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THE LATEST WORK ON THE EXPORT OF BAETICAN OLIVE OIL TO ROME AND THE ARMY

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Over the last few years much work has been carried out on the export of olive oil from the province of Baetica to both Rome itself and the rest of the Roman Empire. The key for understanding the export traffic to Rome[1] is the material from the Monte Testaccio in Rome, which is almost completely composed of amphorae from Baetica dating from the Imperial period, where a team of Spanish and Italian archaeologists have carried out two campaigns of excavations in 1989 an 1990 under my direction (Plate 1). This article also contains some other conlusions drawn from the work done in recent years by the team of Spanish archaeologists who work on the Monte Testaccio, investigating the topic of the Baetician oil trade.

The aim which the team excavating the Monte Testaccio set itself was to understand the most important destination of Baetician olive oil, the city of Rome, in the belief that such an understanding would throw much light on the problems concerning the export of Spanish olive oil not just to Rome, but also to the rest of Roman Empire where it is found not only in the European provinces of the Empire but also in Africa and especially Mauritania Tingitana,[2] an area which itself produced olive oil, as is shown by the large number of oil presses to be found in the capital of the province, Volubilis. The number of amphorae stamps of Baetican origin is enormous.[3] In Alexandria alone[4] around 1,000 stamps with the names of Spanish olive oil producers have been found. Various others have recently come to light in Israel.

The corpus of stamps from Spanish amphorae found in Germania, edited by Prof. J. Remesal of the University of Barcelona, is about to be published in Germany. This publication will be of great importance owing to the large number of names from Spanish stamps which it has gathered together, and in determining the date of the exports and the provenance of the amphorae since the majority of these stamps are known in their place of origin in Baetica, and for the large amount of information that they provide about the administration of the trade by Rome.

In addition we already know in outline of the role that the *annona militaris* played in the export of olive oil from Baetica to Germany, thanks

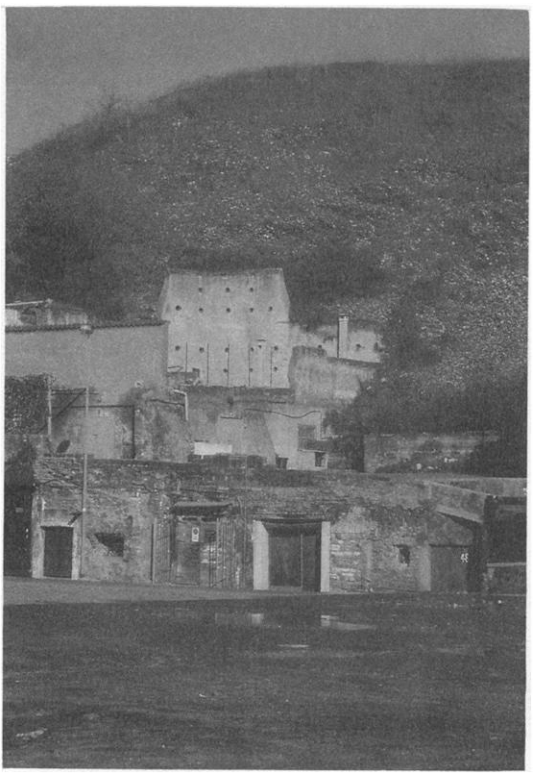

Plate 1. General view of the Monte Testaccio

to a recent book by Remesal,[5] whose main, and highly radical, conclusions which cast much light on the Roman administration of the trade in respect of the provisioning of the army on the *limes*, we shall discuss further.

Olive oil from Baetica in Germania

The sites which imported Baetican olive oil in Germania were above all military camps and the town of Cologne. The provision of olive oil from Baetica, supplied in Dressel 20 amphorae, to these centres ought to have been on a regular basis, although at the moment not all military camps provide us with the same information. At Nimegen, for example, a large number of stamps from Baetican amphorae dating from the Flavian and

Trajanic period have been found. It is likely that a similar pattern would also have been true of Britain.

