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Roman Coinage in the Western Empire*

By RICHARD REECE

I. THE MATERIAL

THE coins which form the basis for this discussion, summarized in Tables I to IV (facing p. 252), have been published in more detail in the *Numismatic Chronicle* (Southern France 1964, northern Italy 1971, northern France 1972) and in *Britannia* iii, 269–76, where full details of the nature, location and peculiarities of the groups may be found, together with a subjective estimate of each group's archaeological reliability. For ease of reference the full names of the groups, and the periods into which the coinage has been divided is repeated:

Britain. Canterbury (Ca), Chedworth (Ch), Cirencester Excavations (CE), Cirencester Museum (CM), Fishbourne (Fi), Henley Wood (HW), Lullingstone (Lu), Nettleton (Ne), Portchester (Po), Sea Mills (SM), Thistleton (Th), Verulamium Frere Excavations (VF), Verulamium Wheeler Excavations (VW), Verulamium Theatre (VT), Verulamium Lord Verulam collection (VV), Wanborough (Wa), Winchester (Wi), Richborough (Ri).

North France and the Rhine. Soissons (So), Condé-sur-Aisne (CA), Sens Archaeological Society (SA), Sens Museum (SM), Autun (At), Avallon (Av), Auxerre (Au), Châtillon (Cl), Langres Collection A (LA), Langres Collection B (LB), Langres Collection C (LC), Verdun (Ve), Belfort (Be), Sélestat (Se), Haguenau (Ha), Rhine Valley miscellaneous (RV), Rheinzabern (Rh), Speyer (Sp), Pachten (Pa), Mainz (Ma).

Southern France. Bourges (Bo), Poitiers (Pt), Toulouse (To), Foix (Fo), Perpignan (Pe), Montpellier (Mo), Nîmes Collection A (NA), Nîmes Collection B (NB), Arles (Ar), Aix (Ax), Glanum (Gl), L'Escafe (LE), Banon (Ba), Vienne Museum (ViM), Vienne Theatre (ViT), Dijon (Di).

Northern Italy. Pavia (Pv), Padova (Pd), Verona (Ve), Este (Es), Udine (Ud), Aquileia (Aq), Cividale (Ci), Portogruaro (Pg), Venezia (Vz), Adria (Ad), Faenza (Fz), Bologna Civic collection (BC), Bologna University collection (BU), Ravenna (Rv), Arezzo (Az), Cortona (Co), Siena (Si), River Tiber collection 1 (T1), River Tiber collection 2 (T2), Ostia (Os).

* I am grateful to Miss Alex Tuckwell for re-drawing figs. 3 and 4 for publication, and to Mr. R. R. Downey for re-drawing figs. 1, 2, 5 and 6.

Periods :

I	27 B.C.—A.D. 41	VIIa	161—80	XII	294—317
IIa	41—54	VIIb	180—92	XIIIa	317—30
IIb	54—68	VIII	192—222	XIIIb	330—48
III	69—96	IXa	222—38	XIV	348—64
IV	96—117	IXb	238—59	XVa	364—78
V	117—38	X	259—75	XVb	378—88
VI	138—61	XI	275—94	XVI	388—402

Four main tables are given showing both the actual numbers of coins and the numbers expressed as percentages. Table I shows the coins in each group in each period divided up into silver (AR), large bronze—sestertii etc. (AE 1); middle bronze—dupondii, asses, folles, etc. (AE 2); and small bronze (AE 3-4). The percentages in Table II show each figure as a percentage of the total number of coins in the group. Table III shows the total coins in each period for each group; again, the percentages show each figure in relation to the total number of coins in the group. Table IV shows the coins of each ruler from 259 to 294; the percentages here show the number of coins of each ruler expressed as a percentage of the total number of coins in the group struck between 259 and 294.

In a few instances numbers of coins and percentages do not agree with those previously published. This is due to a re-arrangement of the material for southern France for the periods around 200, and to the elimination, through cross-checking, of arithmetical errors and inconsistencies; in no case has the number of coins in any group changed. The figures in this summary must be taken as final for this piece of work, which is completed some seven years after its start. But while the work has been in progress many museum collections will have changed by addition, subtraction or re-classification, and many further coins will have been excavated, so that the numbers published are only valid for the period 1965-70. Although the numbers of coins in any collection will have changed, I am confident that the overall relationship of period to period within the group will not greatly have altered.

These changes which have already happened, and will continue to happen, can have no effect on the thesis offered, because in this preliminary essay on the interpretation of coin-finds only the most obvious numerical methods and criteria will be used. I have little doubt that a full statistical treatment could derive much from the material. For the present I wish only to paint the broad outlines of the picture: should anyone wish to go further I have attempted to put all my material at his disposal as succinctly as possible. There remains to be stated only an outline of accuracy, and a warning.

It will be easy for any other worker in the field of archaeological numismatics to find minor inaccuracies in this work which contains a basic three hundred numerical entries drawn from well over a thousand observations in the field. Thus it may be that on closer inspection of the 55 coins attributed to Gallienus in the collection of Lord Verulam, one could be re-attributed to Valerian I. Such inaccuracies become more likely in the lists of foreign collections especially

where I listed the coins from manuscripts, card-indexes, or through the dusty glass of dark museum cases. I would be grateful if critics would take the trouble to calculate the effect of their corrections on my 'broad outlines' in order to temper their criticisms with a statement of their quantitative value.

The warning follows from this justification of limited accuracy. Although I have put this material at the disposal of anyone who wishes to use it, it would be irresponsible if I did not make quite clear my estimate of my degree of accuracy. I hope that the values given are correct to within 2 per cent. Thus if 297 coins are noted, the value is unlikely to lie outside the range 291 to 303, and if a value of 5.0 per cent is noted, the likely range is 4.9 to 5.1 per cent. Any future work which uses these values should bear this in mind, and readers of any such works are warned that any further interpretations which depend on differences of less than around 3 per cent in two values *may* be highly questionable.

Mention of future work allows brief thoughts on what can be done. I have already suggested that I do not see the correction of this work as a useful expenditure of time or effort. Extension of this method to other provinces of the Empire could be useful especially in Africa, the Greek East and the Danube, as this would bring in the relationships between central and local currencies before Diocletian's reform. In the West I hope the future lies with efforts in which detailed study of coins is allied to their use and distribution. Thus I think particularly of the work on the geographical location, circulation, and numismatic intricacy of some of the silver coinages of Augustus undertaken by Mr. T. R. Volk, whose detailed studies in Italy and elsewhere gave many welcome corrections and warnings to my own summaries; and I wonder whether die studies of, say, the coinage of Faustina I in hoards and site finds all over the empire might not enable us to understand the working of the mint in the production and distribution of batches of coinage to different areas.

Germany is producing the comprehensive volumes of finds of Roman coins in Germany in *Die Fundmünzen der Römischen Zeit in Deutschland*, and the way forward in Britain perhaps lies in following this example. All the coins from the British sites listed will shortly be ready for publication in full detail with references to standard works, such as the *Roman Imperial Coinage*; so within the province of Britain there will soon be considerable material for these detailed comparisons. I have suggested that future work should lie in attention to detail, but I hope that this will not lead to neglect of comparisons with provinces beyond the Channel. Britain produced a regular coinage for only forty years; for the rest of the Roman occupation all coinage had to be brought in, so that it is only in relation to the mainland of Europe that Roman coinage in Britain can be understood.

II. BRIEF INTERPRETATION

(1) *The number of coins in each group*

Reference to the totals of coins on Table IV will show that each geographical area produced groups of widely differing size. Italy has the largest collections with seven groups each containing more than two thousand coins; the north of France

on the other hand is represented by fifteen out of twenty collections with less than one thousand coins. Only the smallest collections with less than two hundred coins seem to produce erratic results, so that most unusual values are due to something other than the size of the group.

(2) *The proportion of 'early' and 'late' coins*

The first level of analysis is one which divides the coins into four main phases. Phase A conveniently comprises all denarii, sestertii, dupondii and asses, with their subdivisions, and therefore spans the years 27 B.C. to A.D. 259. Phase B includes coins of debased silver with radiate crowned portraits from 259 to 294, Phase C includes the establishment and decline of the Follis from 294 to 330, and phase D runs from 330 to 402. The averages have been taken for the percentages for each area, and the results are shown on FIG. 1. To guide any judgement of what may be 'normal' representation, it may be remembered that Phase A

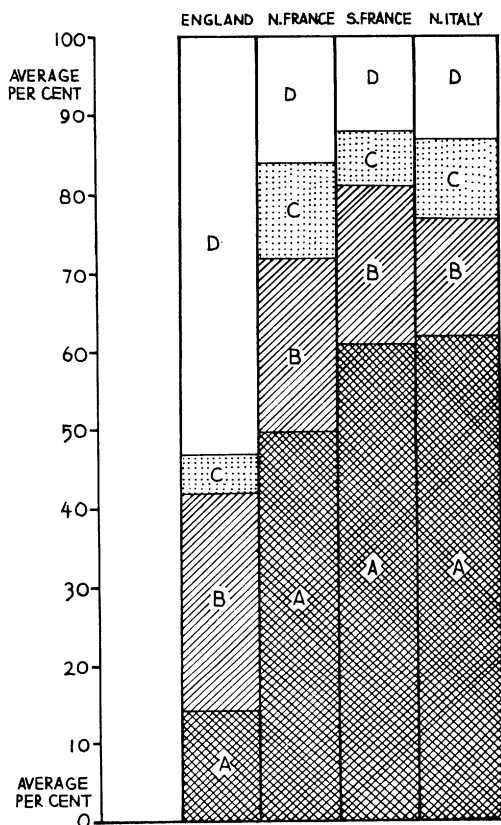


FIG. 1

Distribution of coins in four chronological phases.

covers 276 years; B, 35 years; C, 36 years, and D, 72 years. Leaving out of account all the fluctuations of the coinage, and the values of the different coins, this would suggest a distribution of the coins, according to the length of each phase, as follows: A. 67 per cent, B. 8 per cent, C. 8 per cent, and D. 17 per cent. This is followed fairly closely by the groups of Italy and the south of France. On these terms Britain shows a remarkably low proportion of coins before 259 and a remarkably high proportion of coins after 330.

(3) *The actual numbers of coins in different phases*

The simple analysis of phases and the relationship of the coins in each phase to the number of years in the phase cries out for modification in many ways. The first question to be considered is that of the absolute number of coins rather than the relative proportion of coins. It could be argued that Britain is not lacking in Phase A, but heavily overstocked in Phase D, thus depressing the proportions of all other phases.

Reference to Table IV will show that Britain not only lacks a proportion of Phase A coins but is also deficient in the sum total of such coins. Thus the Corinium Museum contains over six thousand coins found in Cirencester, the result of considerable collection, care, and interest. Such a collection should compare favourably with, say, Dijon where similar care has been taken over the collection of locally found coins, even though a total of only just over four thousand has been reached. Period by period comparison up to 259 uniformly exalts Dijon except in the reign of Claudius I (Period II*a*). Cirencester manages to regain its position when compared with Poitiers, but that collection contains only just over eight hundred coins; period for period Cirencester has only a gentle advantage in numbers. In Italy the divergence is even more marked, and Cirencester's lack of early coinage continues obvious. The collection at Aquileia has an impeccable archaeological pedigree for its thirteen thousand coins; if its numbers are divided by two or three they should therefore be comparable with Cirencester. A glance at the table shows that Aquileia can be brought down to the Cirencester level only by much greater division, by four or six; and this pattern is followed in Italy as in the south of France wherever comparable sites can be found. Therefore, compared with the mainland of Europe, Britain has not only a lower proportion of coins before 259, but an actual lower number, or deficiency, of these coins.

(4) *The distribution of Sestertii*

The coins of Phase A belong to a fixed system of values whose relationship we know from historical sources. The unit of accounting in the early Empire was the sestertius; on this depended the silver denarius (four sestertii), and its subdivisions the dupondius (half-sestertius), As (quarter-sestertius) and the semis and quadrans (half and quarter As). A first step is to examine the distribution of the sestertii of different periods in the four areas. FIG. 2 shows the percentages of sestertii of the total coins in the group, with dots below the base-line to show groups in which no sestertii were present in that period.

In all areas sestertii reach a peak in Periods VI and VIIa (Antoninus Pius and Marcus Aurelius) though, as would be expected, this peak is correspondingly small in Britain. Issues up to Claudius I drop in importance from Italy, through France, to Britain where only three sites out of eighteen show these early sestertii. This is to be expected for obvious historical reasons, if it is accepted that coins only entered Britain in large numbers after the conquest of 43. It is only in the Flavian period (III) in Britain that a majority of groups contain sestertii, and only under Trajan does this coin form an important proportion of site-finds.

The end of the career of the sestertius in the different areas is even more divergent than its advent. In Italy the coins form an increasingly important part of groups from Periods VIIb (Commodus) to IXb (ends at 259). A similar picture is apparent in the south of France, so that in these two areas no groups are known *without* sestertii of these four periods. The north of France is a transitional area in which an upward move in Periods VIIb, VIII and IXa is followed by a drop. In Britain a totally different picture is obvious: after the reign of Commodus groups containing sestertii fall into a minority, all subsequent issues are rare, and (apart from the suspected imports at Cirencester and an oddity at Verulamium) sestertii of 222–59 are unknown.

(5) *The relationship of denarii to sestertii*

Now that the course of the sestertius has been plotted, it is possible to examine coins of higher and lower value in relation to it. The four parts of FIG. 3 have been constructed from the relative numbers of denarii and sestertii in each period for each group. The mid-line gives a value of one, i.e. that there were in the group an equal number of the two denominations; a value of five shows that there were five times as many denarii as sestertii (5 : 1, or 25 : 5); a value of $\frac{1}{10}$ shows that there were ten times as many sestertii as denarii (1 : 10, or 3 : 30). Values in circles show that the groups in question had denarii but no sestertii of the relevant period: values below the base-line show sites with no relevant denarii.

In Italy a delicate balance between the two denominations is excellently shown, varying little from parity. Under Claudius there was a drop in the production of silver, the peak of 'popularity' of the denarius was reached under the Flavians (Period III), and this was followed by a gentle decline until the debasement of Septimius Severus. This act reverberates through the diagrams of all areas, being equally clear in Britain and in Italy. In Italy and the south of France both sestertii and denarii continued firmly up to their joint end in 259. In the north of France and Britain every group shows a predominance of denarii in its last period, and, as already stated, few sites have even one sestertius for comparison.

The British picture of the relationship of denarii to sestertii is one of clear contrast. Up to the end of the Flavian period (III) Britain shows a predominance of denarii, and this state of affairs recurs from Septimius Severus to 259. There is, in the middle, a clear time from Trajan to Marcus Aurelius when sestertii predominated.

