

Carthage: overseas trade and the political economy, c AD 400-700

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Fulford, M. G. ORCID: <https://orcid.org/0000-0002-8780-9691>
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Carthage: Overseas Trade and the Political Economy,
c AD 400-700

The purpose of this essay is to examine the evidence for the medium- and long-distance trade of Carthage from the late Roman imperial period to the Arab conquest of AD 698. The implications of change in both the direction and volume of trade for a more general understanding of the economy during a period when Carthage experienced three different political systems will be considered. The study is based on the large quantities of stratified pottery currently being studied from the British excavations at Carthage.¹

The contribution of the limited number of relevant literary sources has been explored by Mickwitz² for part of the period. Archaeology has much to add to our understanding of commerce in the ancient world, particularly because it has the potential of offering a systematic approach. The literary evidence serves to provide brief, qualitative generalisations about ancient commerce. As typical and relevant examples may be quoted the remark of Procopius that Carthage was thronged with eastern merchants at the time of the Belisarian attack³ and the observation in *Expositio Totius Mundi et Gentium* that Africa 'et paene ipsa omnibus gentibus usum olei praestat'.⁴ For the archaeologist pottery is important, chiefly because of the large amounts that survive and the comparative ease with which it is possible to trace sources of production and assess their relative importance. Other artefacts also have much to contribute, but characterisation of the sources of metal or glass objects by analysis of the material or stylistic decoration is considerably more difficult. Moreover, glass and metal objects seldom survive in sufficient quantities to allow more than qualitative generalisations about probable sources, when these can be identified. In this study it is mainly the evidence of pottery that will be explored.

A sample of more than 4 tonnes of pottery of the period c AD 400-700 has been studied. This material derives from a series of stratified groups, each of which can be dated to within about twenty-five years and which, collectively, span the period concerned. Few of the important groups contained less than 50 kilogrammes of pottery, the majority considerably more. The main object in analysing this body of material was to sort it into the different wares present and differentiate between those that were imported and those that were of local (i.e. N. Tunisian) origin. In this way the amounts of each variety were calculated and the relative proportions gave a systematic view of the developing pattern of importation of pottery over three centuries. Within the broad division of local (Tunisian) and imported, it was possible to make important refinements and identify a wide range of different sources.

Once the pottery was quantified and the statistics assembled, the question arose over the extent to which generalisations could be made about trade as a whole between Carthage, representing Zeugitana, and the rest of the Mediterranean. It could be argued that the evidence simply represents the activities of traders solely concerned with pottery which had no direct relation to the overall pattern of trade. In one respect this argument can immediately be quashed because the most abundant pottery type of the period was the amphora which was used to contain perishable commodities such as olive-oil, wine, fish-sauce and fruits. Thus, the study of this class of pottery may inform us directly about important commodity trades of the ancient world. This still leaves unstudied a large proportion of the pottery assemblage. This can broadly be divided into fine or decorated wares probably designed for use at table and domestic wares which were used in the preparation and storage of food. It is well known that some classes of fine ware, such as Attic Black and Red Figure or early Roman Arretine, enjoyed enormous popularity and that examples of these wares are found over a wide area of the ancient world. Clearly they were popular in their own right, but as the excavation of ancient wrecks has shown, we have no evidence that they were traded long distances on their own. They occur as space-fillers in more valuable cargoes, often of oil or wine-carrying amphorae.⁵ Only, it may be suggested, towards the end of its journey to the consumer might pottery have been carried in its own right.⁶

If fine pottery had little value as a bulk cargo, domestic or coarse pottery had even less. Such wares seldom travelled long distances in quantity and it could be argued that their carriage was only justified on routes that were used often in the transport of more valuable commodities. Thus, while amphorae can inform us directly about trade in perishable commodities, the trade in other pottery can also give us an insight into the general pattern of trade. The occurrence of a particular ware, when quantified and compared with the amounts attributable to other sources, can give us an indication of the relative importance of the province or region from which the pottery was exported in the overall pattern of trade. The general ratio of imports to locally-produced wares may inform us about the prosperity of the city or region which has produced the assemblages in question.