The export of Baetican olive oil to Germania reached its high point in the Antonine period, more particularly between the years A.D. 141–161. In the final half of the second century, these exports decreased in volume, due either to the Moorish invasion of Baetica or the wars against the Quadi and Marcomani. However this decline is not consistently found at all importing sites and two of the sites where Spanish olive oil was produced, Canama and La Catria, increased their exports in this period.

The major exporting centre of Baetican olive oil during the Flavian and Trajanic period was beyond a doubt La Catria (Lora del Rio, Seville), which was the principal exporter for the *annona*. From the mid-second century onwards these exports decreased in volume, recovering in the first half of the third century. In the area neighbouring La Catria, on the other hand, while the export of olive oil was of importance in the Flavian and Trajanic period, it decayed in the mid-second century and had almost vanished by the third. Some *figlina*, pottery workshops, at La Catria, ought to have been confiscated by Septimius Severus (*SHA*, *Vita Sev.* 12). In the town there was an intervention warehouse for the supply of olive oil to Rome and the army, as the use of the word 'portus' found on its amphorae shows.

The *Municipium Flavium Arvense* only became important as a centre for the export of olive oil in the third century A.D. An inscription from the first half of the second century (*CIL* II.1064) shows that its land was parcelled out amongst small landowners or tenants working in this trade, whose patron was a Fulvius Carisianus. Malpica and its neighbourhood only exported Dressel 20 amphora in large numbers in the mid-second century A.D.; these disappeared in the following century. The *Municipium Flavium* of Canama (Alcolea del Rio, Seville) also exported a large amount of olive oil to the *limes*. Inscriptions found on amphorae stamps here appear to show that several *conductores vectigalium* were present in Canama, an important fact for our knowledge of important aspects of the Roman administration in Baetica. In the mid-second century A.D. this town exported a large amount of olive oil to Germania, but stopped doing so in the third century. The area of Astigi (Ecija, Seville) only became important as an exporter of olive oil in the third century A.D.; more specifically the site of Las Delicias exported olive oil to Germania from the Flavian-Antonine period, but these exports reached a grand scale in the third century.

From this information we can conclude that there was a link between various olive oil producing centres in Baetica and some German sites. Each

exporting area had its period of importance and this trade is found in the hands of a particular group of individuals or families. These individuals or families had connections to the *annona* in a private capacity.

Various calculations have been made about the volume of the exported olive oil. It has been worked out that each legion, some 6,000 men, would have required around 1370 amphorae a year; a Dressel 20 amphora has a capacity of 210 pounds, leading to a figure of 288,000 pounds of oil per annum. Each olive tree in Baetica therefore would have produced some 20 pounds of oil a year. It has been generally accepted that olive oil from Baetica was exported to Germania along the Rhône. Remesal, on the other hand, believes that it was exported by an Atlantic route, owing to the difficulties of navigation to be found on the Rhône and of taking the amphorae overland to Germany. The Roman lighthouse at Corunna was built to help this trade.[6] Pliny (*NH* 2.167) and other authors allude to this maritime traffic. Wrecks of ships carrying Dressel 20 amphorae from Baetica have been found on the Atlantic coast of Galicia.[7]

Remesal's study also provides other important information about the function of the *annona militaris*. It calls attention to the fact that there was no specific title given to this branch of administration. Augustus created an efficient administrative structure, the *praefectus annonae* of Rome, with an *officium* which centralized the tasks of collection and distribution using employees in the provinces, the *procuratores Augusti*, who were given the task of obtaining the produce. In this task they relied on the help of the troops who were under the *officium* of the governor of the province. This system became more complicated with the passage of time.

In regard to the organization of the system of provisioning within the army itself, Remesal only concerns himself with the supply of olive oil from Baetica from abroad under state control. He believes, following D. van Derchem, that there was no central office dealing with military supplies, but that this function was part of the task of the *praefectura annonae*. From the Claudian or Neronian period onwards a variety of inscriptions (*CIL* Vi.8538, 8540, 8539, 8541, etc.) refers to low-ranking personnel concerned with provisioning the army and who ought to have been employed by the *praefectura annonae*.