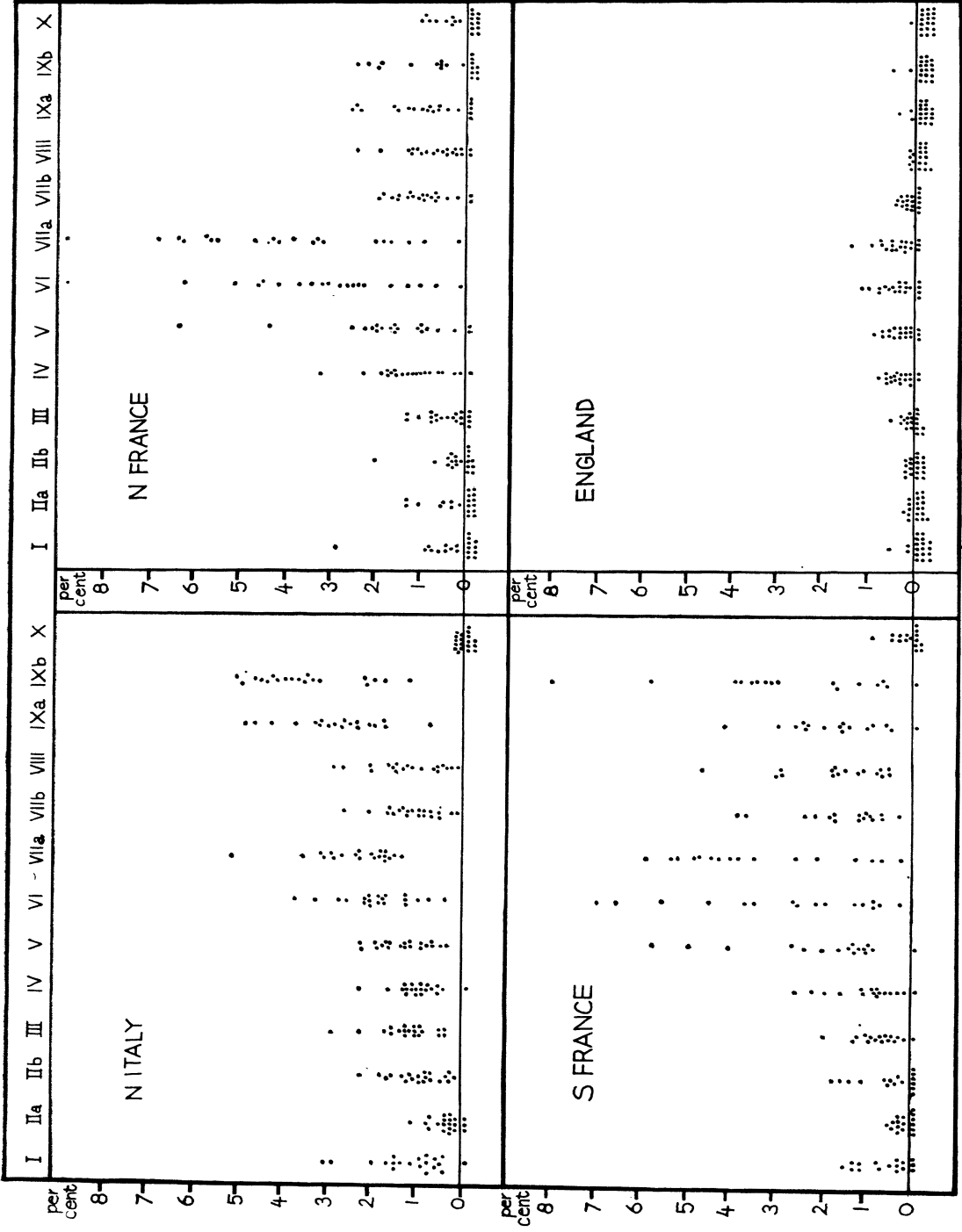


FIG. 2
Distribution of sestertii.

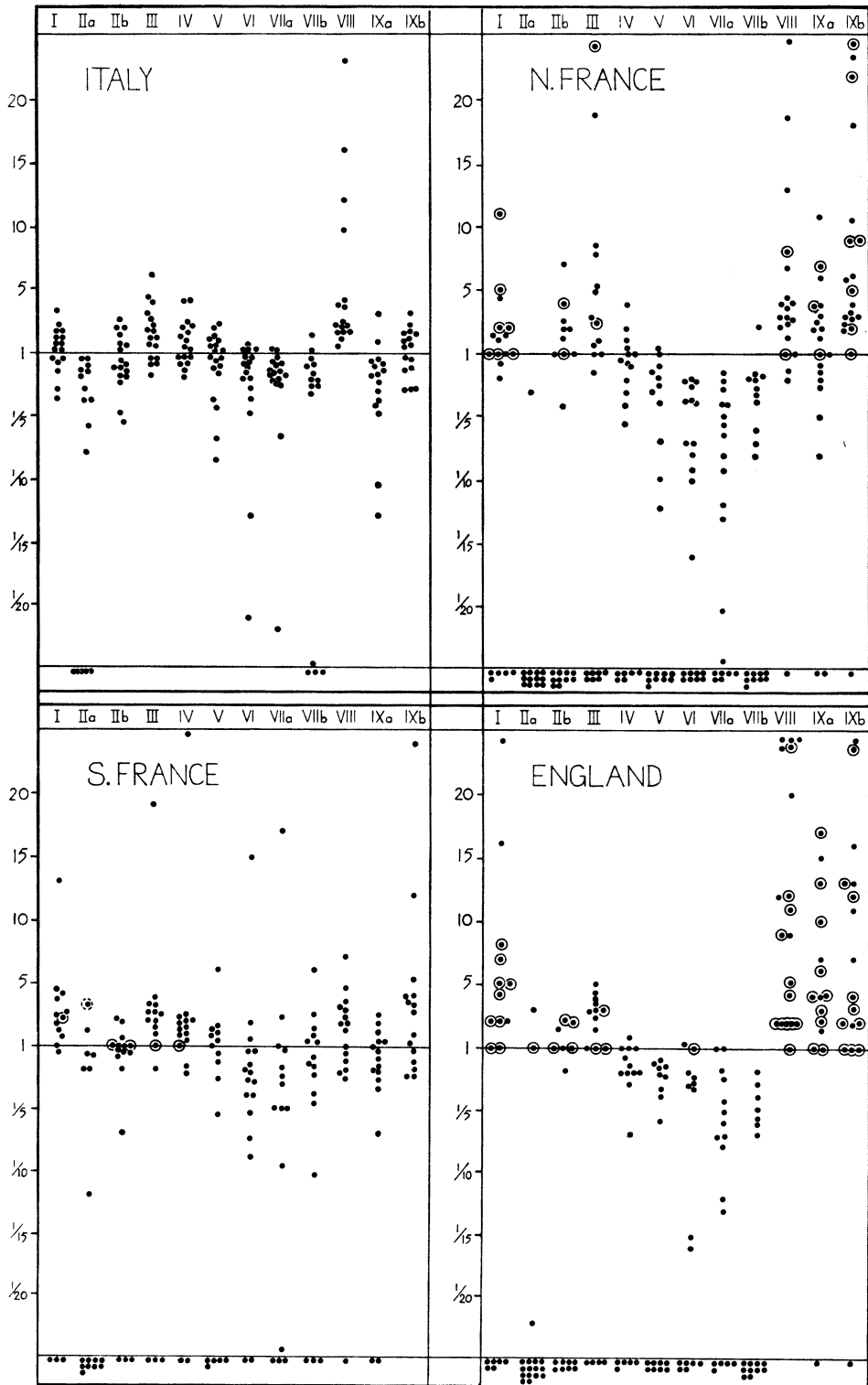


FIG. 3

Ratios of denarii to sestertii (see p. 232).

(6) *The relationship of dupondii and asses to sestertii*

The gentle decline, seen in all four areas, of the dupondius and As (called for convenience middle bronze) in relation to the sestertius, hints at the Republican origins of the Roman Imperial Coinage. The use of sestertii has been seen to rise and to fall again; the denarius seems to have varied in circulation more according to its silver content than to fashions and precedents, but middle bronze is shown by the four parts of FIG. 4 to be at the height of its popularity as the Empire opens. The basic unit of reckoning and tariffing in the early Republic, the As had been eclipsed in the second and first centuries B.C. by its silver multiple the denarius (originally ten, then retariffed at sixteen Asses). The As and the dupondius reappeared in Augustus's reform of the coinage, and very large issues indeed were struck up to about 4 B.C. This large-scale production is mirrored even in Britain, and all areas demonstrate the gradual decline of the two denominations from a maximum under Augustus to extinction by about 259. The coins seem to have played a more important part in Italy for longer than in Britain or France, but the putative revival in Italy from 238 to 259 must remain uncertain because of the difficulty of defining and recognizing bronze denominations at this period.

In general, these coins are best represented in Britain, where there is a sudden change after the Flavian period into the era of the sestertius, already noted. Reference to FIG. 2, which shows the career of the sestertius, demonstrates that the sudden change is a failure in supply of middle bronze rather than a great increase in the numbers of sestertii in each group.

(7) *Subdivisions of the As*

Augustus retained from the Republican coinage two denominations smaller than the As, the semis (a half), and the quadrans (a quarter). These can conveniently be referred to as small change. They were struck intermittently up to the time of Trajan, but after his reign they occur very rarely indeed. All but one of the groups in Italy have a proportion of small change though this is never high. The unquestionably authentic groups from Aquileia, and the Tiber, from Condé-sur-Aisne, Mainz and Poitiers, show that representation of these coins in groups is not due to the collection of unusual coins. But even in the groups in which they are best represented, the Tiber and Condé-sur-Aisne, small change is a Roman category quite different in quantity, and presumably in utility, from our idea of 'coppers' or small change today. This point throws valuable light on the use, loss, and finding of different denominations, which will be considered later. All groups in which small change occurs show that it was a declining part of the coinage from Augustus onwards, and although quadrantes of Claudius I are fairly well known as collectors' coins they are very unusual site-finds in both England and France. Coin-supply to Britain had not reached its full level before these coins died out, so that they form a minimal part of the coinage of the province.

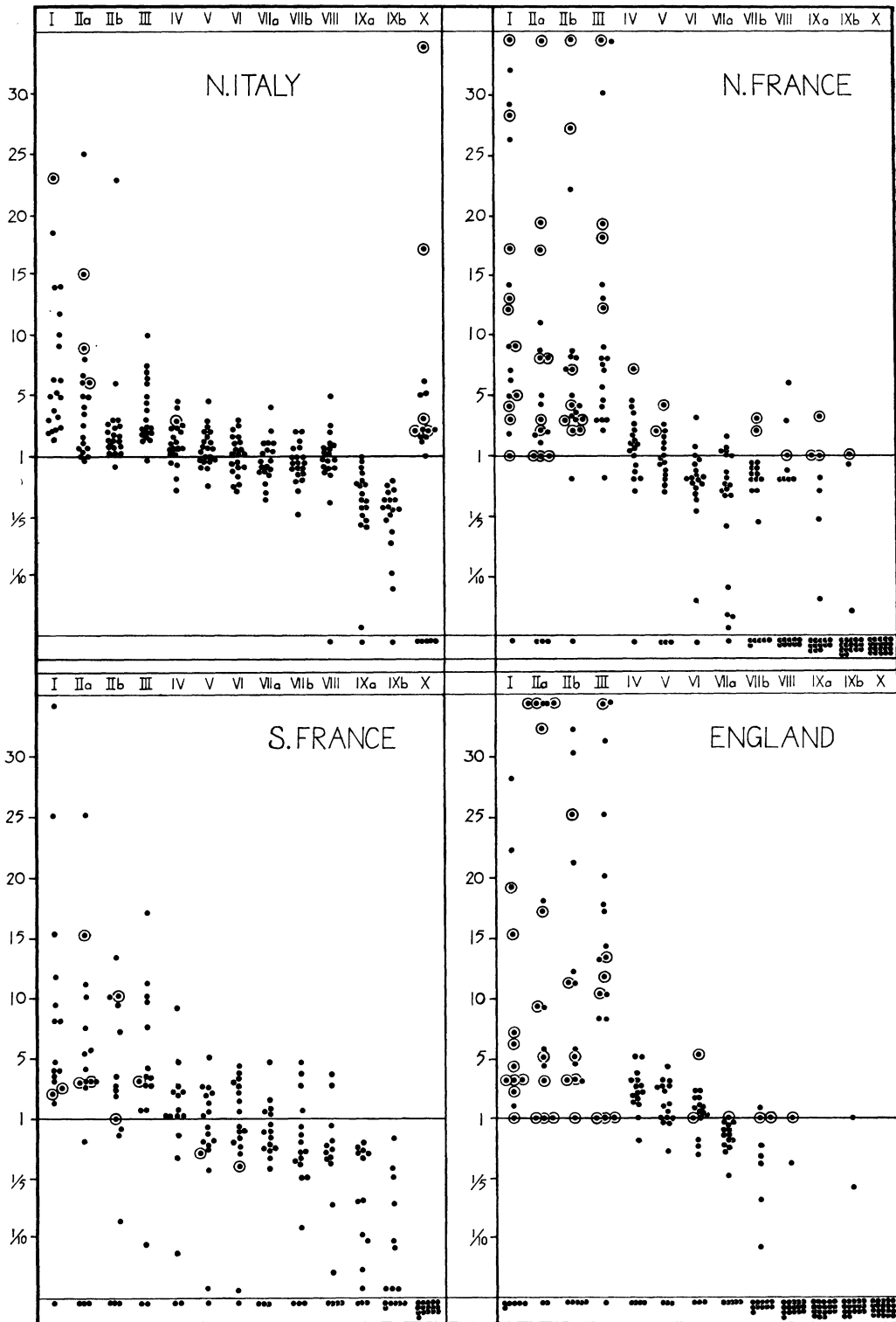


FIG. 4

Ratios of dupondii and asses to sestertii.

(8) *The coinage up to 259—a summary*

A general picture of the use of currency in the western Roman Empire from Augustus to the death of Valerian can now be given in outline, though Britain plays a limited part and presents a slight and almost continuous exception. The coinage of Augustus, as recorded in these groups, was predominantly silver and middle bronze, with a proportion of sestertii and a sprinkling of small change. In the course of the first century small change died out, and by the reign of Trajan sestertii had eclipsed middle bronze. These changes can perhaps be laid at the door of inflation, which reduced the purchasing power of the smaller denominations and hence their utility to the public, and caused more loss to the state in their production.

The denarius followed a different course through the first century, reaching a peak everywhere in the Flavian period and thenceforward declining until the debasement under Septimius Severus. The decline sets in under Trajan, and must therefore have some bearing on his supposed debasement of the silver coinage *c.* 106. This point calls for much further consideration: first it needs to be explained why a debasement, if it happened, in 106 caused the denarius to be less and less represented in our groups and site-finds, when the debasement of *c.* 196 did exactly the opposite; secondly the decline in numbers of denarii from Domitian to Marcus Aurelius in most groups is exactly contrary to the rise in the numbers of denarii hoarded in Britain, for these rise steadily between the same limits.