As with any class of evidence there are internal problems of interpretation. The most important, as far as this paper is concerned, is the presence in any assemblage of residual pottery, i.e., sherds that are considerably older than the date of deposition. The existence of intrusive material such as this is sometimes difficult to recognise, but it should be appreciated that its presence will tend to have a deflationary effect on the proportions of that pottery which is contemporary with the date of deposition. Groups of discarded pottery vary considerably in the character of their composition, but they can be divided into two categories of primary and secondary refuse. The

former represents material which remains where it is first discarded (fills of cisterns and wells or destruction deposits are typical of this group), whereas secondary refuse consists of material which is removed from the area where it was used or first discarded (dumps and building make-ups typify this group).⁷ While the latter tends to have older material in it, the former can be very unrepresentative of the pottery with small numbers of vessels represented by large or near-complete fragments. In either case, given sufficient quantity, the study of the relative change in the various components of the assemblage should not be affected. The pottery used as the basis for this paper is almost entirely secondary refuse, but as this is the case throughout the sequence, the interpretation should not be affected.

These opening remarks about the character of the evidence to be discussed are important both as an introduction to material unfamiliar to the historian and as a counter to the fundamentalists who may argue that the study of traded pottery is a self-contained subject which can be taken no further.

Before assessing the changes that took place in the Vandal and Byzantine periods, it is first necessary to examine the role of Carthage and the province of Africa in the Roman imperial economy. The province of Africa was a major corn producer, much of it exported as tribute, to feed the populace of Rome.⁸ In addition its importance as a source of olive-oil, commented on by ancient writers, is now being more fully understood by the study of the amphorae which carried this commodity.⁹ In the third and fourth centuries, Africa Proconsularis and Tripolitania were the most important producers of olive-oil in the Mediterranean. Africa overtook Spain which had previously been the major source of oil in the west in the second half of the third century.¹⁰ In addition, and probably as a result of the trade in either oil or corn, table wares (African Red Slipped Ware) enjoyed a very great popularity around the Mediterranean at this time.¹¹ In the west Mediterranean we also find large amounts of domestic kitchen ware of Tunisian origin in the third and fourth centuries.¹² Africa in the late Roman imperial periods was not only at least a major source of the two staples, corn and oil, but also of table wares and, in a more limited geographical area, of domestic pottery.

The importance of Africa can thus be seen through the study of ceramic assemblages around the Mediterranean in the third and fourth centuries. African ceramics predominate at Carthage itself during this period, although the picture is not yet clear. Imported wares do not appear to be at all significant and the reasons for this will be discussed below.¹³ It is possible that the overwhelming quantities of African wares excluded even the most casual competitor.

It is now appropriate to pick out the main trends in the fifth- to

seventh-century pottery assemblages at Carthage that have so far emerged. In the first phase it is important to note that the East Mediterranean began to appear as the most important source of imported amphorae from the early fifth century. In the period c AD 400-425, we can identify small amounts of those vessels classed as Bii, Biv, Almagro 54 and perhaps Bi for all of which an origin in the East Mediterranean has been suggested.¹⁴ It is not important here to discuss the evidence for a more precise source for these amphorae types but, for example, Riley has suggested Gaza as the source of Almagro 54,¹⁵ Hayes, the Sardis region for the Biv,¹⁶ Peacock, the Antioch region for the origin of Bii;¹⁷ for others an eastern source can be suggested on the grounds of both petrology and distribution. Generally, at Carthage imported wares can readily be distinguished from local products.