The Roman state would have been able to obtain olive oil, in the same way as other products it needed, through the *fiscus*, *donationes*, payment effected through *procuratores*, or by requisition through the so-called, and feared, *indictiones*. The control exercised by the *fiscus* over the Baetican olive oil trade was minimal in A.D. 41. However by A.D. 71 it was almost total as the Monte Testaccio shows it was in the Antonine period. There-

fore a rigid form of control over this trade was established by the Roman state between A.D. 41–71. Perhaps it was Vespasian who increased the amount of control. The first *procurator frumenti comparandi*, M. Arruntius Claudianus, who possibly organized the supply of Rome and the army from the capital itself, dates from the reign of Domitian.[8]

From the information gathered together by Remesal it is clear that the Roman army on the Rhine had sufficient stocks of Baetican olive oil to supply other units of the army and that the armies were supplied with olive oil from Gaul and Spain by the Rhône and Atlantic.

A well-known inscription from Hispalis (Seville) (*CIL* II.1180) mentions an Ulpius Saturninus Possessor, a *praefectus annonae ad oleum afrum et hispanum recensendum*, from the reigns of Marcus Aurelius and Lucius Verus. Contrary to the interpretation which is generally followed, which is that his post was a provincial one, this title ought to prove that Possessor's duties were located in the *praefectura annonae* in Rome and that his brief was to oversee the import of olive oil from Baetica and Africa, and the transport of other products for the *annona*, paying the transport costs which the *navicularii* presented to the *annona.* Possessor would have held his post at the beginning of the wars against the Marcomani. At this time a *subpraefectura annonae* was created, a post which was held by P. Cominus Clemens from A.D. 170. The *praefectura annonae* would have taken care of the provisioning of Rome and the army. The inscription of Possessor also tells us that the *vecturae* were the price of transporting the goods and that there was no trade as such between the *navicularii* and the *annona.* Instead there merely existed a traffic in the goods needed. Within the Empire commerce was largely in the hands of the *annona.* Therefore the reign of Marcus Aurelius saw the development of the organization of the *annona*, along the lines which had been laid down in the Flavian period. Under the Severan dynasty the *annona* under went further changes.

The stamps from the Dressel 20 amphorae allow us to see that three workshops and their estates were confiscated by the Imperial authorities at this time and administered by them. On the death of Caracalla these estates passed from the imperial *ratio privata* to the *patrimonium*; Alexander Severus made them private property. This evolution can be seen form the *tituli picti* on Baetican Dressel 20 amphorae. It appears that Septimius Severus enriched his *ratio privata* at the expense of the *fiscus*, which had received them as *patrimonium principis*, and that he allowed the *ratio privata* to monopolize the trade for the *annona*, to solve the problem of the rising cost of maintaining the army, and at the same time to maintain a monopoly over the exactions of the *fiscus* which had previously been

carried out by *publicani* or *conductores*. Alexander Severus' great contribution was to liberate the trade in the *annona* once more, allowing private individuals to transport goods pertaining to it again. The Monte Testaccio ceased to be added to in the reign of Gallienus, and therefore our evidence too stops at this time. Dressel 20 amphorae (Plate 2) now disappear and other forms of amphorae take their place, e.g., the Dressel 23 form. These changes may be connected with military reforms.

