and the first of Probus.) From these figures it would appear that in the matter of preference for reverse-types the connexion was stronger between the usages of the mint in the reigns of Tacitus and Probus than between those under Aurelian and Tacitus.

The coins of Probus show the same uniformity of style as those of the later years of Aurelian and of Tacitus: there is not an inferior and a superior group, artistically, as was the case a few years previously. But it is possible that a clue to a distinction of issues may be found in the division of the legend of the obverse, as in the reigns of Gordian III and Philip. The break of the legend over the head is normally either (a) -IIP OBOC- or (b) -IIPO BOC-, rarely (c) -II POBOC-: when the spacing of the letters hardly amounts to a break, the point of the wreath may be taken as indicating the division. There is a marked tendency for these varieties of legend to be associated with particular reverse-types: as an illustration of this the number of coins of various reverse-types which occurred with the different legends in the hoard already quoted for Aurelian and Tacitus may be given.

	Rev. type.	Obv. leg. (a)	(b)	(c)
Year 1	Dikaiosyne standing l.	—	3	—
	Elpis standing l.	7	2	—
	Eagle r. looking back	2	1	—
	Eagle l. looking back	—	11	—
,, 2	Dikaiosyne standing l.	9	88	1
	Elpis standing l.	86	17	1
	Nike advancing r.	2	—	—
	Eagle r. looking back	98	18	—
	Eagle l. looking back	9	135	1

	Rev. type.	Obv. leg. (a)	(b)	(c)
Year 3	Eirene standing l. . . .	84	40	2
	Tyche standing l. . . .	34	125	—
	Eagle r. palm across . . .	144	32	—
	Eagle l. looking back, wings open	31	134	—
„ 4	Athene seated l. . . .	7	11	—
	Eirene standing l. . . .	109	2	1
	Nike advancing r. . . .	23	—	—
	Tyche standing l. . . .	14	83	—
	Eagle r. palm across — . . .	204	10	—
	Eagle l. looking back, wings open	34	167	—
„ 5	Dikaiosyne seated l. . . .	1	—	—
	Homonoia standing l. . . .	4	41	1
	Nike advancing r. . . .	75	8	—
	Bust of Sarapis r. . . .	—	1	—
	Eagle r. looking back . . .	94	9	—
	Eagle l. looking back . . .	11	110	—
„ 6	Athene seated l. . . .	69	4	8
	Homonoia seated l. . . .	3	41	—
	Nike advancing r. . . .	7	2	—
	Eagle r. wings open . . .	240	14	20
	Eagle l. looking back . . .	25	182	2
	Homonoia seated l. . . .	4	—	2
„ 7	Nike advancing r. . . .	1	2	1
	Eagle r. wings open . . .	257	115	35
	Eagle l. looking back . . .	40	295	—
	Homonoia seated l. . . .	2	—	—
„ 8	Eagle r. wings open . . .	74	4	—
	Eagle l. looking back . . .	11	29	1

It will be seen that on the whole there is a fairly even balance between the issues with (a) and with (b): but that, especially in the earlier years, these are not distributed equally between the types: (a) is normally associated with the eagle to r. and in years 1 and 2 with Elpis, in years 3 and 4 with Eirene, in year 5 with Nike, and in year 6 with Athene: similarly (b) is found throughout with the eagle to l. and in the years corresponding to those above-mentioned with Dikaiosyne, Tyche, Homonoia standing, and Homonoia seated respectively. But there are a good many exceptions: and, if the break in the legend were the distinguishing mark of the shop, the occurrence of occasional examples of (c) is a further complication in assorting the issues: in most years there are hardly enough to justify this variation in being regarded as denoting a separate shop, yet, if the breakage-point were not strictly observed, its value as a distinguishing mark would be small. An alternative classification into shop-outputs by reverse-types may be worth consideration, in spite of the arguments against the general use of this test put forward at the beginning of this article: it is noteworthy

that in each year, till 7 and 8, the bulk of the specimens belong to four types, as in the reign of Tacitus, and that the four types always comprise two personifications and two varieties of eagle: the preponderance of eagles gradually increases, till in years 7 and 8 they supply practically the whole of the specimens. The number of examples, in the hoard in question, of (A) personifications normally associated with legend (a); (B) personifications normally with (b); (c) eagle r. normally with (a); and (D) eagle l. normally with (b), is