In the early fifth century (c AD 400-425), only about 10% of the amphorae can be assigned to East Mediterranean sources. This percentage is doubled by c AD 475-500 and, in the groups deposited at about the time of Belisarius' invasion in AD 533, 25-30% of all the amphorae can certainly be attributed to sources in the East Mediterranean. If we now turn to all the remaining imported amphorae whose sources are as yet unidentified and some of which are almost certainly residual, we find some evidence of increase. In the early fifth century these account for 20-25% of the amphorae, by the end of the century the percentage is 25-35% and by c 533 the figure is down to 15-20%. Tunisian oil-carrying amphorae are therefore of least importance in Carthage at the end of the fifth century (45-55%).

After the groups of c 533 we find stagnation and eventual decline in the ratio of imported to local amphorae. In some groups the proportion of Tunisian amphorae rises to 75% and in late sixth to early seventh-century groups East Mediterranean vessels account for 10% or less of the assemblage. This decline is reflected in the material from other sites in Carthage. Riley, for example, has observed that East Mediterranean amphorae dwindle practically to nil by c AD 600.¹⁸

The impression that the period from towards the end of the fifth century up to the time of the Byzantine conquest was one of the most vigorous commerce between Carthage and the East Mediterranean in particular is strongly supported by the evidence of the fine and coarse wares.

Fine or table wares had long been produced in quantity from Tunisia. African Red Slip vessels predominate in Carthage to the almost complete exclusion of other table wares from the second century to the time of the Arab conquest.¹⁹ Thus, with this category of pottery it is essential that we examine the pattern of exports in order to assess the fluctuations in its trade. It is noticeable that those forms which belong to the beginning to mid- or late fifth century at Carthage are rare outside Tunisia, although vessels that

belong to the period up to c 400 have an extensive Mediterranean distribution.²⁰ The latter is obtained once more with the new forms that appear in the late fifth century and which are current in the first half of the sixth century. In the past it has been suggested that the eclipse in the export of Tunisian fine wares in the fifth century coincided with the Vandal occupation and that regeneration occurred after the Byzantine conquest.²¹ The recent excavations at Carthage have significantly altered the dating evidence with the results just described. As with the imported amphorae, so the evidence of the African Red Slipped wares indicates decline during the course of the second half of the sixth century. Seventh-century finds outside Tunisia are rare.

Imported fine wares are uncommon at Carthage. The most frequent find in the late antique period is Hayes' form 3 of Late Roman C which was produced in Asia Minor.²² This form also has a very extensive distribution in the Mediterranean and is the only form in this kind of fine ware which has such a distribution. It reached Britain where it is the commonest post-Roman Mediterranean import on western sites. The significance of this will be discussed later.

The third class of pottery is represented by the coarse domestic or kitchen wares. In the late Roman imperial period, Tunisia exported large amounts of cooking wares around the western Mediterranean. This trade seems to disappear by c AD 400 in parallel with the decline in the export of African Red Slipped wares. However, at Carthage the Vandal and Byzantine pottery assemblages include distinctive grit-tempered, mostly hand-made wares, able to withstand open-fire cooking. Petrological examination of these has discerned five major classes, two of which are almost certainly Tunisian. On geological grounds the others originate from the regions of southern Italy, northern Sicily, Algeria and the islands of Sardinia and Pantelleria. The latter has now been confirmed as the source of one fabric. In the assemblage of domestic pottery the percentage of those that are definitely imported rises from 4-5% in the late fourth to early fifth century, to 8-10% c AD 475-500 and to about 15% at the time of the Byzantine conquest. Thereafter, the percentage of imported wares decline and Tunisian hand-made vessels predominate. This is also the case for the early to late fifth century when Tunisian vessels of this type are also the most important. Imported wheel-thrown kitchen wares are never very common; they occur throughout the sequence and into the seventh century, but in no group do they account for more than 1% of the assemblage.

The evidence of all the pottery points to a significant increase in the overseas trade of Carthage from the late fifth century. Following the Byzantine conquest the pottery suggests stagnation followed shortly by decline towards the end of the sixth century. This is at variance with the view which sees the Vandal period as one when commerce was disrupted and the Byzantine

annexation introduced a period of comparative stability and prosperity.²³ Although the bulk of Carthage's trade lay with the east Mediterranean, the origin of the coarse, hand-made wares is perhaps an indication that a more regional economy may be defined in the eastern part of the west Mediterranean basin.