This theory is extremely radical, as normally it is believed that after the end of the Monte Testaccio in A.D. 257, Spain stopped exporting olive oil to Rome and the army on the *limes*. This hypothesis would find strong support in the fact that there are no Dressel 20 amphorae in the underwater finds from the Spanish coast[9] and that there were a large number of African amphorae in Spain in the Late Empire, clear evidence of the import of African olive oil.[10] Remesal's theory is supported by the fact that

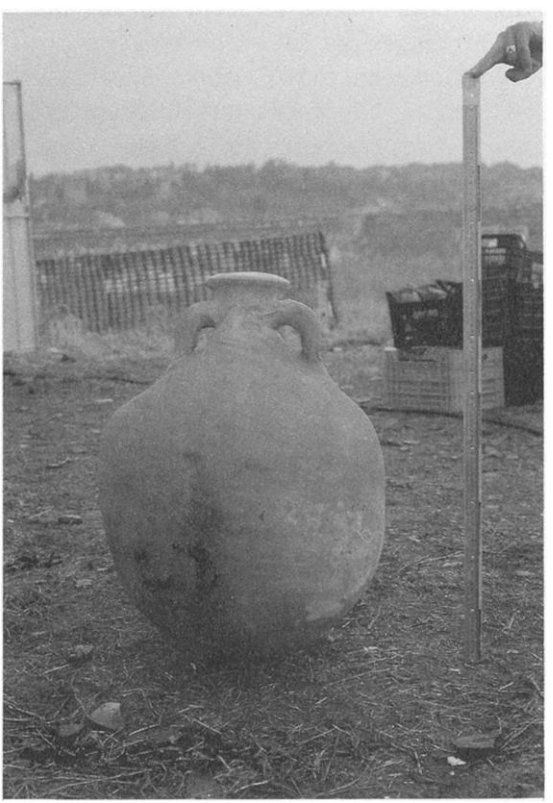

Plate 2. Dressel 20 amphora found at the bottom of the excavation

Spanish Dressel 23 amphorae are found built into the vaults of the Circus of Maxentius in Rome,[11] that the vaults of the mid-fourth century church of St. Gereon in Cologne are reinforced with 1200 Dressel 23 amphorae,[12] and that Dressel 23 amphorae dating from the first half of the third century have been found in Ostia. Dressel 23 amphorae have appeared in Spain at Ampurias (dating from the first half of the third century) and Tarragona (dating from the first half of the fifth century), and were manufactured in Baetica, where workshops which produced Dressel 23 amphorae have been found at El Tejadillo (Alcolea del Rio).[13] These Dressel 23 amphorae appeared in the market place from the reign of the emperor Gallienus onwards. It is interesting that this type of amphora is found in August between A.D. 280–280, a little after the invasion of the Franks[14] which according to Orosius (41.2) devastated Spain for twelve years. This ought to show that although *inruptae sunt Hispaniae, caedes vastationesque passae sunt . . . quod etiam sub Gallieno imperatore per annos propemodum duodecim germanis evertentibus exceperunt*, the export abroad of Baetican olive oil was not curtailed – a very radical point of view.

It can also be deduced from the study of the Spanish amphorae found in Germany that there was an extremely close interprovincial dependency between those areas which produced olive oil and those which imported it, and a large amount of state intervention. On the *limes* of Britain and Germany very little evidence for African olive oil has been found. Contrary to what has been supposed, therefore, there was no *annona militaris*, but merely a *praefectura annonae.* Other important conclusions of Remesal's study are that the officials in charge of the supply of the army in wartime belonged to the *ordo equester.* During the Early Empire there was a controlled market which the state itself destroyed to take control of the means of production itself. The fundamental economic relation in the trade was that between Baetica and Rome, Rome being the centre of the imperial administration, not that between Germany and Baetica. In the reign of Diocletian the emphasis of trade from Baetica changed radically and was orientated towards the army and the officials of the Roman West.

Excavations on the Monte Testaccio

Holding excavations on the Monte Testaccio is an old project, long cherished by the Spaniards Dr. E. Rodriguez Almeida,[15] who has dedicated his entire life to the study of archaeological material from the site, and

Prof. J. Remesal,[16] who has published various works on the stamps of olive oil amphorae found in Germany and Baetica.