At present I reserve judgement on any drastic debasement under Trajan, so I can only explain the downward drift of the denarius in one of two contradictory ways. The evidence of British hoards, and that of more broadly based groups and site-finds, may be conflated to give a picture in which creeping inflation made the denarius more and more sought because of its bullion value, which in turn led to hoarding and the absence of denarii available for circulation and loss. I am reluctant to commit myself to this explanation because it is contrary to all other evidence, which suggests that, as inflation proceeds, so coins of higher and higher face-value are more commonly used and lost. This leaves the probability of a very much more complex picture which contradicts the idea of gentle continuous inflation, undirected and unchecked, with its gradual shift to coins of higher face value as purchasing power drops. The simple picture fits well the evidence up to the reign of Domitian; perhaps then the problem was taken in hand under Trajan.

From the reign of Trajan until the debasement of 196 the number of sestertii in nearly all groups rises period by period, and the number of denarii falls. This means that there was not an upward change, or even a shift, in the coins commonly used. These remained the denarius and the sestertius for the whole century, with the denomination of higher value relatively less common at the end of that time than at the beginning. In contrast, the first century, which started as the Age of the As and finished as that of the sestertius, presumably shows a fourfold inflation. This seems strong evidence for a definite policy stemming from Trajan.

Briefly summarized, my suggestion is that Trajan's administration recognized the shift which had taken place in prices, purchasing power, and perhaps coin-use

in the first century, and regulated the relative volumes of silver and bronze stringently, in order to curb the tendency of more money to chase the same amount of goods. This 'policy'—we do not know whether it was empirically applied or explicitly understood—continued through the second century until the inception of a completely new policy under Severus, which loosed a flood of newly coined money in a vital act of debasement, which hindsight shows to have been the death of the old monetary system based on token bronze and silver fine enough to be regarded as bullion.

(9) *The early third century*

In some quarters the notion of third-century collapse and despair has already been questioned. Mr. Peter Brown¹ sees it as an age of unsettlement and transition, but a flourishing period rather than one mortally sick; and work now in progress on the Gallic and British Empires of the third century at least allows us to doubt the picture of *Sturm und Drang* which has hitherto been popular. While the drop in silver-content of the coinage from around 50 per cent in 196 to around and below 5 per cent in 270 cannot be doubted, I see no need to assume that this is the result of continuous catastrophic economic crises. I prefer to regard the decline as one which, once started, could only have been halted by a happy accident; one which no government could ever have afforded to reverse; and one which, if halted, could not have been stabilized because the point on the silver scale at which the halt might have occurred, say 30 per cent silver, would have been completely arbitrary and lacking in any absolute backing. There is no need to regard Severus's expedient as anything other than a once-for-all remedy to settle a backlog of debt and to launch a 'new deal'. A similar economic trick had been applied in the late third century B.C. when the value of the denarius was moved from ten asses to sixteen. The resultant surplus, we are told, cured all financial ills, and established a secure system of exchange. Severus was less lucky in that he tampered with the bullion standing of the silver coinage, reduced it, presumably, to a token coinage, produced it in large quantities, and unknowingly put the whole system of coinage and exchange into the melting pot. I see the continual debasements of the third century not as more desperate remedies for ever increasing ills, but as a weak misuse of silver contents in order to solve minor difficulties and pressures which a stable, bullion silver coinage might easily have overcome intact. Severus created instability in the coinage and currency but not necessarily in the basic economic framework.

The picture of coinage up to the death of Valerian needs little further comment. Italy seems to have used the sestertius in ever increasing quantities, and eventually, c. 250, the double sestertius. Britain, on the other hand, rarely used or saw these new coins, and instead relied on a steady inflow of silver. Care must be taken here to distinguish between the inflow of coins to an area and the use of similar old coins in the same place. Under Commodus even Italy seems starved of newly minted denarii. This suggests that, although older coins were

¹ *The World of Late Antiquity* (London 1971), 22–6.

continuing in use, the actual number available may well have been falling as old coins were hoarded and lost. The picture as regards sestertii from 222 to 259 is slightly different. In Italy large numbers of these coins seem to point to a vigorous use of this denomination. In Britain, hoards testify to the large numbers of worn sestertii from Domitian to Marcus Aurelius still available in the reign of Postumus (259–68). Few new sestertii seem to have entered Britain, so the problem is one of supply and movement rather than one of use.

Once Britain was established as a self-sustaining province, it may well be that the prime cause of the entry of new coins was as payment of wages; the administration and army had continuous requirements. There may have been little *state* expenditure on building projects, unlike at Rome (with projects such as the Septizonium and the Baths of Caracalla) or in the homelands of the dynasty in Syria and Africa. The contrast in new coins supplied to Britain and Italy may well mirror the difference between gangs of labourers surviving in the slums of Rome, paid in token copper, and politically important groups of state employees near the frontiers, paid in silver. The picture of coinage in north Africa could be of great interest here.

(10) *The period of debased silver*

Although the period of extreme debasement of silver concentrates around the year 270 it is convenient to look at the large span from the first debasement under Severus (Period VIII) to the silvered bronze follis of Diocletian (XII). FIG. 5 shows the percentage of 'silver' coins in these groups in all four areas. Italy seems to have the simplest pattern, for it shows a gradual rise up to the period of minimum silver, and then a slight drop to the introduction of the follis. In the light of this pattern that in France makes good sense, and the introduction of coinage of the Gallic Empire explains the extreme peak in Period X (259–75). Britain is substantially different. The difference of percentages can be seen in the diagram; reference to Table II will show an absolute lack of coinage in Periods VIII, IX*a* and IX*b* and then numbers roughly comparable with continental sites in Periods X and XI.

This might be thought to suggest that Britain had caught up with the continent by the second half of the third century in coins supplied, used, and lost. This is not so, for a new factor seems to keep Britain on the path of divergence. The number of coins for 259–95 are roughly the same in all four areas, but unfortunately they are not the same coins in all four groups. Italy has, almost exclusively, coins of the central emperors ruling from Rome; Britain has coins predominantly of the Gallic and British emperors: France, as usual, shows a mixture set between the two extremes. Britain also has the category of coins which copy the Gallic issues, often on small flans and in an irregular and barbarous manner—hence the name barbarous radiates. These coins and the poor issues of Victorinus and Tetricus cannot be thought of as equal, in face value, silver content or purchasing power, to the central issues of Aurelian and his successors. Because of the scarcity of coins of Aurelian and Probus in Britain, and because the

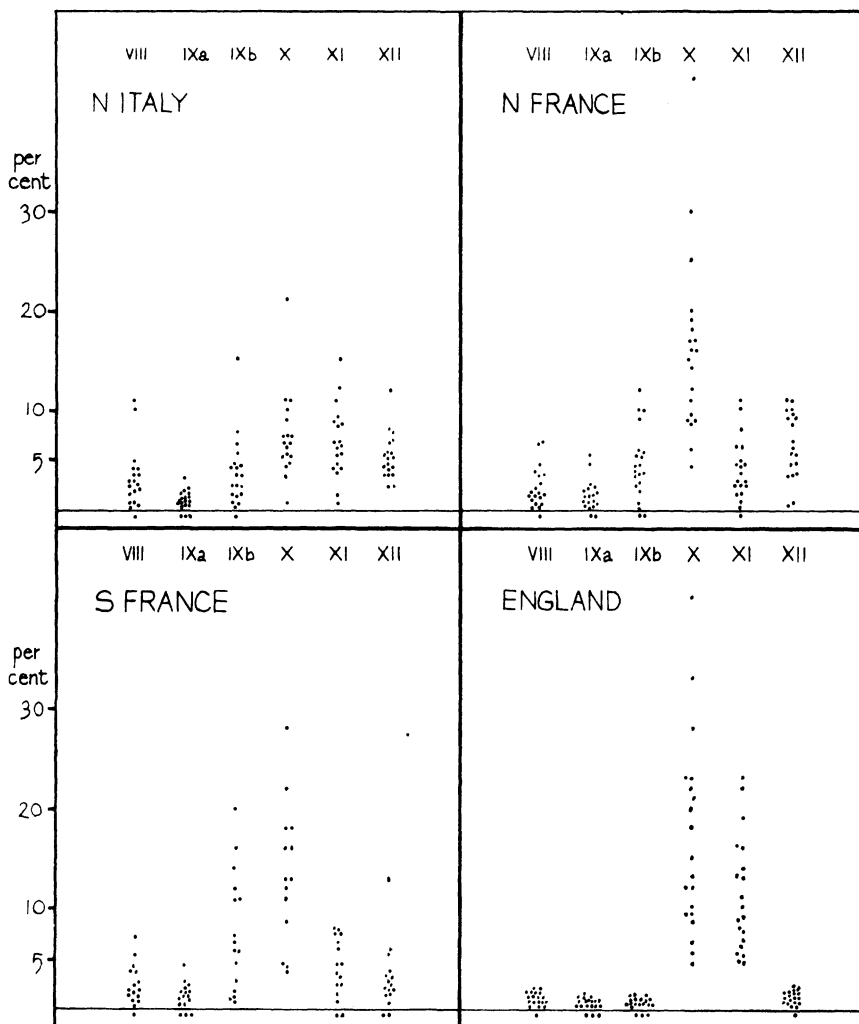


FIG. 5

Distribution of base silver coins from A.D. 193 to 317.

barbarous radiates copy mainly issues up to 273, with a few later ones, the imitations have been placed in Period XI (275-94).

The factor which operated on early Roman coinage in Britain to cause divergence from Europe has been seen to be either a shortage of supply, or a very restricted use, of coins. Either way, the result was a lower rate of coin-loss in Britain than in Europe before 259. There was no suggestion of any element of selective supply of lower denominations to this developing economy, for although the total numbers are low, the proportions of denarii to sestertii to Asses in England is roughly similar to that on the continent. But in and after the third

century Britain has high numbers of coins of low face value, and apparent shortages of coins of higher face value. This appears in Periods X and XI where 'good' coins of the central emperors are rare, while 'poor' coins of the central and Gallic empires are common. This tendency in Britain for groups to have a bias in favour of coins of low face-value, whenever two similar values co-existed, will be seen again in the fourth century.

In Britain alone the return to coins of a high value after 294 causes a severe drop in numbers. In Italy and France the drop occurs, but at most the numbers are halved; in Britain Period XII often shows only one tenth of the coins in Period XI.

(11) *The Central, Gallic and British Empires*

As mentioned above (p. 238) the years 259–94 give the only occasion in which different provinces within our four areas were striking and using different coins. The issues of Carausius and Allectus are here virtually confined to Britain since the only sites which might have shown comparable values, Rouen and Boulogne, were not investigated. Barbarous radiates occur in the northern part of France as well as in Britain, but their numbers in the south of France and Italy are very small. That they did reach Rome itself is shown by one example from the Forum and another from a recent excavation by Miss Joanna Morris beside Porta Pia.

At the beginning of this era there are two types of distribution at work. The issues of Gallienus and Claudius II are common in all areas, but especially in Britain: coins of the Gallic emperor Postumus are similarly represented in Britain and Italy, but are more common in France. Here is the 'distribution by value' which is, at this moment, opposed to 'distribution by politics', and appears the stronger. Britain concentrated on 'poor' coins even if they came from the political sphere from which she was supposedly estranged. Italy concentrated on 'good' coins even of a rebel emperor.

After the death of Postumus there was little difference in the Roman and Gallic issues until the reform of Aurelian. 'Politics' and 'value' combined to exclude the coins of Aurelian from Britain, while the same factors in Italy ensured the preponderance of Aurelian's coins over those of his rivals. With the coins of Victorinus and the Tetrici, Britain laid the foundations of substantial coin-use, which was exceptional by the standards of any other area at the time, and was to continue through the barbarous radiates to the low-value coins of the fourth century.

The emperors from Tacitus (276) to Diocletian struck a considerable number of coins as mints proliferated and the workshop establishment of individual mints expanded. Table IV shows decisively how few of these coins penetrated to Britain, or were lost there. One or two hoards of this period are known, but there seems to be no evidence that coins of this date ever saw substantial circulation in this country. In Italy they are sometimes the most common coins in a group. This divergence is presumably due to 'distinction by value', for it is going beyond the evidence to suggest any political division between Rome and the North West

from the Tetrican abdication to the proclamation of Carausius. The coinage of Carausius appears to follow closely, and grow from, the barbarous radiates, and one wonders how far the widespread issue and use of such coins in Britain reflects a degree of autonomy even before 286.

(12) *Late Roman silver*

Silver coins of very good quality (often up to 95 per cent silver) were brought back into the economy after about 356. Hoards of these late silver coins are especially associated with Britain, but the Tables show that British groups can claim no special number of these coins as accidental losses. All that can be said is that in all areas, though particularly in the north of France, late Roman silver is rare.

(13) *The fourth century—copper*

FIG. 6 shows a situation reversed from that shown in the distribution of sestertii (FIG. 2). In the fourth century British groups show a large number of coins, Italian groups show few; France as usual is in between, though a majority of groups in the south of France show less coins than most Italian groups. If we take Italy as the norm, and Britain as aberrant, an assumption which has seemed justified so far, then the latter seems to have had an unusually large number of coins in the fourth century.

The problem of irregular copies of fourth-century coins has been briefly discussed in Part I of this paper.² All that needs to be recalled here is the fact that this problem is mainly an insular one—these copies are rare in the other three areas—and that elimination of copies would not bring the British groups down to a European level. Copies rarely form 30 to 40 per cent of the coins of any period in British groups, and in Period XVa, for instance, are almost unknown; so subtraction of such copies from totals would still leave Britain well ahead of the other provinces in these periods.

'Distinction by value' can possibly be seen at work in Italian groups which show a rise after 348, when the module of copper coins increased sharply, and a rise after 388 when the same thing happened after a brief period of nothing but 'poor' coins (AE 4, diameter 14 mm). This same distinction can be seen again in Table I in Periods XVb and XVI in Britain and Italy. In Britain the second brass of 378–87 are almost unknown, and such coins as there are of that poorly represented period are invariably fourth brass. In Period XVI (388–402) none but fourth brass are represented in the British groups. In Italy, Period XVb usually has more second than fourth brass, and even in Period XVI fourth brass are not always the commonest coins. While Britain rarely saw or lost the larger copper coins, Italy usually used and lost far more large coins than small.

Mr. P. J. Casey has suggested (*in lit.*) that the poor representation of coins of Magnus Maximus (383–8) is due to the absence of British garrisons, and hence

² *Britannia* iii (1972), 269–76.