Following the introductory remarks about the value of pottery as an indicant of trade, it is likely that the evidence so far assembled really reflects the fortunes of the basis of the African economy, i.e., cereal and olive cultivation. Evidence to corroborate the pottery may also be found in an examination of the low-value coinage of the period.²⁴

From the later third century it was customary for each mint to mark its coinage so that the origin of any coin could quickly be identified. Thus, a study of the coin assemblage from any site will reveal the changing representation of the mints whose issues reached that site during the late imperial period. The practice of marking coins in this way was continued with Byzantine coinage. The output of the coins of any mint will depend on its size and the length of time it operated. The distribution and circulation of the coin, once issued, depended on a number of factors ranging from the location of officials receiving payment to the fluctuating needs of the local and regional economy. Special problems of interpretation arise in those provinces where no mint operated and we must assume the bulk importation of coin to pay imperial officials, etc. In other respects we can suggest that the distance and quantities in which coin travelled was largely a factor relating to the demand for low-value currency by the regional economy. In the case of the Mediterranean, the presence of coin from western mints in the east and *vice versa* reflects the strength of the underlying economy and the density of traffic of which it is almost certainly a casual product. It is difficult otherwise to account for the presence of small numbers of low-value coins in places remote from the originating mint when alternative and more accessible sources were available. The quantity of coin travelling long distances should relate in some way to the density of traffic.

Except for a brief period in the late third and early fourth century when Carthage operated, Alexandria was the only mint on the north African coast throughout the late Roman period. Most of the coinage in Carthage originated from the west and from Rome in particular, although eastern mints are represented. Generally, the latter supplied more coin to the west in the second half of the fourth century. Western mints decline in their representation in the east Mediterranean from the early fourth century onwards.²⁵

During the Vandal period both silver and low-denominational bronze were minted at Carthage. In addition, in the fifth century there were large amounts of bronze nummi whose source or sources are uncertain. The Vandal

kingdom is considered by some to have been responsible for a proportion of this coinage and it does occur in quantity in Carthage.²⁶ Large amounts of this type of coinage are found as far afield as Athens and in hoards in Italy, Sicily and Algeria as well as Tunisia.²⁷ Whatever the source of this coinage it appears to have been acceptable currency over much of the Mediterranean in direct competition with the regular Byzantine issues. Apart from hoards when the date of deposition can be assessed reasonably closely, it is uncertain when the product of any mint actually reached its final destination. It is unlikely that Vandalic coinage circulated for long after the reimposition of Byzantine control in the west.

Vandal coinage of definite Carthaginian origin also enjoyed a wide circulation in the Mediterranean outside those territories which at one time or another were under Vandal rule, i.e., Corsica, Sardinia, Sicily and the Balearics. They are present, for example, in the large collections published from Athens and Corinth.²⁸ This invites comparison with the issues of other barbarian states bordering the Mediterranean. Ostrogothic coinage has not been recognised in the large samples of coins from the American excavations at Carthage.²⁹ It is, however, present in some quantity at Athens and there are examples at Corinth, but they appear to be rare any distance from Italy.³⁰ Since there were no political reasons why barbarian coinage should have circulated far afield in the Mediterranean in this way, it is reasonable to suppose that they travelled in the course of commercial activities. In the Roman period it might be argued that coin was occasionally sent far afield to cope with local shortages or to pay for certain services rendered to the imperial government.