The Monte Testaccio is the main economic record of Imperial Rome, providing documentation about the export of olive oil to Rome over some 250 years. At the same time it provides us with evidence about the organization of this trade. Various hypotheses have been put forward to explain how it was created. The German Hispanist H. Dressel, who was the first to investigate the Monte in the last century and confirm that its remains came from Spain and not from Gaul, as French researchers had suggested, since the place names found on the amphorae were Spanish, believed that it had come into being from the reign of Augustus onwards and without any form of planning. E. Rodriguez Almeida has taken the opposite position that the Monte was created according to a predetermined plan which comprised two distinct levels. One level was begun in the Augustan period, when Strabo already notes the export of olive oil from Baetica to Rome. This level continued in use to the mid-second century, with a second being added onto it on its western side dating from the mid-second century to the mid-third century A.D. The second campaign of excavations has enabled us to discover that the two levels were constructed in different ways. In the first level the material is broken into large fragments, which accounts for the rapid growth of the Monte. However the opposite is the case in the additional level where the material is more scattered and the strata from each year are smaller. The location chosen for the first campaign, undertaken in 1989, was the place where it was believed that the two levels joined. These excavations have confirmed Rodriguez Almeida's views.

In the first campaign it was intended to excavate a trench of $30m^2$. Given the large amount of profitable material, however, the initial trench was reduced to 2 sectors where excavation in more depth took place in the campaign of 1990. The two sectors chosen for excavation were, first, the supposed joining point of the Monte's two levels and, secondly, an area of the third century level. Material which proved of no epigraphic or typological value was put back onto the Monte in plastic boxes. At the present time Prof. Grubessi of the Earth Sciences Department of the University of Rome and his team are analyzing a large number of amphorae of known provenance and age in order to establish a table of analysis of their fabrics which would allow the provenance and date of fragments where this date is not known to be determined.

In the two areas of the first campaign, called North and South, (Plate 3), there was no soil to be found after a depth of 25 cm, and amphorae frag-

Plate 3. The western side of the excavation at a depth of 5m

ments were found piled on top of one another. Beyond this depth the material was less fragmentary than that found in the initial 25 cm. In the two areas the amphorae dated from the third century, specifically from the Severan dynasty. Deposits of African amphorae which appeared to have been deliberately smashed were found at a depth of 45–60 cm.

Below a depth of 60 cm in the Southern Sector only third-century material was found. At a depth of 2 metres this could be securely dated to the years between A.D. 217–228. The *tituli picti* of the *Ratio Fisci* belong to the former date. In the first excavation in the Northern Sector at a depth of 120–200 cm the only secure dates, according to Prof. Rodriguez Almeida, were A.D. 220, 221, 222, 223, with a further piece almost certainly dating to A.D. 214, as it contains a form of nomenclature already recorded, probably by Dressel and found on other inscriptions:

Sabino et Apollina/(re cos) = (*CIL* XV.4097)

Among the material is a brief and continuous annual sequence, from between the years 159 and 161, with the final year greatly predominating in number. This ought to be the last year the eastern pre-Antonine level of the Monte was in use. There is a clear impression that such perfectly coherent group of material should be related not to a horizontal level, but a

plan of tipping from the edge of the adjacent higher level. This would be a gentle and certainly a risky form of tipping – one that was fixed and secured by the use of post-Severan material.

Given the large number of *recensiones*, control marks, from A.D. 161, it is worthwhile stating, as E. Rodriguez Almeida has on other occasions, that these show the widest variation in their formulae of all those found on our amphorae. These run from the formula *Vero iii et Commodo ii cos*, to *Aurelio Caes iii et Commodo ii*, to *Aurelio Augusto iii*, etc. The reason for this variety of formulae is clearly the change in the titles used by Marcus Aurelius and Verus after the death of Antoninus Pius in Lorium on the 7th March in this year. These new examples add to the already known variant *ii August cos*, which cannot be discussed here (given the overall context) save to note that it too belongs to this year.