	A.	B.	C.	D.
Year 1	9 (Elpis)	3 (Dikaiosyne)	3	11
„ 2	104 „	98 „	116	145
„ 3	126 (Eirene)	159 (Tyche)	176	161
„ 4	112 „	97 „	214	201
„ 5	83 (Nike)	46 (Homonoia)	103	121
„ 6	81 (Athene)	44 „	274	209
„ 7	—	—	407	335
„ 8	—	—	78	41

These figures account for all the coins in the hoard, except, in year 2, 2 with Nike: in year 4, 18 with Athene and 23 with Nike: in year 5, 1 with Dikaiosyne and 1 with Sarapis: in year 6, 9 with Nike: in year 7, 6 with Homonoia and 4 with Nike: in year 8, 2 with Homonoia. Except in year 4, these extra types are comparatively negligible.¹ It is rather tempting to suppose that there were four shops working in the Alexandrian mint at the beginning of the reign of Probus, which distinguished their main issues by the reverse-types used: at first the issues were fairly balanced, but (if the shops may be named by the letters in the statistics above) shops C and D gradually took a larger share and finally A and B practically disappeared: A and C at first showed a strong preference for legend (a), as B and D did for (b), but the practice grew more lax in the later years. The presence of the extra types is, however, an objection to this classification, just as the third variety in point of breakage is to the alternative one.

It is perhaps rather in favour of the first of the two alternatives suggested that in the time of Carus and his sons some reverses appear to have been appropriated normally to particular members of the family, but occasionally wandered to others. In year 1, the usage was practically stable: the reverse-types are Dikaiosyne (Carus and Numerian), Nike (Carinus and Numerian), Tyche (Carinus), Eagle r. palm across (Carus and Numerian), eagle between vexilla (Carus, Carinus, and Numerian). Of these, the Nike-type is rare: the others are all common, and it would seem that two types were assigned to Carus and Numerian and one to Carinus, while one was used in common.

¹ There are other types known, not represented in this hoard: Dattari's catalogue includes, in year 3, Nike l. and emperor riding l.; in year 5, Athene seated l. Tyche standing l. and eagle r.

palm across; in year 8, Eirene l. But these are even rarer, and for present purposes more negligible, than the extra types mentioned.

In year 2, there are four reverses: two of these, Nike and eagle between vexilla, are continued from year 1, and are both used for Carinus and Numerian alike: two fresh ones are introduced, Athene seated for Numerian and Elpis for Carinus: but a few specimens occur where the Athene reverse is associated with an obverse of Carinus. In year 3 again Nike and an eagle-type are found as reverses for both emperors, while Carinus had as his special reverse-type Homonoia, and Numerian as his Eirene: but, as in year 2, the Eirene reverse of Numerian was occasionally borrowed for Carinus: there is also a rare reverse, a concord of the two emperors, apparently known only for Numerian. It looks as if separate shops worked, on the one hand for Carus and Numerian and later for Numerian alone, and on the other for Carinus, with some distinct and some joint reverse-types; but occasionally a reverse-die strayed into the wrong shop. The transference of a reverse-die would presumably be an easier matter than that of an obverse one. There is, however, another mark of differentiation which occurs in this period, and seems to produce a cross-division: the star on the reverse, which was found in years 4 and 5 of Aurelian, and recurs under Diocletian and Maximian, is used during part of the reigns of Carus and his sons. The practice was not consistently followed throughout, as will be seen from the following table of specimens in the hoard quoted for the last three reigns.