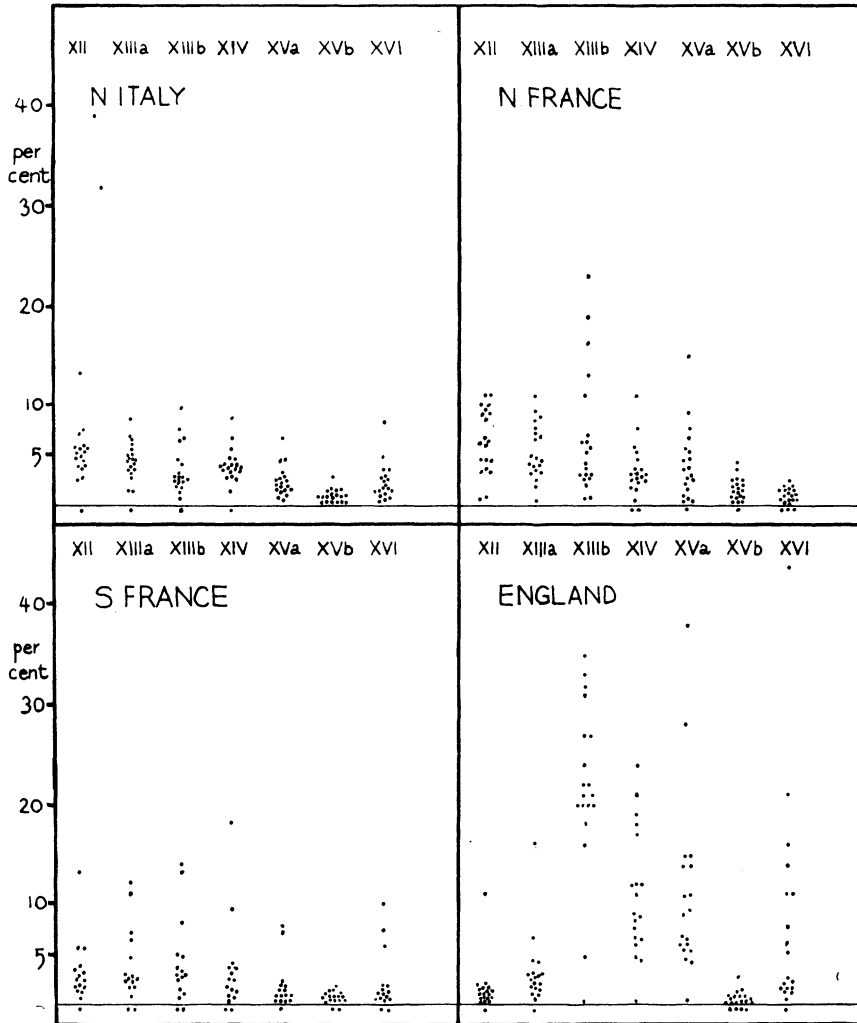


FIG. 6

Distribution of copper coinage from A.D. 294 to 402.

their pay, from the province. While they were following their leader in Gaul the need for coinage in Britain was substantially curtailed. This stimulating suggestion provokes further speculation which fits the evidence surprisingly well.

The fourth century in Britain saw two problems, a problem of high supply of coinage, and a problem of local imitation. In Period XIII*b*, for example, this imitation is such as hitherto to have defied all attempts to separate it from the regular coinage; it is therefore well executed, copies are mixed homogeneously with regular coins, and the two must presumably have circulated without distinction. These points can be made less forcefully for Period XIV (348-64) when

the reverse commonly copied was that of a Fallen Horseman with the legend *Fel Temp Reparatio*, but even then there are many copies which could have circulated at parity with the regular coins. Copies of obviously small size, less than about 13 mm diameter, perhaps filled a strong need for small change which the regular coinage of the time did not even attempt to supply.

If we assume that the high supply of coinage *met* Britain's unusual need, these problems become contradictory and nonsense ensues, for there was no need to produce copies when enough regular coins were supplied. One way out of the contradiction is to suggest that the regular supply never succeeded in meeting British demand, which I very much doubt; the other way is to assume that copies and regular coins were not produced at exactly the same time. This is not to desert Dr. J. P. C. Kent's powerfully argued case³ for 'contemporary copies' (contemporary, that is, with the regular coins that they copied) and to return to the idea of a fifth-century coinage. I suggest that, since the regular coinage of the fourth century was episodic, Britain produced copies when regular supplies dried up.

Argued in detail this case grows in attractiveness. Copies of coins of *c.* 320–30 are known, but they seldom form an appreciable part of the coinage. The main copies seem to have started somewhere after 330 when the Wolf and Twins reverse of *Urbs Roma*, the Victory on Prow of *Constantinopolis*, and the Two Soldiers of *Gloria Exercitus* provided copying which ranged from the immaculate to the inarticulate. If we put all pre-330 copies together just before 330, then we might have a start in about 326, a modest supply in the minor breaks in the coinage in the 330s, and then a massive production when regular supply ceased in 341. Present theory⁴ brings the coinage of Constantine's sons to a close shortly after the death of Constantine II in 340, and only suggests a re-opening of production in 345–6. There were therefore five years in which the British appetite for small change may have been completely unassuaged. It seems no accident that the majority of copies of this date follow the Two Soldier reverse showing only one standard, which belongs to 335–41, rather than its earlier counterpart showing two standards. Copies of the imperial ladies, Helena and Theodora, are fairly common, and the originals of these belong to 337–40. The module of copies descends from that used by the coins struck by the regular mints up to 341, rarely attempting the larger module of 330–5. With the resumption of the large-scale supply of small change in 346, copying seems to have waned; for copies of the Two Victories of *Victoriae DD Augg Q NN* are proportionally rare. Early Constantinian copies seem therefore to have begun just before 330, a time when Richborough and other Saxon Shore forts were being re-occupied, and to supply a need caused by stoppages in official production up to 346.

After the eleventh centenary of the founding of the City in 348 with its issue hopefully labelled *Fel Temp Reparatio*, and during the disturbances of

³ *Proceedings of the Third Congress of Roman Frontier Studies* (Rheinfelden), 61.

⁴ J. P. C. Kent in *Roman Imperial Coinage* viii (forthcoming).

Magnentius (350–3), the regular mints supplied mainly large coins, few of which ever seem to have reached Britain. This seems to have acted as an interruption of supply, for large-scale copying began once again. The only secure grounds for dating these copies are the design that was copied, and the coins on which they were sometimes overstruck. Both give an unequivocal date-bracket of not before 350, and not after 364. No one has yet shown one of the very common issues of the House of Valentinian to have been overstruck, and in the face of the hundreds of overstrikes known on coins of 330–41 the negative evidence seems definitive. A second phase of copying can therefore be fitted in to the difficulties of supply, and lack of small change, from *c.* 350 to 364.

The third and fourth phases which should have produced copying are the apparent stoppage of supply, and the large module of the regular coinage, from 383 to 387, and the complete stoppage of copper in the West after 402. The problem here is a lack of copies. There are a few copies of coins of the House of Theodosius (388–402), but these are rare. There are practically no copies of coins issued from the regular mints in the twenty years preceding 383. Why this lapse, when copying was so firmly rooted in Britain? The simplest explanation is that the copyers were not in Britain. Since I assume that the copyers met their own needs by producing coins, the absence of copyers would mean the absence of need, and the great need for money was in the army.

As yet we know very little about the origins, status and disposition of the army in Britain in the fourth century. The establishment of units of *Comitatenses* in the towns seems probable, and may be confirmed by the standard military bronze fittings distributed widely through the province from about 350 onwards. Augmentation of Romano-British troops by forces raised outside Britain, though contentious, seems to me probable, though I doubt whether such soldiers shared to any great extent in the coin-based economy of late Roman Britain. In the north of Gaul and the Germanies soldiers receiving regular wages (as distinct from tribesmen bribed with gold or silver) were presumably safely concentrated in the late fortresses and camps such as Mainz and Kastell Alzey, which have a concentration of late coins. It may be that the numismatic uniqueness of Britain in the fourth century lies in the nature and distribution of her regular soldiers, and these in turn determined not only the volume but also the widespread and homogeneous distribution of her later coinage.

I have so far avoided saying that soldiers were responsible for copying coins in Britain in the fourth century. The laws against forgery were frightening, and, one would think, efficiently deterrent in their brutality; but there is surely a case for suggesting that if the army (with the consent of the civil governor) produced its own small change, such production, with no attempt at underhand forgery, could be countenanced. The army, paid in gold, was the only body needing to copy small change which could do it safely. If we also remember the remarkable number of copies which were used and lost by the army in the Shore Forts such as Richborough, and add the final argument of the cessation of copying at the departure of the army, then I think that at least a case has been made.

III. DISCUSSION OF METHOD

Before bringing together the last points in this study we must now examine the method used. Such discussion has so far been avoided on the grounds that there was no point examining the method until it was known whether it worked. This principle is unlikely to cause discomfort to those with a scientific or empirical bent, but it has already caused considerable doubt among some who claim a more classical academic disposition.

The main question—all others being subordinate—is whether the material assembled here demonstrates a modern pattern of finding, collecting and conserving, or an ancient pattern of loss. In Britain, the majority of groups consist of coins from recent, controlled excavations, and there can be no doubt at all that these demonstrate a pattern of ancient loss on the sites excavated rather than a pattern of modern finding. But other groups, such as Lord Verulam's collection and the six thousand coins in the Corinium Museum, are the result of long-term collection of chance finds from local sources. These groups, which *could* show a pattern of modern finding radically different from the pattern of ancient loss, are virtually indistinguishable from groups of excavated coins, when judged by the criteria here used. Cirencester shows an odd group of late sestertii which I have joined general opinion in labelling as collectors' imports; but while this paper was being written another sestertius of Severus Alexander was found weightily stratified below a re-used Roman tombstone. It may be that even this 'diagnostic' batch of contamination owes less to a modern Cirencestrian collector than to a Corinian peculiarity.

In Britain there are many groups of coins which are the result of excavation; their proportions and composition were consequently determined in antiquity. Groups of chance finds are also known, but these have the same characteristics as excavated coins: no collector's pattern can therefore be seen in any of the groups used for this study.

In Italy groups at Aquileia, Ostia, and from the Tiber come from archaeological deposits, and can therefore be held to represent the pattern of ancient loss. Groups at Pavia, Este, Portogruaro, Adria, and Faenza seem to have been built up of local chance finds, for many of the finds are recorded in museum registers, and there are few, if any, collectors' items among them which are likely to have travelled any distance. Other groups such as the Civic collections at Padova, Venezia, and Bologna derive from further afield, but probably still within Italy if not within the local province. All Italian groups hang together, numerically, in a very neat fashion: they all show a typical 'Italian' distribution by denominations, metals and dates of issue, with the minor divergences to be expected in groups of such different size and background. Because some of these groups, which show the same pattern as the rest, have either an archaeological origin, or a pedigree of local finds, then the pattern they show must be an ancient pattern: if civic collections show this same pattern it is because the pattern of coins lost in the Roman period far overshadows any modern pattern which recent collectors might have tried to impose. Again, in Italy as in Britain, there is every

reason to suppose that the pattern discovered is due to the ancient pattern of loss, and there is no reason to suppose that modern collecting and sorting has altered this pattern in any basic way.

It would be tedious to repeat the same reasoning for the south of France, but it can be done by comparing the archaeological groups of Glanum, L'Escafe, and Banon with the local finds of Poitiers, Arles and Dijon and the collections of Toulouse and Perpignan. From the north of France and the Rhine comes a final piece of evidence. It might perhaps be suggested, in order to account for the absence of small copper issues of the fourth century on the continent, that all the museums of France and Italy might be guilty of discarding poor small coins, and saving larger and finer issues. This accusation can be proved unfounded by the large numbers of unattractive and miserably small coins of, say, Claudius II in continental museums; but if despite this it were still maintained, it would have to be extended to the archaeology and museums of Germany. For the four German groups included in this list from the highly critical pages of the 'Fundmünzen' are indistinguishable from groups preserved in museums of the north of France. Once again it is as certain as can be that the ancient patterns of coin-loss outweigh any modern patterns that there may be; the latter are present, certain, and appreciated, but in the event unimportant.

This conclusion has to face criticism. The ancient pattern, it has been suggested, is rendered irrecoverable (a) by the presence of hoards in many groups, or (b) by selection by museums of attractive coins, or (c) by the random destructive nature of recent building on sites with Roman antecedents, or (d) by the widespread trade in coins, and the large distances that they may have travelled from their place of loss. The answer to these points is simple, and has already been given at length: all the points raised can create difficulties in the case of a single period, or a single group; but they have been seen to have no overall effect on the total picture, and *at that level* need cause no anxiety.

Hoards do contribute to some groups; they have been noticed in my detailed reports on the four areas, they do affect individual periods in individual groups and do provide aberrant values. They have not been mentioned here from the very fact that the other values show them up as aberrant, and they can therefore be disregarded when framing general principles. Some museums have indeed selected the biggest and the best coins, for example Toulouse and Perpignan; but this is immediately obvious in comparison with Glanum or Poitiers, can be discounted, and does not substantially affect the general picture. Every site which has produced coins has a different history in terms of ancient occupation, abandonment or continuity and modern disturbance, yet all the national pictures smooth out the smaller fluctuations which such differences have produced. Coins certainly travel, now as in the first century. Montpellier has no Roman precursor yet has an excellent collection of Roman coins; the Collection Bottacin at Padova comes partly from Trieste and partly from even further afield. But seen against the general background these vagaries are insignificant.

Justification at such length may itself need justifying. I have argued the case point by point in detail, and I hope logically, because the work necessary to

construct this paper met with some hostile criticism which may well be extended to its conclusions. I am not concerned to buttress a failing case, but to make sure that the argument, if it is rejected, is rejected for sound and cogent reasons, rather than for unsound ones here I hope refuted.

IV. GENERAL DISCUSSION

Having presented the method, a justification of the method, the material gathered and some of the points which grow directly from the material, I must finally consider some points which have either remained implicit or have not yet appeared.

The first question is what the coins in any given group represent. So long as these all come from a single site, then it seems to make little difference whether they result from excavation or long-term chance finds. I shall therefore continue the discussion for site finds alone. The coins in a site-group do not represent the money which circulated on that site from 27 B.C. to A.D. 402. They rarely show any gold coins, though we know from historical sources and from small hoards that these were used in commerce as well as for military and governmental salaries; more obviously, the coins on any site now are only that small fraction of the total circulation which was lost. Here are two facts: our site-finds are a fraction of the coins in circulation on that site, and they are a fraction biased in favour of worthlessness. Also important is the 'risk factor' in which one measures the task of finding a coin lost in a pile of refuse, or on the surface of a busy street, against its value. Gold coins were rarely lost because not only they were scarce, but also when misplaced a great deal of effort went into recovery. This 'risk factor' is not my modern invention: in the *Cena Trimalchionis* of Petronius (43, 4) one of the diners defines the financial care and craft of a recently deceased friend with the words 'he started off with an As and didn't mind picking a quadrans out of a muck-heap with his teeth,' giving the clear judgement that only the poor and mean would do such a thing: the rest could afford to leave that smallest of coins for the later excavator.⁵

Bearing in mind the value of a coin to its loser, we may lay down a general rule that the coins found on a site, being the coins which were anciently lost there, bear a direct relation to the coins that were circulating, the main distorting factor being the over-representation of coins of low value. There is a further distorting factor, that of date. The number of coins which were lost in the year of their minting must be very small indeed, yet we still have no objective evidence to demonstrate the probable dates of loss of the more commonly found coins. It is possible to make one fairly firm statement on the dating of coin-movement, and to use this, and other ideas, to give one interpretation of the meaning of coins found on a site.