Beneath a depth of 1.20m, no more third-century material was found, only Protoantonine amphorae; therefore the dig had reached the edge of the higher mid-second century level. This is shown by the abundance of *tituli picti* found which were now much larger and contained a greater number of elements (Plates 4 and 5). A large number of private *mercatores* were found (Plate 6): for the most part these were already known (L. Aelius Fabianus, M. Cornelius Ianuarius, various Caelii, L. Lituccius Sabinus,

Plate 4. Recording of a *titulus pictus* in situ in the northern sector of the excavation

Plate 5. *Titulus pictus* of a Dressel 20 amphora with a complete set of fiscal control marks

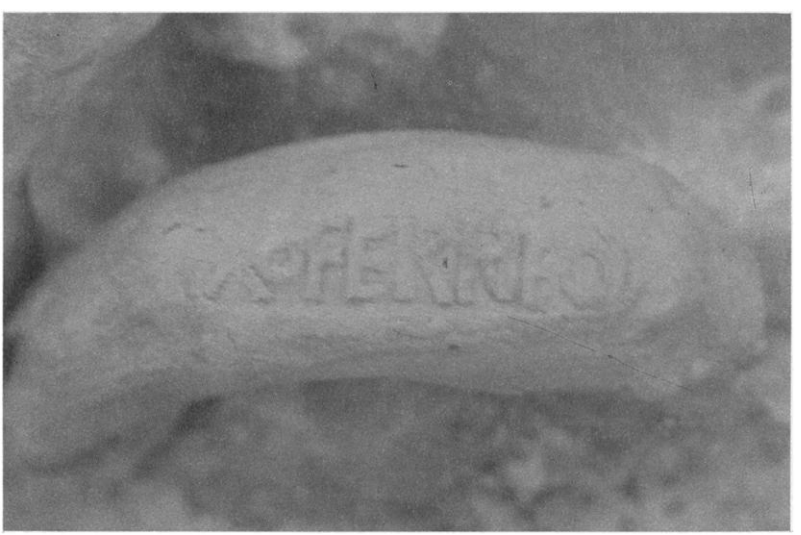

Plate 6. Stamp of Saxo Ferreo (Huertas de Belen, Baetica)

etc.); one trader, although previously known operating in a partnership, now occurred alone (C. Valerius Valerianus); and finally two new names were found (a L. Aemilius Onesimus and a C. Oppius [reading doubtful] with a lost *cognomen*).

In the Southern Sector perfectly fixed horizontal strata were in a clear temporal sequence, to which only two epigraphic features showed a certain anomaly. The material most immediately striking and recognizable was the very high numbers of *tituli* of the *Ratio Fisci*, which like their twins in the Northern Sector, appeared without any *recensio*. For their part the *recensiones* were almost always very small and badly preserved fragments, only a small number being complete.

The secure dates proposed by Rodriguez Almeida began from the bottom of the dig with the date A.D. 217, and 'rise' upwards in an almost perfect sequence to the middle of the following decade, with a secure or highly probable ceiling of A.D. 229.

These dates taken from the Monte Testaccio serve to confirm the conclusions of Rodrigez Almeida's studies on the *tituli picti* of the Severi which throw a great deal of light on the organization of the olive oil trade in Baetica during this dynasty. Septimius Severus' first intervention in the Baetican olive oil trade can be identified in the inscriptions of the *Ratio Fisci*. Today it is known that this reform occurred after the death of Caracalla, falling in A.D. 217. The *tituli picti* of the Severan period can be subdivided into two groups. The oldest carry the names of Septimius Severus and Antoninus Caracalla and date from A.D. 198–205. The second group carry Geta's name as well as the two former ones. These imperial names do not confirm the confiscations of the Severi alluded to by the *Historia Augusta*. The imperial names take the place of those of *diffusores olearii* or *mercatores*. No private names appear on amphorae from the Monte Testaccio between A.D. 198–230, the latter being the year when they begin to appear once more owing to the *liberalitas* of Severus Alexander (*SHA Alex.* 22.1). We can say, therefore, that Septimius Severus and his sons controlled the supply of olive oil to Rome, which had previously been carried out by private traders, by means of state-owned securities. Rodriguez Almeida believes, contrary to the generally accepted view, that Septimius Severus' confiscations in Baetica were of no importance. This seems to be correct as we only know of three such estates which had already been taken over by the imperial administration in the Antonine period, and we have no evidence as to why this occurred. The Severi revolutionized the forms of transporting olive oil, but not the system of its production.