[In the table I have classed the coins of Divus Carus in year 2, as, though they are undated, they were presumably struck shortly after his death. It is rather curious that no Alexandrian coins of Carus of year 2 are known: he is usually supposed to have died in the late autumn of 283, after the beginning of his second Alexandrian year. But it is difficult to fit in the Egyptian evidence as to the reigns of Carus and his sons with the received chronology. From the coins it is clear that Carinus ranked as Augustus before Aug. 29, 283, as his issues with that title begin in year 1: and that Numerian was not so ranked till after that date, as issues for him as Caesar continue into year 2. These facts suggest that Carinus was proclaimed Augustus when his father started for the East in the summer of 283, and that Numerian was not promoted till the death of Carus. Of two known papyrus datings, one (O.P. 55) presents no difficulty: it names Carus as Augustus and Carinus and Numerian as Caesars on April 7, 283: but the other (O.P. 1564) is perplexing, as it is only 16 days later,—April 23,—but is headed *α έτους Καρίνου*, giving no title and mentioning neither Carus nor Numerian. As it contains a horoscope, there can be no mistake in the calendar date, which is verifiable astronomically. An explanation that occurs to me is that, for some reason, Carinus even as Caesar was regarded in Egypt as more important than his father: it will be noticed from the table that the number of coins of Carinus as Caesar in year 1 is larger than

that of Carus, contrary to the general Alexandrian rule that, if coins were simultaneously being struck for different members of the imperial house, the issues in the name of the Augustus were larger than those in the name of a Caesar or any member of the family. Possibly however, *Καρίνον* is a blunder for *Κάρου*, the scribe having got confused between the names of father and son.]

		Without star.	With star.
Year 1	Carus	94	3
	Carinus Caes. . . .	126	4
	„ Aug.	1	7
„ 2	Numerian Caes. . . .	4	4
	Divus Carus	10	3
	Carinus	94	20
	Numerian Caes. . . .	1	—
	„ Aug.	41	11
	„ 3	Carinus	27
	Numerian	7	—

From these figures it may be concluded that the use of the star was introduced rather late in year 1, shortly before the elevation of Carinus to the rank of Augustus, and was dropped before year 3. Of the coins of year 2, about a quarter, alike of Divus Carus, Carinus, and Numerian, have the star. It is clear that the issue of coins with and without the star was concurrent, and it is possible that the star was intended as a shop-mark: but, if so, it seems to have been introduced tentatively, as it may have been under Aurelian, and to have been dropped, to be revived more systematically in the next reign.

The conclusions that may be drawn from this review are as follows:—

(1) When a symbol (other than the palm on the issues of Severus Alexander, Gallienus, and Diocletian and Maximian after their decennalia) appears in the field of the reverse of a group of tetradrachms, it can usually be regarded as a shop-mark: fairly clear instances are the lituus under Claudius I, the star in Nero's year 14, the star and simpulum in Galba's year 2, and the star under Diocletian and Maximian: less certain, but not improbable, cases are found in the star in year 9 of Nero, the simpulum in years 11 and 12 of the same emperor, and the star in years 3 of Titus, 4 and 5 of Aurelian, and 1 and 2 of Carus and his sons.

(2) The star on the obverse of coins of years 18 to 20 of Trajan is not likely to be a shop-mark, but that on the coins of the succeeding years 2 and 3 of Hadrian may be: the crescent in the same position on coins of the five following years, and the serpent on those of year 8, are more doubtful.

(3) Differentiation of concurrent issues by variation of the obverse legend, either in the point of breakage or the termination, is very probable in the latter part of the reign of Severus Alexander and several following reigns—those of Maximinus, Gordian III,

Philip, and Decius : the same system recurs under Claudius, and possibly under Probus : under Aurelian, in years 1 to 5, the distinction is by alternative styles at the beginning of the legend. Earlier instances of the same principle may be found in the reign of Claudius, in year 1 of Galba, and possibly in years 18 to 20 of Trajan, 20 to 22 of Hadrian, 21 to 25 of Commodus, 2 to 4 of Septimius Severus, and 1 and 2 of Elagabalus.