It seems likely that most coins completed 90 per cent of their travelling, in terms of Roman miles, in the period, if not within five years, of their minting.

⁵ See also Luke xv, 8-9, a reference I owe to Professor S. S. Frere.

The best archaeological evidence for this is the way in which coins struck before 43 entered Britain after that date only in very small numbers. This suggests two points; first, that the majority of coins of Augustus had reached their 'loss-spots' within the reign of his successor, and few strayed widely thereafter; secondly, that coinage which had already been struck and circulated was, in principle, out of reach of the government. On the first point the evidence is clear that there was never enough coin-drift after 43 to even up the numbers of coins of Augustus, or Tiberius, or even of Gaius in France and Britain. On the second point the evidence, archaeological and historical, fits better for copper than for silver and gold. The precious metals could, and did, return to the government in taxes, and could be re-issued as e.g. military pay without further effort. Thus while the mint of Rome seems to have produced little silver and no bronze during the early years of the conquest of Britain, silver already circulating could be sent into the province after its collection via taxes, and this accounts for our picture of the early silver coinage in Britain as consisting mainly of the Gallic issues of Augustus and Tiberius, with a good sprinkling of Republican issues. For gathering circulating bronze coin, in contrast, no state mechanism seems to have existed; so the army, it may be supposed, had to supplement insufficient supplies from Rome by producing its own copies. This explanation is backed by some evidence, but it must be admitted that at this period copying is not yet securely identified with the army.

Care must be taken here to distinguish between large-scale official movement of coinage and individual or group movement which brought coinage with it. Small numbers of all sorts of coins obviously entered Britain in the purses and strong-boxes of the invading army. This was a year of instant import, to be repeated sporadically later with military movements; but money which later came with individual detachments must pale into insignificance beside the periodic bulk movements of military pay, wherever they came from and whatever metals and denominations they comprised. Later examples of momentary isolation of various areas, or revivals of activity in border areas, similarly show that coins seldom moved into fresh areas within the Empire very long after they were struck. I therefore suggest that a majority of coins lost in Italy were trapped in Italy in the period of their minting, that a majority of coins lost in France moved there soon after they were struck, and similarly the majority of coins lost in Britain.

My work at present in progress on the composition of hoards of denarii buried in Britain in the first two centuries gives some ideas on dates on coin-loss in general, and shows a very straight-forward picture of coin circulation. To the province in question comes a batch of newly minted coins of, say, Hadrian. They may pass through the army pay-chests into the pool of denarii in general circulation. On entry to this pool the coins of Hadrian will obviously be diluted by the many coins of Trajan, and also by survivors from the Flavian period and perhaps the republic. Perhaps, after some years, these newly minted coins form 20 per cent of the denarii in circulation. Throughout the reign the percentage of the coins of Hadrian will increase, but even at the emperor's death they will not form the largest percentage of the coins represented. That will only happen

in the reign of his successor when the coins of Hadrian have stayed more or less constant, the earlier coins are still being lost and hoarded, and the coins of Antoninus Pius are still in a minority.

I have suggested that losses bear a relation to coins of the same sort in circulation: very roughly, and allowing for differential value and 'risk', the more of any coin in circulation the greater the chance of some of them being lost. So there exists a gulf between the period of supply and the period of loss: the period of supply may well be the period of minting, whereas the period of loss is statistically less likely to be the period of minting than the two periods immediately following. It is this gulf which has made me attempt to restrict my earlier remarks to the supply of coinage, and to avoid, where possible, any interpretation in terms of loss. The coins in and under the palace at Fishbourne, which are positively misleading unless considered in the social and economic context in which they were lost, add to my determination to avoid this particular area of speculation until further work has better mapped out the hazards. As a very general summary it might be safe to say that the coins lost on any site give information on the supply of money to the province in question during the period of issue of each coin, and information on the state of the site one or two periods after each coin was minted.

The main exception to this rough rule is the behaviour of copper coins in the fourth century. Dr. J. P. C. Kent has suggested that many of these coins were stock-piled in the mints for some years after they had been struck. One of the chief points causing this suggestion is the peculiar distribution of coins among princes who ruled concurrently: thus from 337 to 340 the three sons of Constantine ruled together and presumably struck equal numbers of coins, yet Constantine II is always poorly represented in modern finds. This could be explained if coins of the three princes were struck, but stored rather than issued until after the death of Constantine II, when his coins were melted down and re-minted rather than issued with the coins of his brothers. Although my thoughts on copying of coins do not go any way to explaining this problem, I prefer for the moment to hold to a theory of 'stop-go' production, which was immediately discernible in the shortage of supply to out-lying provinces such as Britain.

Whatever the mechanics of supply, these copper coins followed a life much shorter and much less sure than that of the denarii on which my earlier remarks were based. As a token currency with very little intrinsic value, their life-span depended on the state of continuous flux which obtained in governmental monetary policy throughout the century. While a proportion of each issue was lost when current, the remainder was superseded by monetary reforms (though whether demonetized or not we do not know) and was either discarded for subsequent archaeological discovery, or remained as a small but finite proportion of small change until the cessation of the use of coinage.

To explain the different subject of relative numbers of coins in Britain and Europe in the first and fourth centuries, one simple but perilous method may be applied; this concerns the value of coinage lost expressed in terms of gold. One aureus had the same purchasing power as 25 denarii or 100 sestertii or 400 asses; in the fourth century a gold solidus was roughly the equal of 1800 copper coins

(a rough average which does not assume all copper coins to have the same value) or 20 silver. Using these rough values it can be seen that the total purchasing power of coins in the Corinium museum for the first century of its Roman occupation is equal to between four and five aurei, and for the fourth century it is between four and five solidi. Very simply, as much money (in terms of gold) was lost in Corinium in the fourth century as in the first century of its existence. At Dijon, a site already compared to Cirencester, the early (41–138) value of its coins lies between fifteen and sixteen aurei, while for the fourth century it fails to add up to one solidus. In Dijon far more money was lost in the early period than in the fourth century.

One idea to be derived from these figures concerns the relation of coins lost (or rather coins recently found) to the total of coins in circulation. The tiny proportion of coins lost is startlingly illustrated when we consider that all the coins of the period 41–138 so far found in Cirencester, representing a century of losses, would only make up the takings of one prosperous shop-keeper during one week of life in the Roman town.⁶ The total excavation of the site might produce ten times as many coins as we have now, around 60,000, which would compare favourably with the total excavation of Richborough—a smaller site, but more intensively occupied by regularly paid troops. It is inconceivable that the number could reach 200,000 coins. This means that we can never approach the turnover of one prosperous shop-keeper for one year. With one hundred years to consider and perhaps as many shops, inns and other establishments charging fees, together with all the paid labourers and skilled services supplied and paid outside shops, not to mention taxes and religious dues, entertainment and transfer of property, what survives is probably not one hundred-thousandth part of the money in circulation in Corinium at any one time. Allowing for the effect of gold and silver (for buying a field in gold pieces needs no more coins than buying a cow in silver pieces, or a set of dishes in asses) and remembering that much of this money moved in cycles from hand to hand, it would probably be overstating badly to suggest that one coin in every thousand in circulation was lost. On a sample of far less than 0.1 per cent of the original volume my reluctance to use the full statistical apparatus should occasion no surprise.

A last suggestion concerns the British addiction to small change. This has been put forward above as a novelty of the third century which became established in the fourth. Could it be that the proportion of commercial transactions of different value-levels remained fairly constant in Britain throughout the Roman period, so that in the first two centuries the value of the coins available was too high to be of general use? This presumably altered in the fourth century when the face value of a single coin had fallen from one four-hundredth of a gold piece to one twelve-hundredth or less. When the purchasing power of the smaller coins had fallen to one third of its earlier value, many more commercial transactions were on the same level of value as the coins available, and more coins were

⁶ I am very grateful to Mr. Ian Hodder for pointing out that this calculation can only be regarded as reasonable if it is assumed that all the transactions of this 'prosperous shop-keeper' were conducted for cash—a point as yet completely speculative.

consequently used. On the continent a contrary method of reasoning could perhaps be adopted, but that is an area to be explored by an economist.

Britain emerges from the welter of material and interpretations as a province with an individual, not to say aberrant, use of coinage, but one which in the long run proved more stable, perhaps because it was more broadly based in the population than the more 'aristocratic' coin-use of the mainland of Europe.

Acknowledgements

This survey made demands on the time, good nature and patience of a large number of curators, custodians and librarians throughout France and Italy to whom I am very grateful.

Initial archaeological encouragement was provided by the late Sir Ian Richmond, and has been continued by Professor S. S. Frere and all the other archaeologists who have kindly allowed me to work on the coins from their excavations. On the numismatic side, these notes might never have materialized without the encouragement of Mr. Robert Carson and Dr. John Kent and the many hours of discussion with them, and with Dr. Anne Robertson, Mr. George Boon and Mr. John Casey; but they must not be thought responsible for, or to agree with, my errors of fact or judgement. To Mr. David Russell, to the Craven Committee of the University of Oxford who enabled me to travel in north Italy and north France, and to the Heberden Coin Room of the Ashmolean Museum, its deputy keeper Dr. Colin Kraay and its staff, I owe the chance to gather and to work on this material in happy surroundings.

I offer this work to the keeper of the coin room, Dr. Humphrey Sutherland, with my best thanks for all his help; it would be impossible to find another person with whom my time could have been more profitably or more pleasurably spent.

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AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	
		WT				VV				Wa				Wi				Ri							
-	5	-	19	-	7	-	6	-	2	-	1	-	1	-	-	-	64	4	113	3					I
-	-	-	35	-	-	-	17	-	-	-	9	-	-	-	5	-	1	22	377	4					IIa
-	1	2	24	3	-	-	11	-	1	-	3	-	2	-	-	-	7	4	129	2					IIb
-	9	2	62	-	10	3	43	-	7	2	27	-	1	-	10	-	34	19	333	-					III
-	8	13	36	-	5	10	15	-	3	9	12	-	-	1	-	-	22	12	59	-					IV
-	4	14	34	-	6	13	18	-	1	6	6	-	-	5	5	-	12	26	38	-					V
-	1	33	39	-	5	11	21	-	1	8	9	-	1	2	2	-	29	28	55	-					VI
-	2	17	11	-	6	13	14	-	1	7	6	-	1	5	1	-	3	9	2	-					VIIa
-	2	8	3	-	1	7	2	-	9	5	-	-	-	-	-	-	3	9	2	-					VIIb
-	37	1	-	-	32	1	-	-	9	-	-	-	2	-	-	-	52	1	-	-					VIII
-	14	2	-	-	17	-	-	-	4	-	-	-	2	-	-	-	13	-	-	-					IXa
-	29	-	-	-	17	1	1	-	4	-	-	-	2	-	-	-	39	-	-	-					IXb
784	-	-	-	1,395	-	-	-	505	-	-	-	199	-	-	186	-	-	-	-	-	4,759				X
310	-	-	-	641	-	-	-	473	-	-	-	183	-	-	188	-	-	-	-	-	4,099				XI
-	-	-	54	-	-	-	26	-	-	-	15	-	-	13	-	-	-	-	351	-	-	-	-	-	XII
149	-	-	164	-	-	-	69	-	-	-	71	-	-	24	-	-	-	-	-	855					XIIIa
952	-	-	1,023	-	-	-	574	-	-	-	469	-	-	160	-	-	-	-	-	10,127					XIIIb
-	1'	-	902	-	-	220	3	-	-	-	129	-	-	51	-	-	35	46	3,156	-					XIV
225	1	-	287	-	-	159	-	-	-	-	253	-	1	-	55	28	-	-	-	2,821					XVa
-	-	-	4	-	-	1	-	-	-	-	4	-	-	5	25	-	-	-	7	1,083					XVb
45	-	-	72	-	-	48	-	-	-	-	268	-	-	61	72	-	-	-	-	22,750					XVI

AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4		
		Ha				RV				Rh				Sp				Pa				Ma				
1	5	-	12	-	-	-	1	-	3	2	53	5	2	3	95	1	1	-	4	1	27	18	570	13	I	
1	-	-	-	-	-	-	1	-	-	5	10	-	-	1	11	-	-	-	1	1	-	29	43	3	IIa	
-	-	-	-	-	-	-	3	-	1	4	14	-	3	2	17	-	-	-	3	-	7	7	49	4	IIb	
-	1	1	3	-	1	1	3	-	8	6	35	-	-	4	29	-	3	1	8	-	20	15	114	1	III	
-	-	2	1	-	-	4	5	-	8	16	28	-	2	11	17	-	-	-	3	1	21	29	51	-	IV	
-	1	8	7	-	5	11	1	-	8	31	15	-	1	12	13	-	1	2	3	-	8	25	29	1	V	
-	-	13	3	-	2	8	-	-	13	20	27	-	2	24	26	-	1	4	4	-	7	37	38	-	VI	
-	6	2	1	-	2	3	-	-	4	7	5	-	1	6	3	-	2	-	3	-	6	9	6	-	VIIa	
-	1	1	-	-	12	4	-	-	68	2	1	-	13	1	-	-	14	1	-	-	86	5	2	-	VIIb	
-	5	-	-	-	27	9	-	-	47	7	-	-	14	3	1	-	4	-	1	-	47	4	-	-	VIII	
25	-	-	27	-	-	-	140	-	35	1	-	-	18	-	-	-	6	2	-	-	83	13	1	-	IXa	
6	-	-	4	-	-	-	51	-	-	-	3	-	-	-	13	-	-	-	-	8	-	-	-	-	IXb	
-	-	-	10	-	-	-	48	-	-	-	44	-	-	-	47	-	-	-	15	-	1	-	68	-	X	
12	-	-	8	-	-	-	19	-	-	-	43	-	-	-	68	-	-	-	35	-	-	-	-	107	XI	
8	-	-	11	-	-	-	19	-	-	-	195	-	-	-	80	-	-	-	71	-	1	-	-	114	XII	
-	-	-	3	-	-	-	10	-	-	-	44	-	-	-	25	-	-	-	11	-	-	-	65	-	XIIIa	
8	1	-	24	-	1	-	29	-	-	-	45	-	-	-	59	-	-	-	28	-	-	-	-	36	XIIIb	
1	-	-	4	-	-	-	4	2	-	-	15	1	-	-	18	1	-	-	7	-	-	-	10	4	XIV	
2	-	-	1	-	-	-	6	-	1	-	12	-	-	-	2	-	-	-	3	-	-	-	1	3	XVa	

AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4																	
		VIT				Di																			
4	-	-	-	-	66	5	169	10																	I
2	-	-	-	-	7	13	38	2																	IIa
-	-	-	-	-	16	19	52	2																	IIb
-	1	3	-	-	109	32	136	-																	III
3	-	4	2	-	94	45	96	-																	IV
-	2	-	-	-	81	64	89	-																	V
-	2	-	-	-	93	176	109	-																	VI
-	1	2	-	-	54	258	125	-																	VIIa
-	1	2	-	-	68	94	40	-																	VIIb
-	3	-	-	-	95	31	27	-																	VIII
-	2	-	-	-	38	142	19	-																	IXa
337	2	2	-	214	532	189	18	-																	IXb
191	-	-	10	-	-	15	-	787																	X
-	-	-	-	-	-	-	167	-																	XI
173	-	-	7	-	-	-	130	-																	XII
85	-	-	27	-	-	-	80	-																	XIIIa
-	-	-	8	-	-	-	39	-																	XIIIb
-	-	-	2	-	-	-	33	-																	XIV
26	-	-	2	-	-	-	20	-																	XVa
8	-	-	2	-	-	-	3	-																	XVb
23	-	-	33	-	-	-	3	-																	XVI

AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4		
		Az				Co				Si				T.1				T.2				Os				
17	11	15	56	17	14	18	95	17	13	27	137	40	-	136	2,395	64	-	4	75	53	-	-	23	7	I	
7	-	2	2	2	-	8	23	4	1	4	14	8	-	90	578	17	-	-	9	19	-	-	6	3	IIa	
7	4	14	15	3	7	10	26	8	7	38	48	5	-	65	124	13	-	8								

-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4		
	WT				VV				Wa				Wi				Ri					
	.1	-	.4	-	.3	-	.2	-	.2	-	.1	-	.1	-	-	-	.1	.1	.2	.1		I
	-	-	.7	-	-	-	.7	-	-	-	.5	-	-	-	.6	-	.1	.1	.7	.1		IIa
	.1	.1	.5	.1	-	-	.4	-	.1	-	.2	-	.2	-	-	-	.1	.1	.2	.1		IIb
	.2	.1	1.2	-	.4	.1	1.7	-	.4	.1	1.6	-	.1	-	1.2	-	.1	.1	.6	-		III
	.2	.3	.7	-	.2	.4	.6	-	.2	.5	.7	-	-	.1	-	-	.1	.1	.1	-		IV
	.1	.3	.7	-	.2	.5	.7	-	.1	.3	.3	-	-	.6	.6	-	.1	.1	.1	-		V
	.1	.7	.8	-	.2	.4	.8	-	.1	.5	.5	-	.1	.2	.2	-	.1	.1	.1	-		VI
	.1	.3	.2	-	.2	.5	.5	-	.1	.4	.3	-	.1	.6	.1	-	.1	.1	.1	-		VIIa
	.1	.2	.1	-	.1	.3	.1	-	-	.3	-	-	-	-	-	-	.1	.1	.1	-		VIIb
	.7	.1	-	-	1.3	.1	-	-	.5	-	-	-	.2	-	-	-	.1	.1	-	-		VIII
	.3	.1	-	-	.7	-	-	-	.2	-	-	-	.2	-	-	-	.1	-	-	-		IXa
	.6	-	-	-	.3	.1	.1	-	.2	-	-	-	.2	-	-	-	.1	-	-	-		IXb
	-	-	-	22	-	-	-	20	-	-	-	12	-	-	-	23	-	-	-	9.2		X
	-	-	-	19	-	-	-	19	-	-	-	11	-	-	-	23	-	-	-	7.8		XI
	-	-	1.1	-	-	-	1.0	-	-	-	.9	-	-	1.6	-	-	-	-	.7	-		XII
	-	-	3.2	-	-	-	2.7	-	-	-	4.2	-	-	-	3.0	-	-	-	-	1.6		XIIIa
	-	-	20	-	-	-	22	-	-	-	27	-	-	-	20	-	-	-	-	20		XIIIb
	.1	-	18	-	-	-	9	-	-	-	7.5	-	-	-	6.4	-	.1	-	6.2	.1		XIV
	.1	-	5.7	-	-	-	6	-	.1	-	15	-	.1	-	6.9	-	.1	-	-	5.5		XVa
	-	-	.1	-	-	-	.1	-	-	-	.2	-	-	-	.6	-	.1	-	.1	2.1		XVb
	-	-	1.4	-	-	-	1.9	-	-	-	16	-	-	-	7.7	-	.1	-	-	44		XVI

-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4						
	Ha				RV				Rh				Sp				Pa				Ma					
	2.9	-	6.9	-	-	-	.2	-	.3	.2	5.3	.5	.3	.4	13	.1	.3	-	1.3	.3	1.3	.9	26	.6		I
	-	-	-	-	-	-	.6	-	-	.5	1.0	-	-	.1	1.5	-	-	-	.3	.3	-	1.3	2.1	.1		IIa
	-	-	-	-	-	-	.6	-	-	.4	1.4	-	-	.4	3	2.3	-	-	1.0	-	.3	.3	2.3	.2		IIb
	.6	.6	1.7	-	.2	.2	.6	-	.8	.6	3.5	-	-	.5	3.9	-	1.0	.3	2.6	-	.9	.7	5.3	.1		III
	-	1.2	.6	-	-	.8	1.1	-	.8	1.6	2.8	-	.3	1.5	2.3	-	1.0	1.0	.3	-	1.0	1.3	2.3	-		IV
	-	-	1.2	-	-	1.9	.8	-	.2	2.0	1.9	-	.1	1.6	1.7	-	-	-	1.3	.3	.4	1.1	1.3	.1		V
	.6	4.6	4.0	-	1.1	2.3	.2	-	.8	3.1	1.5	-	.3	2.5	1.5	-	.3	.6	1.0	-	.4	1.7	.8	-		VI
	-	6.3	1.7	-	.4	1.7	-	-	1.3	2.0	2.7	-	.3	3.2	3.5	-	.3	1.3	1.3	-	.3	1.8	1.7	-		VIIa
	-	1.7	.6	-	.4	.6	-	-	.4	.7	.5	-	.1	.8	.4	-	.6	-	1.0	-	.3	.4	.3	-		VIIb
	3.5	1.2	.6	-	1.5	.6	-	-	6.8	.2	.1	-	1.7	.1	-	-	4.5	.3	-	-	3.9	.2	.1	-		VIII
	.6	.6	-	-	2.5	.8	-	-	4.7	.7	-	-	1.9	.4	.1	-	1.3	-	.3	-	2.1	.2	-	-		IXa
	2.9	-	-	-	5.7	1.9	-	-	3.5	.1	-	-	2.4	-	-	-	1.9	.6	-	-	3.8	.5	.1	-		IXb
	-	-	-	15	-	-	-	30	-	-	-	6.0	-	-	-	8.6	-	-	-	17	-	-	-	9.2		X
	-	-	-	2.3	-	-	-	10	-	-	-	.3	-	-	-	1.7	-	-	-	2.6	-	-	-	1.7		XI
	-	-	-	5.7	-	-	-	10	-	-	4.4	-	-	-	6.3	-	-	-	4.8	-	.1	-	3.1	-		XII
	-	-	-	4.6	-	-	-	4.0	-	-	4.3	-	-	-	9.1	-	-	-	11	-	-	-	-	4.9		XIIIa
	-	-	-	6.3	-	-	-	4.0	-	-	19	-	-	-	11	-	-	-	23	-	.1	-	-	5.2		XIIIb
	-	-	-	1.7	-	-	-	2.1	-	-	4.4	-	-	-	3.3	-	-	-	3.5	-	-	-	3.0	-		XIV
	-	-	-	14	-	-	-	6.1	-	-	4.5	-	-	-	7.9	-	-	-	9.0	-	-	-	-	1.6		XVa
	-	-	-	2.3	-	-	-	.8	-	-	1.5	.1	-	-	2.4	.1	-	-	2.2	-	-	-	.5	.2		XVb
	-	-	-	.6	-	-	-	1.3	.1	-	1.2	-	-	-	.3	-	-	-	1.0	-	-	-	.1	.1		XVI

-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4															
	VIT				Di																		
	-	-	-	-	1.4	.1	3.5	.2															
	-	-	-	-	.1	.3	.8	.1															
	-	-	-	-	.3	.4	1.0	.1															
	-	.3	.9	-	2.2	.6	2.8	-															
	-	.3	-	-	1.9	.9	1.9	-															
	-	1.2	.6	-	1.7	1.3	1.8	-															
	-	.6	-	-	1.9	3.6	2.2	-															
	-	.6	-	-	1.1	5.3	2.6	-															
	.3	.6	-	-	1.4	1.7	.8	-															
	.3	.6	-	-	1.9	.6	.6	-															
	.6	.6	-	-	.8	2.9	.4	-															
	-	-	-	-	11	3.8	.4	-															
	-	-	-	65	-	.3	-	16															
	-	-	-	3.0	-	-	-	6.1															
	-	-	-	-	-	-	3.4	-															
	-	-	-	2.7	-	-	-	2.6															
	-	-	-	8.0	-	-	-	1.7															
	-	-	2.4	-	-	-	.8	-															
	-	-	.6	-	-	-	-	.7															
	-	-	-	1.0	-	-	.1	-															

-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4	AR	AE1	AE2	AE3-4						
	Az				Co				Si				T.1				T.2				Os					
	1.4	1.9	7.3	2.2	1.0	1.3	7.0	1.2	.3	.7	3.4	10	-	1.7	90	.8	-	.4	7.0	5.0	-	-	2.3	.7		I
	-	.3	.3	.3	-	.6	1.7	.3	.1	.1	.4	.2	-	1.1	7.2	.2	-	-	.8	1.8	-	-	.6	.3		IIa
	.5	1.8	2.0	.4	.5	.7	1.9	.6	.2	.9	1.2	.1	-	.8	1.5	.2	-	.8	17	.5	1.6	.1	.6	-		IIb
	1.3	1.0	2.3	.1	1.4	1.7	4.1	.7	1.0	.9	2.8	.2	-	1.5	7.8	.1	-	.4	2.7	.6	9.4	.3	3.0	-		III
	2.6	.9	1.4	-	1.2	1.3	1.7	.1	1.0	.8	1.6	.1	.1	.5	2.4	.1	-	-	.3	.3	-	.3	.7	-		IV
	1.0	1.3	1.6	-	.9	1.6	2.6	.1	.8	.9	1.7	-	-	.9	2.7	-	-	.4	1.7	-	.1	.7	1.5	-		V
	1.4	1.2	.6	-	1.4	1.2	2.2	-	1.3	1.2	2.4	-	-	1.7	4.6	-	-	.3	.8	-	2.8	.9	2.0	-		VI
	.6	2.6	.8	-	.7	2.3	3.3	-	1.9	1.6	2.4	-	.1	1.8	3.0	-	-	3	1.0	-	2.6	1.3	1.5	-		VIIa
	.5	1.2	.9	-	.5	1.4	2.0	-	1.0	.7	5.1	-	-	.9	.9	-	-	.2	.3	-	1.8	.7	1.4	-		VIIb
	2.2	1.6	1.4	-	2.0	1.1	.8	-	-	-	-	-	.1	.3	.2	-	-	.2	.5	-	.4	1.4	1.6	-		VIII
	.6	3.1	.9	-	.4	4.8	.8	-	-	-	-	-	-	2.3	.6	-	-	.5	.4	-	-	4.6	1.0	-		IXa
	2.2	6.5	1.0	-	4.4	7.8	2.1	-	-	-	-	-	.4	3.4	1.0											

	Britain																	North Franc												
	Ca	Ch	CE	CM	Fi	HW	Lu	Ne	Po	SM	Th	VF	VW	VT	WT	VV	Wa	Wi	Ri	So	CA	SA	SM	At	Av	Au	Cl	LA	LB	
I	4	—	7	59	10	—	—	3	—	11	—	33	20	4	24	13	3	1	184	4	1,076	77	6	17	81	6	1	18	39	
Ia	13	—	28	88	66	—	—	14	—	67	—	47	32	3	35	17	9	5	404	—	288	19	3	2	18	17	5	2	8	
Ib	7	1	13	44	17	—	—	4	—	36	—	33	26	4	30	11	4	2	142	—	1,086	31	7	6	23	4	3	7	30	
III	24	2	56	209	35	—	—	13	—	27	9	87	58	15	73	56	36	11	386	14	50	42	8	3	50	18	27	15	65	
IV	21	—	19	95	5	1	4	4	—	3	7	40	30	27	57	30	24	1	93	7	15	31	7	2	41	5	12	15	49	
V	18	—	12	80	4	—	4	10	—	5	4	30	25	27	52	37	13	10	76	6	15	21	5	2	43	10	10	13	68	
VI	22	1	18	121	—	1	3	9	—	3	6	30	35	38	73	37	18	5	112	6	8	39	13	2	49	11	21	21	82	
VIIa	19	1	12	75	4	1	1	14	—	2	2	19	21	9	30	33	14	7	37	6	15	54	18	7	81	10	27	41	89	
VIIb	8	—	—	28	1	1	—	2	—	2	1	6	7	6	13	10	5	—	14	2	7	22	5	2	32	5	3	4	25	
VIII	21	3	12	109	2	2	11	—	—	4	5	20	25	13	38	33	9	2	53	9	3	26	1	10	47	7	6	13	63	
IXa	5	1	3	59	1	2	—	6	—	4	16	6	10	16	17	4	2	13	—	7	4	31	4	8	40	1	10	47	10	
IXb	11	—	1	87	—	—	3	12	1	1	14	16	13	29	5	4	2	39	—	3	59	9	23	73	25	9	22	14	14	
X	514	46	69	793	41	71	15	150	24	60	31	368	611	784	1,395	505	199	186	4,759	—	10	126	172	61	35	233	303	17	58	156
XI	265	21	64	509	31	19	17	111	36	27	16	261	351	310	641	473	183	188	4,099	—	5	56	6	16	48	15	17	10	70	
XII	31	3	25	55	3	—	2	12	38	6	2	13	12	42	54	26	15	13	351	—	12	21	62	27	20	73	4	5	46	51
XIIIa	30	5	25	436	—	—	5	33	34	56	23	3	42	15	149	164	69	71	24	855	10	16	63	9	8	76	20	5	34	38
XIIIb	377	71	255	1,435	2	77	112	448	112	197	75	256	71	952	1,023	574	469	160	10	147	20	84	25	7	1	34	34	1	52	22
XIV	318	36	181	566	1	13	71	220	15	67	62	148	67	826	903	223	129	51	3,237	—	48	46	6	15	65	16	—	44	33	
XVa	85	114	147	936	1	19	37	507	53	56	45	96	63	225	288	159	253	56	2,849	1	117	25	16	6	30	18	—	2	22	
XVb	1	3	11	64	—	—	1	4	3	2	2	—	—	—	4	—	1	4	5	115	5	1	14	8	4	14	7	—	1	7
XVI	92	1	258	761	—	3	20	202	9	7	47	36	27	45	72	48	268	61	22,822	1	1	2	4	3	25	7	—	3	15	
Total	1,845	305	1,214	6,606	224	217	327	1,799	348	596	323	1,603	3,512	5,015	2,368	1,735	792	51,726	122	2,989	897	231	192	1,176	507	159	432	1,121		