In the second campaign of excavations the dig was deepened from 2 to 5 metres, an area of $12m^2$ being excavated. Beneath the stratum from the years A.D. 160–161, one dating from 153 was found.

The amphorae were taken up the Monte intact on horseback and then broken up on the Monte itself as is shown by the fact that an intact amphora has been found at a depth of 5m. According to Remesal's calculations, a mule or ass would carry 4 empty amphorae. Each of these would have weighed 30 kg. On the other hand Remesal believes that the African amphorae ought to have been broken up prior to being taken up the Monte.

Various Details about the Excavations on the Monte Testaccio

Excavating on the Monte Testaccio has various singular aspects. First of all the Monte is made simply of amphorae with no earth; this means that excavation has to be carried out very slowly as the volume of material useful for study it yields is extremely high. A small sampling produces a great amount of data of all types in a far larger proportion than that produced by any other form of excavation. From time to time whitewash was poured on the Monte, probably to counter the unpleasant smell of rancid olive oil, mosquitoes, and perhaps the spread of disease among the population living nearby.

The consular dates of the *tituli picti* date the same stamps wherever they appear in the Roman Empire, and the place of their provenance is, in general, the province of Baetica. All the amphorae have written *tituli picti* on them which are all fiscal control marks, but not all have stamps. By using the *tituli picti* it is possible to relate the amphorae which do not have the stamp to those which do, and determine their place of origin. It will be of use to point out some other new data, such as the absence in the two excavations either of any wine amphorae, which the north-east corner of Spain exported in relatively large amounts to the south of Gaul and Italy from the end of the late Republican/beginning of the Imperial period,[17] or of any *garum* amphorae,[18] despite that fact that the Greek geographer Strabo, who lived in the Augustan period, expressly mentions the export of wine (3.2.61) from Baetica and of Spanish *garum* (3.1.8). The *garum* most sought after in Rome was *sociorum garum* (Str. 3.4.6) which hailed from the vicinity of Carthago Nova, and was highly praised by the Elder Pliny (31.94). Ponsich[19] in his scrupulous survey of the Betis valley, where he discovered many pottery workshops dedicated to the manufacture of Dressel 20 amphorae, came to the conclusion that Baetica only produced

sufficient wine for consumption within the province and not for export to Rome or the *limes*, despite Strabo's views to the contrary, and that the wine of Baetica did not come from the Betis valley. Rodriguez Almeida has suggested, on the basis of his observations of the composition of the surface of the Monte Testaccio, that Baetican olive oil amphorae should form 85% of its total mass, and that the majority of the remaining 15% ought to be made up of olive oil amphorae from North Africa (Tripolitania, Bysacena),[20] but this percentage of African olive oil amphorae needs to be lowered. From the information drawn from our excavations it can be seen that in the second century 90–95% of the Monte was composed of Baetican olive oil amphorae, but that in the third century African amphorae, according to Remesal's calculations, rose to form 20–25% of the total. African amphorae have appeared in a horizontal stratum which runs across the entire length of the excavation, and has a depth of 45m. These African amphorae are of the Tripolitanian I and II and African I and II forms. Possibly this layer of African amphora was intended to give a uniform covering to the deposits of Baetican amphorae, whose fragments are more curved and thicker and consequently more difficult to walk across.

These results coincide with those found elsewhere. In Ostia African amphorae begin to appear in the mid-second century, increasing in numbers from the reign of Commodus onwards: and in Mauretania Tingetana, Mauretanian amphorae – those from Caesariensis, Byzacena, and Tripolitania – appear on the disappearance of Spanish Dressel 20 amphorae. No Gallic amphorae containing olive oil[21] or wine[22] have been found, despite the fact that Gallic wine amphorae are well represented at Ostia,[23] and that in the second campaign approximately 10 tons of material was cleaned. Very few fragments of coarse ware were found in the two campaigns.