After the Byzantine conquest of Africa, Justinian reestablished the mint at Carthage and as a result the majority of Byzantine coinage found in the city is from that mint. Coins from eastern mints account for a tiny fraction of the whole. Out of more than 325 Byzantine coins catalogued from the American excavations, only eight are from eastern mints, two from Sicily and two from Constantine in Numidia.³¹ A similar picture prevails with issues of the Carthage mint of this period found overseas, although it should be remembered that the mint was small in comparison with its eastern partners. At Antioch there are six definite finds, none later than Maurice Tiberius (582-602),³² at Corinth a single find of Justinian out of a total of twenty-seven for his reign and none later.³³ At Athens, four out of 350 coins minted between Justinian and the end of the sixth century are of the mint of Carthage. In the seventh century only three out of more than 1000 coins are from Carthage. Nor do issues of the Italian mints of Rome and Ravenna compete in quantity with the number of early Ostrogothic coins.³⁴

The coin evidence (such as it is) is suggestive in the way it correlates with the ceramic evidence. At the end of the Roman imperial period

there is an increase in the proportion of eastern issues, just as there is an increase in the amounts of eastern amphorae. Vandalic coinage, whether African or not, on the other hand enjoyed a wide circulation around the Mediterranean. At the same time it is interesting to note the quantity of Ostrogothic bronze at Athens. For the period c AD 470-520, there are almost as many Ostrogothic (78) as Byzantine coins from the Agora.³⁵ Later, the numbers of Byzantine coins that find their way either from Carthage to the east or *vice versa* is small. As far as the evidence goes, movement in the seventh century is less than in the sixth century. This also supports the ceramic evidence.

The evidence of ceramics and coinage seems to show that the period from c AD 450/475-525/550 saw more intense commercial activity than either the period c AD 400-450/475 or the Byzantine period at Carthage. Such a phenomenon warrants an attempt at explanation. In the first place, the Vandal occupation of North Africa released that area from the burden of contributing corn and other taxes to Rome and it also deprived Italian landowners of estates held in North Africa from which they had derived income. Although the Vandals imposed their own administrative structure, it is extremely unlikely to have matched the Roman organisation.³⁶ Public building under the Vandals was practically non-existent.³⁷ A proportion of their income was provided from plunder and the activities of their pirate fleet. In essence, the Vandals destroyed a system which automatically deprived Africa of a substantial proportion of its wealth. Thus it is possible to argue that the greater prosperity of the later Vandal period, as evidenced by traded commodities and consumables owed itself to the possibility of peasants and farmers being able to sell part of what previously had been taken in tax.³⁸ It would be absurd to envisage a kind of consumer boom; it is likely that agricultural productivity fell during the fifth century, but nevertheless more, it may be suggested, was available for the open market.³⁹ It is conceivable that we are seeing only the evidence of the success of Vandal piracy and plundering and perhaps even of the profit from the overseas territories which the Vandals held. On the other hand, there is considerable evidence that this prosperity was enjoyed more widely than just in Africa. The finds of eastern amphorae suggest that the west Mediterranean and indeed other parts of Europe such as western Britain benefited from this resurgence of commercial activity after the collapse of the Roman empire in the west. The evidence of the trade in eastern table wares strongly suggests that the resurgence was brief. It is the wider view which can counter any argument that Vandal prosperity at Carthage was due in large measure to the destructive or imperial activities of that kingdom.

With the Byzantine conquest in the west, stagnation and decline set in. Africa was once more an imperial province, its corn exported as part of taxation. A tighter administration was reimposed by Belisarius and an extensive building programme was begun to provide churches and fortifications

for the province. ⁴⁰ The surpluses that had allowed for some luxury trade under the Vandals were thus redirected.