(4) The output of different shops may be distinguished by alternative positions of the emperor's portrait in the later issues of Tiberius and in those of years 21 and 22 of Hadrian : and if any clue to the classification of the bewildering coinage of Antoninus Pius, Marcus Aurelius, and Lucius Verus, is to be found, it may best be sought in a similar distinction.

(5) There is no clear evidence that such a minor variation as the direction of the ends of the wreath-tie on the obverse could be used as a shop-mark.

(6) The allocation of different shops to different members of the imperial house is certain under Diocletian and Maximian, probable in the latter part of the reign of Gallienus and in that of Carus and his sons, but quite uncertain at any other time and contrary to the evidence in the joint years of Valerian and Gallienus.

A chronological statement of the changes in the schemes from year 10 of Severus Alexander may be added :

	Years.	Method of differentiation.
Sev. Alexander . . .	10-14	By termination : four forms for Alexander, three for Mamaea.
Maximinus . . .	1- 2	None.
" . . .	3- 4	By termination, or by spelling for Maximus Caesar : two forms each.
Gordian I . . .	1	By termination : two forms.
Balbinus and Pupienus . . .	1	None ?
Gordian III Caesar . . .	1	By termination : two forms.
Gordian III Aug. . .	2- 5	By termination : two or three forms : two for Tranquillina.
" . . .	6- 7	By breakage : two or three forms : two for Tranquillina.
Philip I . . .	1- 3	By breakage : four forms : two for Otacilia : no variation for Philip II.
" . . .	4- 7	By termination : four forms : four or two for Otacilia : three or four for Philip II.
Decius . . .	1- 2	By termination : three or two forms : two for Etruscilla : two for Etruscus : no variation for Hostilian.

	Years.	Methods of differentiation.
Gallus	3	None.
Valerian and Gallienus	1- 8	None.
Gallienus	9-10	None ?
„	11-15	By issues for Gallienus and Salonina respectively ?
Claudius	1- 3	By breakage : two forms.
Aurelian	1- 5	By spelling of title : two forms.
„	4- 5	By use of star ? : two forms.
„	6- 7	None.
Tacitus	1	None.
Probus	1- 8	By breakage : two (? three) forms.
Carus, Carinus, and Numerian	1- 3	By issues for Carus and Numerian and for Carinus respectively : also in years 1-2 by star.
Diocletian.	1- 2	None.
„ and Maximian.	{ 2- 6 } { =1- 5 }	By issues for respective emperors and by star for each : four forms.
„	{ 7- 8 } { =6- 7 }	By issues as before (one only using star) : two forms.
„	{ 8-10 } { =7- 9 }	By numeral letters : four forms.
„	{ 10-12 } { =9-11 }	None ?

The chief changes in practice are almost coincident with the dates when there is other evidence of innovation or reorganisation in the mint of Alexandria. The introduction of the regular system of differentiation by termination or by breakage came shortly after the appearance of a novel style in years 4 to 7 of Alexander, to which reference has been made above. This system was dropped after the cessation of the activities of the mint during year 2 of Gallus. Differentiation was resumed in year 11 of Gallienus, when the module of the coins was markedly altered, and their artistic style improved. The series commenced then ran on till year 5 of Aurelian, with a gradual decay in workmanship : then another reform took place, bringing a fresh improvement of style, and dropping the differentiation, which was, however, resumed by various methods during the remainder of the issue of tetradrachms.

The more precise determination of the number of shops open at any given point in this period would require a fuller examination of statistics, which must be reserved for a future occasion : the object of the present paper has been to show that the variations discoverable in concurrent issues of Alexandrian tetradrachms had in most, if not all, cases the purpose of distinguishing the output of the shops of the mint.