The excavations have also provided important information about the transport and storage of the amphorae. Each ship ought to have brought to Rome the oil of one producer, and when this was not the case, the vessel would have been filled with the oil of other producers from the same neighbourhood. This would explain satisfactorily why the number of stamps is very high but their variation very low. The lots of olive oil were consumed at the same time, as the *tituli picti* of any one stratum belong to the stamps of that stratum. This is an important conclusion which allows us to interpret all the material published by H. Dressel, M. H. Callender,[24] and that found all over the Roman Empire. Many amphorae also have graffiti, hand prints, and traces of the imprints of olive leaves. The Monte Testaccio, therefore, gathers together important information about the organization

of trade, about the producers and traders in olive oil, about the economic elites of the Roman Empire, and about its control and administration by the state, which is in agreement with the studies on the subject published by Remesal.[25]

NOTES

1. *Producción y comercio del aceite en la Antigüedad, I Congreso Internacional* (Madrid, 1980), II (Madrid, 1983); *Amphores romaines et histoire économiques: dix ans de recherches* (Rome, 1989); F. Mayet, 'Les figlinae dans les marques d'amphores Dressel 20 de Bétique', *Hommage à Robert Etienne* (Paris, 1988), pp. 285–305; D. P. S. Peacock and D. E. Williams, *Amphorae and the Roman Economy* (London and New York, 1986). For the economy of Roman Spain see J. M. Blázquez, *Historia social y económica: la España Romana (siglos III–IV)* (Madrid, 1975), *Economia de la Hispania Romana* (Bilbao, 1978), *Historia económica de la Hispania Romana* (Madrid, 1978), *Historia de España, España Romana 2.1* (Madrid, 1982), pp. 295–607.

2. M. Ponsich, *Recherches archéologiques à Tanger et dans sa region* (Paris, 1970), pp. 271–83.

3. J. Boube, 'Marques d'amphores découvertes à Sala, Volubilis et Banasa', *MAM* (1973–5), 163–85; R. Etienne, *Le quartier nord est de Volubilis* (Paris, 1960), pp. 156–63; F. Mayet, 'Marques d'amphores de Maurétanie Tingitane, Banasa, Thamusida, Volubilis', *MEFRA*, 90 (1978), 357–406.

4. E. L. Will, 'Exportation of olive oil from Baetica to the Eastern Mediterranean', *Producción y comercio del aceite en la Antigüedad, II Congreso Internacional*, pp. 391–444.

5. *La annona militaris y la exportación de aceite bético a Germania, con un corpus de sellos de ánforas Dressel 20 halladas en Nimega, Colonia, Mainz, Saalburg, Zugmantel y Nida* (Madrid, 1986).

6. Th. Hauschild, 'El faro romano de la Coruña (Torre de Hércules): Problemas de su reconstrucción', *Actas del Coloquio internacional sobre el bimilenario de Lugo* (Lugo, 1977), pp. 131–56 and *MM* 17 (1976), pp. 238–57; S. Hutter, 'Der römische Leuchtturm von La Coruña', *Madrider Beiträge* 3 (Mainz, 1973); J. Naveiro, 'Informe: El comercio maritimo en el noroeste durante la época romana atraves de las ánforas', *Revista de Arqueologia* (1986), 40–5. The author states that 'there are a large number of remains of amphorae found in the coastal finds from Galicia. Normally they are of an extremely fragmentary nature making it difficult to determine their typology. This is the reason they are rarely mentioned in works on the subject.'

7. Blázquez, 'Tresors sous-marins en Espagne, découvertes préhistoriques, grecques, puniques et romaines', *Histoire et Archéologie: les dossiers* 65 (1982), 78–84.

8. *AE* (1972), p. 572.

9. Blázques, op. cit. passim.

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