The evidence for the Byzantine period is comparable to that of the third and fourth centuries. The difference is that, although imports are not abundant in either period, the volume of exported pottery in the late Roman period (both amphorae and table wares) is considerably greater. Although we need more evidence for the third and fourth centuries in Carthage, the implication is that, whatever wealth the oil and pottery trade might have created, it did not go towards the purchase of luxuries such as wine or towards financing the same kind of return trade as was the case in the late Vandal period. A simple explanation may be that Africa's dominance in the supply of oil and pottery at that time was so great that it was not worth while to load even small amounts of pottery on returning ships. Another possibility is that the profits of the oil trade were retained by the estate owners resident either in Africa or Italy. ⁴¹

The late fourth and early to mid-fifth century are more directly comparable with the Byzantine period, since there is both a decline in the volume of olive-oil and fine-ware exported, and a fall in the proportion of imported wares. The reasons for this probably lie in the circumstances around the Mediterranean which had witnessed whole-scale barbarian invasions into Italy, southern France and, in the case of the Vandals, to Spain and then Africa. In evaluating the effect on the economy of the invasions themselves, we should not forget to consider the state of those provinces and indeed the western empire as a whole in the years preceding.

This preliminary study of how the trade of Carthage was affected by the three different political systems it experienced in the late antique period can only draw attention to the inadequacy of our knowledge of the economy in late antiquity. We need more sites to be sampled as Carthage has been, both in Tunisia and around the west Mediterranean in general; we also need information on the changing behaviour of rural settlement in the period in order to see whether any correlations can be made between the fluctuations of trade and the agricultural economy. In particular, the transition between the beginning of the fifth century and the Byzantine period needs to be examined in the context of rural settlement. It will also be interesting to see whether the model that has been suggested for Africa can be applied to other contemporary barbarian groups, such as the Ostrogothic and the Visigothic kingdom.

NOTES

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1. M.G. Fulford and D.P.S. Peacock, Excavations at Carthage: The British Mission:2: The Pottery from the Avenue Président Habib Bourguiba Site, Salammbô, forthcoming.
2. G. Mickwitz, 'Der verkehr auf dem westlichen mittelmeer um 600 N.Chr.' in Wirtschaft und Kultur, Festschrift zum 70 Geburtstag von Alfons Dopsch, Baden bei Wien and Leipzig 1938, pp.74-83.
3. De Bello Vandalico, I, 20, 5; for merchants in general, BV, I, 20, 16 and 22-4; see also C. Courtois, Les Vandales et l'Afrique, Paris 1955, p.322.
4. Expositio Totius Mundi et Gentium, LXI.
5. Cf. various authors in 'Dibaititto sull'edizione italiana della Storia Economica del mondo antico di F. Heichelheim', Dialoghi di Archeologia, 7, 1973, 349, 354-6, 360, and M. Fulford, 'The Interpretation of Britain's late Roman trade: the scope of medieval historical and archaeological analogy', in Roman Shipping and Trade: Britain and the Rhine Provinces, ed. H. Cleere and J. Du Plat Taylor, London 1978, pp.59-69.
6. As, for example, the crate from Pompeii which contained ninety samian bowls and thirty-seven lamps; vide D. Atkinson, 'A Hoard of Samian Ware from Pompeii', Jnl. Roman Stud., 4, 1914, 27-65.
7. M. Schiffer, Behavioural Archaeology, London 1976.
8. R.M. Haywood, 'Roman Africa', in An Economic Survey of Ancient Rome, 4, ed. T. Frank, Baltimore 1938, 42-5.
9. There is now a considerable literature on the subject of African olive-oil production and export, see especially Haywood, ibid., pp.45-51; H. Camps-Fabrer, L'Olivier et l'huile dans l'Afrique Romaine, Algiers 1953; F. Zévi and A. Tchernia,