	Britain																	North Franc											
	Ca	Ch	CE	CM	Fi	HW	Lu	Ne	Po	SM	Th	VF	VW	VT	WT	VV	Wa	Wi	Ri	So	CA	SA	SM	At	Av	Au	Cl	LA	LB
I	.3	—	2.6	1.1	4.6	—	—	.2	—	1.9	—	2.1	1.3	.1	.5	.5	.2	.1	.5	3.2	36	8.7	2.5	8.3	6.9	1.1	.6	4.4	3.5
Ia	.7	—	2.4	1.5	2.9	.5	.3	.8	—	1.1	.3	3.0	2.1	.1	.7	.7	.5	.6	1.0	—	9.8	2.1	1.3	1.0	1.6	3.2	3.2	.5	.7
Ib	.4	.3	1.1	.7	7.6	—	—	.3	—	4.5	—	2.2	1.8	.2	.8	.4	.3	.2	.5	1.6	37	3.4	3.0	3.0	2.0	.8	1.9	1.7	2.7
III	1.4	.6	4.5	3.2	1.5	.5	.3	.7	—	4.5	2.7	6.0	3.8	.4	1.5	2.2	2.1	1.3	.8	11	2.0	4.6	3.4	1.5	4.3	3.4	1.7	3.6	5.8
IV	1.3	—	1.6	1.5	2.2	.5	1.2	.3	—	.5	2.1	2.5	2.0	.7	1.2	1.2	1.4	.1	.3	5.7	.5	3.5	3.0	1.0	3.6	1.0	7.6	3.7	4.1
V	.9	—	1.0	1.3	1.8	—	1.2	.5	—	.8	1.2	1.8	1.7	.7	1.1	1.4	.7	1.2	.3	4.9	.5	2.4	2.1	1.0	3.7	1.9	6.4	3.2	6.4
VI	1.2	.3	1.5	1.9	—	.5	.9	.5	—	.5	1.8	1.9	2.3	1.1	1.6	1.4	1.1	.5	.3	4.8	.3	4.3	5.6	1.0	4.2	2.1	13	5.1	7.4
VIIa	1.1	—	1.0	1.2	1.8	.5	.3	.8	—	.3	.6	1.4	1.4	.2	.6	1.2	.8	.8	.3	4.9	.5	2.1	7.7	3.4	6.8	1.8	11	10	8.0
VIIb	.5	—	.5	.4	.5	—	.1	—	—	.3	.3	.4	.5	.3	.4	.5	.3	.3	.3	1.6	.2	2.4	2.2	1.0	2.8	1.0	1.9	.9	2.2
VIII	1.2	.9	1.0	1.8	.8	1.0	.6	.6	—	.7	1.5	1.2	1.7	.4	.8	1.4	.5	.2	.2	7.4	.2	2.9	4.4	4.8	4.0	1.3	3.8	3.1	5.6
IXa	.3	.3	.2	.9	4	1.0	—	.3	—	—	1.2	1.0	.4	.3	.4	.7	.2	.2	.1	5.7	.2	3.4	1.7	3.9	3.4	.2	—	2.5	4.2
IXb	.6	—	—	1.4	—	—	.9	.7	.3	.2	.3	.9	1.1	.4	.6	.5	.2	.2	.1	—	.2	6.6	3.9	11	6.2	4.8	5.7	5.4	12
X	28	15	5.5	12	18	33	4.5	8.3	6.8	10	9.5	23	41	21	22	20	12	23	9.2	8.2	4.2	19	26	17	20	62	11	14	14
XI	13	6.8	2.2	7.8	14	9.0	5.1	6.1	10	4.6	4.8	16	22	8.8	13	19	11	23	7.9	—	2	6.2	2.6	8.0	4.1	2.8	11	2.4	6.2
XII	1.7	1.0	2.0	.8	1.4	—	.6	.7	11	1.1	.6	.8	.8	1.2	1.1	1.0	.9	1.6	.7	9.8	.7	6.9	11	10	6.2	.8	3.2	11	4.6
XIIIa	1.6	1.6	2.0	6.8	—	2.4	1.0	1.9	16	3.9	.9	2.6	1.0	4.2	3.2	2.7	4.2	3.0	1.6	8.2	.5	7.0	3.9	3.9	6.5	3.8	3.2	8.4	3.4
XIIIb	18	24	21	22	.8	35	32	25	31	33	21	16	4.7	27	20	22	27	20	20	16	2.8	2.8	3.0	.5	2.9	6.4	.6	13	2.0
XIV	17	12	12	8.5	.4	6.0	21	12	4.6	11	19	9.0	4.4	24	18	9.0	7.5	6.4	6.4	—	1.7	5.1	2.6	7.4	5.6	3.0	—	11	3.0
XVa	4.7	38	11	14	.4	9.0	11	28	15	9.4	14	6.0	4.3	6.3	5.9	6.0	15	6.9	5.6	.8	3.9	2.8	6.8	3.0	2.6	3.4	—	.5	2.0
XVb	.1	1.0	.9	1.1	—	.3	.8	.9	.3	.6	.3	.3	.3	.1	.1	.2	.6	2.4	—	4.1	.1	1.6	3.4	2.0	1.2	1.3	—	.2	.6
XVI	5.0	.3	.21	11	—	1.4	6.0	11	2.5	1.2	1.4	2.2	1.8	1.3	1.4	1.9	1.6	7.7	4.4	.8	.1	.2	1.7	1.5	2.2	1.3	—	.7	1.4

	Britain																	North											
	Ca	Ch	CE	CM	Fi	HW	Lu	Ne	Po	SM	Th	VF	VW	VT	WT	VV	Wa	Wi	Ri	So	CA	SA	SM	At	Av	Au	Cl	LA	
Gallienus	76	5	7	113	8	12	1	22	8	5	6	56	90	105	195	55	27	22	509	1	11	20	13	3	56	119	3	19	4
Salonina	5	—	2	19	—	4	—	2	—	1	—	7	4	10	14	6	5	2	26	—	—	13	2	1	12	18	—	3	19
Claudius II	104	15	16	177	9	11	6	34	5	11	8	46	131	184	315	141	45	40	1,232	1	22	35	8	5	75	37	2	10	1
Quintillus	2	—	1	3	—	—	—	1	—	1	—	5	6	5	11	1	—	2	24	—	—	2	7	1	1	6	3	2	—
Aurelianus	1	—	1	7	—	—	—	1	—	1	—	3	1	1	12	2	—	2	2	—	—	2	1	2	2	3	—	—	—
Severina	14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Postumus	14	2	—	38	1	—	1	7	—	1	1	13	27	22	49	15	8	4	67	—	2	6	13	1	29	33	2	5	—
Laelian	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Victorinus	53	3	9	81	3	14	2	16	1	18	8	64	72	96	168	28	25	26	510	1	3	18	5	3	9	25	—	—	2
Marius	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tetricus I	189	17	27	247	14	24	5	58	5	15	6	133	180	227	407	194	67	75	7,772	1	10	20	13	3	17	31	5	5	—
Tetricus II	70	4	6	105	6	6	—	10	4	7	2	39	100	143	243	62	19	15	586	1	8	18							

TABLE IIIA: The total of coins in each period group (see pp. 227-230)

North France and the Rhine													Southern France																		
Cl	LA	LB	LC	Ve	Be	Se	Ha	RV	Rh	Sp	Pa	Ma	Bo	Pt	To	Fo	Pe	Mo	NA	NB	Ar	Ax	Gl	LE	Ba	ViM	ViT	Di	Pv	Pd	
1	18	39	34	46	19	10	17	1	63	101	6	628	72	38	116	4	155	153	45	106	28	49	130	9	2	86	—	250	160	111	3
5	2	8	9	9	6	2	—	1	15	12	2	75	19	28	19	—	35	42	11	21	11	5	27	3	—	19	—	60	35	25	1
3	7	30	10	49	9	4	—	3	19	22	3	67	50	36	61	—	74	39	19	51	4	10	14	2	—	43	—	89	52	79	2
2	15	49	31	90	17	7	3	9	52	30	7	101	65	30	135	4	71	94	17	82	37	11	24	11	1	92	1	234	80	147	4
0	13	68	13	82	16	12	2	13	41	26	5	63	71	64	161	3	95	101	13	93	67	11	29	14	—	87	6	234	137	147	5
21	82	29	58	23	13	16	17	54	32	6	63	137	80	224	6	102	133	20	151	37	14	28	24	12	127	2	378	218	177	5	
27	41	89	27	91	22	13	14	10	60	52	9	82	129	65	171	2	100	173	26	174	42	27	37	23	14	126	2	437	270	211	6
3	4	25	8	20	9	3	4	5	16	10	5	21	30	14	90	2	40	93	20	85	18	15	17	18	6	62	3	202	124	77	3
6	13	63	7	30	10	3	9	10	17	14	15	93	84	32	201	1	94	131	27	179	25	9	10	13	10	127	3	153	182	399	7
9	22	41	46	36	9	3	2	16	54	18	5	51	66	24	158	11	87	80	29	129	8	11	9	13	8	120	3	199	239	202	4
9	10	84	45	88	48	1	5	36	36	18	8	97	324	69	612	9	467	350	33	200	11	26	15	24	12	381	4	739	476	298	9
7	58	156	63	284	38	25	27	140	60	64	52	201	576	99	102	2	536	272	59	328	38	27	15	91	19	339	214	802	832	179	6
7	10	70	19	63	9	6	4	51	3	13	8	38	129	62	49	—	129	57	37	129	9	10	3	22	—	191	10	296	584	190	7
5	46	51	12	135	28	13	10	48	44	47	15	69	38	15	9	3	426	59	18	42	11	9	5	11	1	129	—	167	269	167	4
5	34	38	7	100	7	12	8	19	43	68	35	107	47	20	11	—	378	38	32	45	93	14	13	12	—	173	7	130	117	175	4
1	52	22	13	105	9	8	11	19	195	80	71	115	44	22	12	—	150	58	14	60	113	15	4	67	—	85	27	80	77	76	2
—	44	33	9	37	8	1	3	10	44	25	11	65	17	11	11	—	107	33	15	44	146	12	10	48	—	83	8	39	158	100	2
—	2	22	1	68	2	3	4	25	30	45	59	28	5	18	4	1	21	8	6	31	61	4	4	38	—	27	2	33	62	24	1
—	1	7	1	9	2	3	4	6	16	19	7	14	7	10	9	1	2	9	2	8	29	—	—	4	—	20	2	20	29	42	1
—	3	15	—	14	—	2	1	6	13	2	3	4	14	15	2	—	61	15	8	21	48	3	2	37	—	34	33	3	41	49	1
99	432	1,120	371	1,494	306	157	174	472	995	746	313	2,188	2,106	818	53	3,210	2,066	492	2,066	852	301	445	495	87	2,498	332	4,833	4,361	3,124	9,	

TABLE IIIB: The coins on TABLE IIIA expressed as percentages of the total from each site (see pp. 227-230)

North France and the Rhine													Southern France																			
Cl	LA	LB	LC	Ve	Be	Se	Ha	RV	Rh	Sp	Pa	Ma	Bo	Pt	To	Fo	Pe	Mo	NA	NB	Ar	Ax	Gl	LE	Ba	ViM	ViT	Di	Pv	Pd		
6	4.4	3.5	9.1	3.1	6.1	6.3	9.8	.2	6.3	14	1.9	29	3.4	4.6	5.0	7.6	5.0	7.4	9.1	5.3	3.3	16	29	1.8	2.3	3.4	—	5.2	4.1	3.6	6	
2	.5	.7	2.5	.6	1.9	1.2	—	.2	1.5	1.6	.6	3.5	.9	3.4	.9	—	1.2	2.0	1.6	1.0	1.3	1.6	6.0	.6	—	.8	—	1.3	.9	.9	—	
9	1.7	2.7	2.6	3.2	4.2	2.9	2.5	—	.6	1.9	3.0	3.0	2.4	4.4	2.8	—	2.4	1.9	3.4	2.6	.5	3.3	3.0	.4	—	1.7	—	1.8	1.3	2.5	3	
7	3.6	5.8	7.2	4.7	4.5	5.1	2.9	1.0	4.9	4.4	1.9	7.1	3.6	5.8	5.0	—	2.5	6.3	4.9	4.2	3.7	5.9	10	2.4	1.2	4.9	1.2	5.6	3.5	6.6	7	
6	3.7	4.4	8.4	6.1	5.5	4.4	1.8	1.9	5.2	4.1	2.3	4.6	3.1	3.7	5.8	7.6	2.3	4.6	3.0	4.1	4.4	3.7	5.3	2.2	1.2	3.6	3	4.5	2.1	4.7	4	
4	3.2	4.1	3.5	5.5	5.1	7.5	1.2	2.7	4.1	3.4	1.6	2.9	3.5	8.0	7.4	5.7	3.1	4.0	3.4	4.6	3.7	3.6	6.6	2.8	—	3.3	1.8	4.8	3.4	4.5	5	
3	5.1	7.4	7.9	4.0	6.4	8.2	9.2	3.6	5.4	4.3	1.9	2.9	6.7	9.7	11	11	3.3	6.5	5.8	7.5	4.3	4.6	6.2	4.8	1.6	5.2	1.6	7.7	5.6	5.7	6	
9	10	8.0	7.4	6.7	7.0	8.2	8.0	2.1	6.0	7.0	2.9	3.8	6.3	7.8	8.0	3.8	3.3	8.5	2.0	9.0	8.3	6.6	8.2	4.6	1.6	5.1	1.6	9.0	6.8	7.0	6	
9	9	2.2	2.1	1.3	2.9	1.9	2.3	1.0	1.6	1.3	1.6	1.0	1.4	1.7	3.9	3.8	1.3	4.5	3.2	4.2	2.1	4.9	6.8	3.6	6.9	2.5	3.9	3.2	2.5	4		
8	3.1	5.6	1.9	2.1	3.2	1.9	5.3	2.1	7.1	1.8	4.8	4.2	4.1	3.9	8.6	5.7	3.1	6.4	5.2	8.9	3.0	3.0	2.2	2.6	1.1	5.1	1.9	3.1	4.5	13	8	
—	2.5	4.2	1.6	2.4	2.9	1.9	1.2	3.3	5.4	2.4	1.6	2.3	3.2	2.9	6.9	2.1	2.9	3.8	4.4	6.4	1.0	3.6	6	2.6	1.0	4.8	.9	4.1	5.9	6.5	4	
7	5.4	12	12	5.9	15	.6	2.9	7.6	3.6	2.4	2.5	4.4	16	8.4	26	17	14	17	7.5	9.9	1.3	8.6	3.4	4.8	14	15	1.2	1.5	12	9.2	1	
1	1.4	14	17	19	12	16	15	30	6.0	8.6	17	9.2	28	12	4.6	3.8	18	13	12	16	4.5	8.6	3.4	18	22	13	65	16	21	5.8	6	
1	2.4	6.2	5.0	4.2	2.9	3.8	2.3	10	.3	1.7	2.6	1.7	7.7	7.6	2.1	—	4.2	2.3	7.5	6.4	1.1	3.3	.7	4.5	—	8.0	3.0	6.1	15	6.2	5	
2	11	4.6	3.2	9.1	9.0	8.2	5.7	10	4.4	6.3	4.8	3.2	1.9	1.8	.7	5.7	13	2.9	3.6	2.1	1.3	3.0	1.1	2.2	1.2	5.2	—	3.4	7.0	5.5	8	
2	8.4	3.4	1.9	6.7	2.1	7.6	4.6	4.0	4.3	9.1	11	4.9	2.3	2.4	.5	—	12	1.9	6.5	2.2	11	4.6	2.9	2.4	—	7.0	2.1	2.6	3.0	3.7	4	
2	11	3.0	2.5	2.2	2.6	.6	1.7	2.1	4.4	3.3	3.5	3.0	2.2	2.7	.5	—	4.8	2.8	2.9	3.0	1.2	1.3	5.0	.9	14	—	3.4	8.0	1.7	1.9	2.5	2
—	.5	2.0	.3	4.6	.6	5.1	1.5	6.3	4.5	7.9	9.0	1.6	.8	1.3	.5	—	3.4	1.6	3.0	2.2	1.8	4.0	2.3	9.6	—	3.3	2.4	.8	4.0	3.1	2	
—	.2	.6	.3	.6	.6	1.9	2.3	1.2	1.6	2.5	2.2	.7	2	2.2	.2	1.9	.7	3	1.2	1.5	7.2	1.3	.9	7.6	—	1.0	.6	.7	1.7	.8	1	
—	.7	1.4	—	1.0	—	1.3	.6	1.3	1.3	.3	1.0	.2	.7	1.8	.5	—	1.9	.8	1.6	1.1	5.6	1.0	.4	7.4	—	1.3	10	1.1	1.0	1.6	1	