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- 'Amphores de Byzacène au Bas Empire', Antiquités Africaines, 3, 1969, 173-214; A. Carandini, 'Produzione agricola e produzione ceramica nell'Africa di età imperiale', Studi Miscellanei, 15, 1969-70, 97-119; C. Panella, 'Anfore' in 'Ostia III ii', Studi Miscellanei, 21, 1973, 463-633; D.P.S. Peacock, 'Roman Amphorae, typology, fabric and origin', in Coll. Ecole Franc. Rome, 32, 1977, 261-78.
10. Panella, ibid., pp.619-20.
11. Carandini, op.cit. (n.9); J.W. Hayes, Late Roman Pottery, London 1972, p.456 and Map 8.
12. Hayes, ibid., p.455 and Map 5.
13. To date there are insufficient published assemblages of the relevant date to be absolutely clear about this. There is more evidence of the right date from Italy where African ceramics completely dominate the imported wares. If there were other important competitors, they would surely be represented in the Italian assemblages. Cf. 'Ostia III', op.cit. (n.9); A. Frova, Scavi di Luni, 2, Rome 1977, 596-7.
14. The classifications of A.C. Thomas, 'Imported pottery in Dark Age Western Britain', Medieval Archaeol., 3, 1959, 89-111; M. Almagro, Las Necropolis de Ampurias, 2, Barcelona 1955.
15. J.A. Riley, 'Pottery from the first session of excavation in the Caesarea Hippodrome', Bull. Amer. Sch. of Orient. Res., 218, 1975, 30-1.
16. In Riley, ibid., p.31.
17. In Fulford and Peacock, op.cit. (n.1).
18. In J.W. Hayes, 'Pottery: Stratified Groups', in Excavations at Carthage 1975 conducted by the University of Michigan, 1, ed. J.H. Humphrey, Tunis 1976, 116.
19. Hayes, op.cit. (n.11).
20. Ibid., p.456, Maps 7-8 show the position up to c AD 400.
21. Ibid., p.423.
22. Ibid., pp.323-70, 460, Map 15.

23. For piracy, see C. Courtois, op.cit. (n.3), pp.194-7. Courtois takes a favourable view of the Vandal occupation of Africa and its impact on the agrarian economy. He also argues for some continuity in the relations between Africa and other regions before and after AD 439 (pp.321-2).
24. Cf. M. Fulford, 'Coin Circulation and Mint Activity in the Late Roman Empire', Archaeol. J., 135, 1978, 67-114.
25. Fulford, ibid., 86-7; op.cit. (n.5), fig. 50.
26. There is a considerable debate about this coinage, see most recently T.V. Buttrey and B. Hitchner, 'The Coins - 1976', in Excavations at Carthage conducted by the University of Michigan in 1976, 4, ed. J.H. Humphrey, Michigan 1978, 99-168.
27. These are detailed in P. Grierson, 'The Tablettes Albertini and the Value of the Solidus in the Fifth and Sixth Centuries AD', Jnl. Roman Stud., 49, 1959, 77, n.25; see also Buttrey and Hitchner, ibid.
28. M. Thompson, The Athenian Agora:2: Coins from the Roman through the Venetic Period, Princeton 1954; K.M. Edwards, Corinth 6 Coins 1896-1929, Harvard-Cambridge 1933.
29. T.V. Buttrey, 'The Coins', in Humphrey, op.cit. (n.18), pp.157-98; Buttrey and Hitchner, op.cit. (n.26).
30. e.g., Thompson, op.cit. (n.28); Edwards, op.cit. (n.28).
31. Buttrey, op.cit. (n.28); Buttrey and Hitchner, op.cit. (n.26).
32. D.B. Waage, Antioch-on-the-Orontes 4.2: Greek, Roman, Byzantine and Crusader Coins, Princeton 1952.
33. Edwards, op.cit. (n.28).
34. Thompson, op.cit. (n.28).
35. Ibid.
36. Courtois, op.cit. (n.3), pp.215-71; A.H.M. Jones, The Later Roman Empire AD 284-602, Oxford 1964, pp.259-60.
37. Courtois, ibid., pp.311-16.

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38. Courtois, op.cit. (n.3), p.323. Courtois also reminds us of a possible increase in the slave trade, as a result of Vandal piracy (p.322).
39. Cf. Courtois, ibid., p.317; C. Courtois, Tablettes Albertini, Paris 1952.
40. C. Diehl, L'Afrique Byzantine: Histoire de la Domination en Afrique, Paris 1896; Jones, op.cit. (n.36), pp.273-4.
41. Cf. Jones, ibid., p.249.