TABLE IVA: The coins of each ruler from 259 to 294 (see pp. 227-230)

North France and the Rhine													Southern France																		
Cl	LA	LB	LC	Ve	Be	Se	Ha	RV	Rh	Sp	Pa	Ma	Bo	Pt	To	Fo	Pe	Mo	NA	NB	Ar	Ax	Gl	LE	Ba	ViM	ViT	Di	Pv		
9	3	19	37	22	52	11	11	3	22	7	9	5	31	29	1	1	127	130	10	88	7	7	4	28	5	108	39	316	570	—	—
8	7	4	3	4	5	2	2	2	15	3	1	9	98	11	6	—	20	—	3	6	1	—	—	7	3	12	—	14	96	—	—
7	2	10	27	12	54	6	7	6	15	15	21	17	24	98	11	6	—	112	81	6	65	24	5	4	37	5	83	53	166	110	—
3	—	—	1	7	3	8	—	—	4	1	—	—	1	10	6	4	—	—	1	7	—	—	—	—	1	—	9	—	16	36	—
3	—	—	11	4	15	—	—	2	21	5	2	3	17	25	6	4	—	16	2	3	14	1	2	3	1	—	39	2	45	57	—
3	2	5	27	2	21	8	—	2	13	3	3	3	21	7	4	1	—	4	—	3	2	—	—	4	2	2	38	3	108	15	—
5	—	2	12	6	27	5	—	—	10	1	2	5	9	58	6	3	—	34	18	5	15	2	1	2	1	1	10	—	46	13	—
1	5	5	17	6	30	4	1	4	16	13	10	8	45	4	1	—	—	32	10	2	16	2	5	—	10	—	15	—	39	13	—
9																															

Northern Italy

Pv	Pd	Ve	Es	Ud	Aq	Ci	Pg	Vz	Ad	Fz	BC	BU	Rv	Az	Co	Si	T.1	T.2	Os		
160	111	377	203	51	712	96	91	93	41	106	336	175	107	99	144	217	2,595	132	30	I	
35	25	67	41	11	277	31	24	18	6	25	95	34	10	6	35	27	685	28	9	IIa	
52	79	299	31	29	130	14	16	43	13	15	187	193	46	36	51	98	202	217	23	IIb	
140	207	672	106	51	605	37	42	77	53	61	572	487	99	37	108	202	746	49	127	III	
80	147	421	54	36	409	24	23	52	17	38	482	294	67	38	60	135	238	11	10	IV	
137	147	538	22	33	407	33	26	61	12	10	542	399	113	31	70	142	286	22	23	V	
218	177	576	57	33	554	45	45	46	9	10	524	453	83	25	67	196	506	12	57	VI	
270	211	623	42	59	603	23	41	69	11	48	629	488	120	31	85	234	390	14	54	VIIa	
124	77	322	13	23	170	3	12	51	2	13	267	282	43	20	53	88	138	5	39	VIIb	
182	399	752	15	67	488	30	43	229	3	29	599	560	96	40	53	—	37	7	34	VIII	
239	202	469	37	62	450	21	24	110	5	35	476	285	84	36	81	—	235	9	56	IXa	
476	298	994	43	121	771	29	40	374	5	85	1,500	691	117	75	195	—	386	14	55	IXb	
832	179	627	25	77	1,406	64	99	103	2	63	1,253	524	73	45	103	—	326	82	48	X	
584	190	775	13	66	935	48	109	82	2	80	1,172	575	86	64	58	—	305	61	44	XI	
269	167	474	19	140	995	57	73	8	8	40	660	373	85	37	76	—	168	40	38	XII	
117	115	420	27	59	1,201	27	59	82	9	50	497	457	55	32	38	—	91	49	13	XIIIa	
77	76	234	9	32	1,357	31	61	71	5	61	295	163	27	22	10	—	228	72	21	XIIIb	
158	100	261	28	49	951	27	53	40	3	34	373	256	55	36	39	—	203	89	39	XIV	
62	24	141	17	19	598	33	21	16	5	17	152	97	12	19	19	—	248	70	25	XVa	
29	42	103	7	14	416	5	8	9	2	8	64	22	8	2	5	—	2	3	4	XVb	
41	49	123	8	28	334	34	30	49	1	20	197	28	28	32	18	—	1	86	11	XVI	
		3,124	823		13,858		942		214		11,030		1,520		1,375		8,070		1,000		
1,361		9,383		1,068		715		1,763		848		6,947		771		1,340		1,071		(761)	
																(4,000)					

Northern Italy

Pv	Pd	Ve	Es	Ud	Aq	Ci	Pg	Vz	Ad	Fz	BC	BU	Rv	Az	Co	Si	T.1	T.2	Os	
4.1	3.6	6.2	22	4.7	5.1	1.4	9.2	5.3	19	12	3.0	2.6	7.1	13	10	14	32	12	3.0	I
.9	.9	.9	4.9	1.1	2.1	4.4	2.6	1.0	2.8	2.9	.8	.6	.7	.9	2.6	.8	8.5	2.6	.9	IIa
1.3	2.5	3.2	3.7	2.7	1.1	1.9	1.6	2.4	6.0	1.7	1.7	2.8	3.9	4.7	3.7	2.4	2.5	1.8	2.3	IIb
3.5	6.6	7.2	13	4.8	4.4	5.2	4.5	4.3	25	7.1	5.2	7.0	6.6	5.0	7.9	4.9	3.4	3.7	1.3	III
2.1	4.7	4.5	6.5	3.3	3.1	3.4	2.5	3.0	8.0	4.5	4.4	4.2	4.4	4.9	4.3	3.5	3.1	.6	1.0	IV
3.4	4.5	5.6	2.7	3.0	3.1	4.6	2.7	3.3	5.7	1.2	5.0	4.7	7.4	3.9	5.2	3.4	3.6	2.4	2.3	V
5.6	5.7	6.2	6.9	3.2	4.1	6.3	4.8	3.1	4.2	1.2	4.9	5.5	5.4	3.2	4.8	4.9	6.3	1.1	5.7	VI
6.8	7.0	6.6	5.2	5.4	4.3	3.1	4.3	3.9	5.1	5.6	5.7	7.0	7.9	4.0	6.3	5.9	4.9	1.3	5.4	VIIa
3.2	2.5	3.4	1.9	2.1	1.3	4.4	1.2	2.9	1.0	1.5	2.4	4.0	2.9	2.6	3.9	6.8	1.8	.5	3.9	VIIb
4.5	13	8.1	1.8	7.3	3.7	4.2	4.5	13	2.4	3.4	4.4	6.3	5.2	3.9	—	—	1.6	3.4	—	VIII
5.9	6.5	4.9	4.4	5.8	3.1	3.0	2.6	5.3	3.2	4.1	3.2	4.0	5.6	4.6	6.0	—	2.9	9	5.6	IXa
12	9.2	11	5.3	11	5.7	4.1	4.3	2.1	2.3	10	14	9.9	7.8	9.7	14	—	4.8	1.3	5.5	IXb
21	5.8	6.9	3.0	7.3	10	9.0	10	5.8	.9	7.5	11	7.5	4.9	5.8	7.6	—	4.1	7.7	4.8	X
15	6.2	8.3	1.6	6.3	6.8	6.7	12	4.7	.9	9.4	11	8.3	5.7	8.3	4.3	—	3.8	5.7	4.4	XI
7.0	5.5	5.1	2.3	13	7.1	8.0	7.8	4.1	3.7	9.7	5.9	5.4	5.6	4.8	5.6	—	2.1	3.7	3.8	XII
3.0	3.7	4.5	3.3	5.5	8.7	3.8	6.2	4.7	4.2	5.9	4.5	6.5	3.4	4.1	2.8	—	1.1	4.6	1.3	XIIIa
1.9	2.5	2.6	1.1	3.0	9.8	4.3	6.5	4.0	2.3	7.2	2.7	2.4	1.8	2.8	0.7	—	2.8	6.7	2.1	XIIIb
4.0	3.1	2.8	3.3	4.6	6.9	3.7	5.6	3.8	1.4	4.0	3.5	3.8	3.7	4.5	2.9	—	2.5	8.4	3.9	XIV
1.7	.8	1.5	2.0	1.8	4.4	4.6	2.2	1.0	2.3	2.0	1.4	1.4	.8	2.6	1.4	—	3.1	6.6	2.5	XVa
.7	1.4	1.2	1.1	1.2	2.9	.7	.9	.5	1.0	.9	.6	.4	.5	.5	.4	—	.1	.3	.4	XVb
1.0	1.6	1.3	.9	2.7	2.4	4.8	3.2	2.7	.5	2.3	1.8	.5	1.7	4.2	1.3	—	.1	8.0	1.1	XVI

Northern Italy

i	Pv	Pd	Ve	Es	Ud	Aq	Ci	Pg	Vz	Ad	Fz	BC	BU	Rv	Az	Co	Si	T.1	T.2	
5	570	54	189	10	14	703	19	16	21	1	21	253	148	15	11	17	—	65	26	
1	96	21	29	—	5	83	4	5	20	—	1	77	57	6	2	7	—	5	4	
1	110	27	122	5	16	590	17	28	16	—	12	210	89	14	13	31	—	62	40	
5	36	6	20	—	5	27	1	3	1	—	1	38	17	4	2	3	—	—	—	
5	57	39	123	10	10	374	16	33	20	1	15	446	122	17	5	19	—	138	5	
3	15	5	25	—	3	18	2	5	4	—	1	32	15	4	3	2	—	8	3	
3	15	10	38	—	3	43	1	2	6	—	—	57	31	5	1	16	—	—	—	
1	—	1	—	—	—	3	1	—	—	—	—	—	—	—	—	—	—	—	—	
1	13	3	22	—	4	22	—	2	—	—	1	22	7	—	2	3	—	—	—	1
1	—	1	5	—	1	2	—	—	—	—	—	6	1	—	—	—	—	—	—	
1	13	5	35	1	5	33	2	4	1	—	1	48	11	—	3	3	—	—	—	
1	7	—	19	—	3	14	3	1	—	—	—	24	7	—	—	—	—	2	1	
1	84	27	57	—	7	47	2	6	18	—	6	88	43	7	6	11	—	13	1	
1	20	7	25	1	3	14	2	1	1	—	2	24	24	3	5	4	—	2	—	
3	230	74	295	7	18	435	16	52	35	1	30	546	252	32	16	—	—	81	14	
3	42	9	29	—	5	8	2	4	1	—	5	70	35	5	6	—	—	6	2	
1	30	11	38	—	6	33	1	14	2	—	—	75	40	4	2	—	—	6	—	
1	53	8	35	—	3	10	1	10	2	—	1	45	23	4	4	—	—	3	—	
1	70	21	88	3	8	132	11	14	1	2	8	141	74	10	9	14	—	94	9	
1	34	15	89	1	5	163	3	5	9	2	12	125	46	8	8	4	—	70	19	
2	7	6	31	1	5	62	1	1	3	—	5	17	12	6	4	5	—	28	1	
2	7	6	31	1	5	23	8	1	4	—	—	26	11	4	4	4	—	4	2	
2	1	1	10	—	1	2	—	—	—	—	—	3	2	—	—	—	—	—	—	
2	—	1	9	—	1	1	—	1	—	—	—	4	1	—	—	—	—	—	—	

Northern Italy

i	Pv	Pd	Ve	Es	Ud	Aq	Ci	Pg	Vz	Ad	Fz	BC	BU	Rv	Az	Co	Si	T.1	T.2	
3	38	15	13	30	9.0	2.6	16	8.0	13	14	17	11	14	10	10	11	—	11	21	
3	6.4	5.9	2.1	—	3.0	2.9	3.5	2.4	12	—	.8	3.3	5.4	4.0	1.9	4.4	—	.9	3.1	
5	7.3	7.5	8.9	15	10	21	15	14	10	—	10	8.9	8.4	9.0	12	19	—	10	31	
5	2.4	1.7	1.4	—	3.0	.9	.9	1.5	.6	—	.8	1.6	1.6	2.7	1.9	1.9	—	—	—	
2	3.8	9.5	8.9	30	6.0	12	14	16	12	14	12	19	11	12	4.8	12	—	24	3.9	
6	1.0	1.4	1.8	—	1.9	.6	1.7	2.4	2.4	—	.8	1.4	1.4	2.7	2.8	1.3	—	1.4	2.4	
0	1.0	2.8	2.8	—	1.9	1.5	.9	1.0	3.7	—	—	2.5	2.9	3.4	.9					