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LATE-ANTIQUE PETRA,
NILE FESTIVAL BUILDING AT SEPPHORIS,
DEIR QAL'A MONASTERY,
KHIRBET QANA VILLAGE AND PILGRIM SITE,
'AIN-'ARRUB HIDING COMPLEX,
and other studies

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"Carrot" amphoras: a Syrian or Palestinian connection?

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The study of many Eastern Mediterranean amphora types is an ongoing process. New excavations in the eastern Roman provinces continue to provide fresh information on many kinds of ceramics and on their circulation not only in that region but also in trade to the West. Indeed, most typologies of eastern amphora types were first created on sites in the West, as is true of the "carrot" amphora (so named because its distinctive, short tapering shape is reminiscent of that of a carrot), classified as Camulodunum 189,[1] Augst 44,[2] or Pompei XV.[3] This paper intends to take a fresh look at this enigmatic type, the origins and contents of which have been debated.[4]

The carrot amphora has a plain or rounded rim which lacks a neck, small thick loop-handles, and small tapered body, normally covered by horizontal rilling. Its capacity was comparatively small (2-3 litres, or almost 1 *congius*).[5] The type was first noted as occasional finds in Britain and Germany. S. Loeschke (1942) identified the form at Oberaden (type 85) and drew attention to parallels at Avenches. Further finds were made in Britain, Germany and Pannonia, and the type became commonly recognized in those parts of Europe, though little was known about its origin or contents. W. Reusch (1970) was the first to study the type in depth and suggested that the main contents were dates, based upon the carbonized contents of one of two horizontally ribbed vessels from Avenches, though neither was the typical "carrot" form.[6] Reusch pointed out that the main concentration of the typical "carrot" type was on military sites along the Rhine and Danube *limes*, which was interpreted as a sign of direct state involvement[7] in the commerce to supply the military garrisons.

Speculation on its origins centred on desert regions of the East known to have produced dates. This view was strengthened when a scanning electron microscope examination by M. Shackley (1975, fig. 5.10) showed that the quartz grains in the fabric displayed well-developed Aeolian features, suggesting that they derived from a hot desert environment,[8] and the notion of a Palestinian origin was taken up in the literature (Green 1980). P. Sealey (1985, 87-89) discussed the type and pointed out that it was strange that the type, if it was Palestinian, had not been documented in underwater surveys off the Israeli coast. At about the same time D. Peacock and D. Williams drew attention to the similarities of fabric between the carrot form, the amphora from Avenches containing dates, and Kingsholm 117 (their Class 66, though the forms are not the same). Then in 1992 a typical body sherd containing a *titulus pictus* from a carrot amphora found at Carlisle[9] was examined by R. Tomlin, who identified the word *kouk* (in Greek) and

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1 Hawkes and Hull 1947.

2 Martin-Kilcher 1994.

3 Schoene and Mau 1909.

4 Tomlin 1992; Martin-Kilcher 1994.

5 A complete vessel from Gracechurch Street London holds 3.15 litres (Wheeler 1930; Sealey 1985, 88). Other examples are quoted by Vipard (1995, 55), where the volume in litres ranges from 0.5 up to 4.01.

6 The half-intact amphora which contained carbonized dates was large, wide-mouthed, and had a broad shoulder (Callender 1965, fig. 20 no. 4 = Peacock and Williams 1986, Class 65); the second amphora which contained carbonized olives had more of a carrot shape but is still not typical of the form (Reusch 1970, Abb. 1 no. 5).

7 Such state involvement would be similar to that in the case of Dressel 20: cf. Remesal 1986.

8 Shackley made a comparison with similar-shaped quartz grains from a locally-produced Palestinian 5th-c. B.C. amphora (her fig. 5.11). Although this comparison showed that the quartz grains in both vessels derived from a "hot sandy climate", Shackley did not actually suggest that the two vessels must have come from the same source.

9 Price and McCarthy 1990, 167.

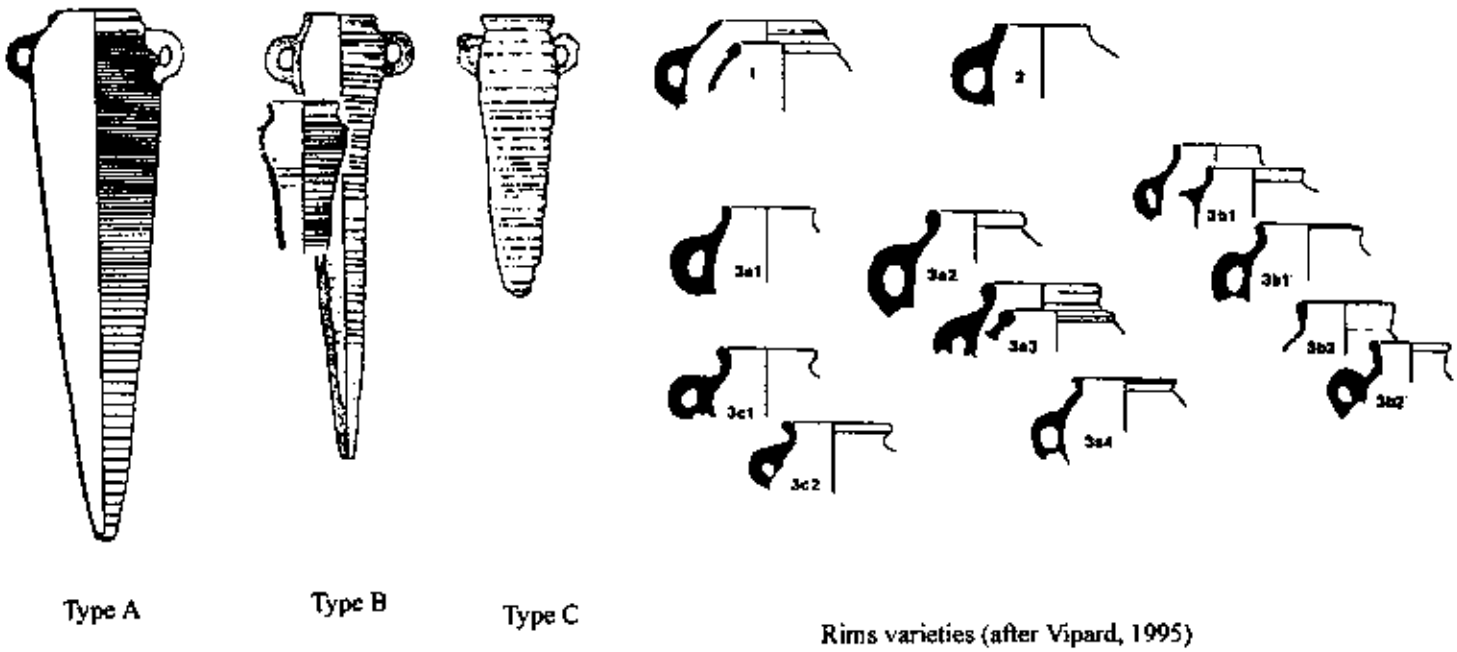

Fig. 1. Left Types A, B and C of the carrot amphora; right, varieties of rim (after Vipard 1995)

interpreted it as *kouk(ion)*, the name of a variety of date from the doum palm (*Hyphaene thebaica*), which grew only in Upper Egypt and Sudan. However, we may observe that the doum palm's fruit is quite large (fist-sized or a little smaller) and that the small size and shape of the carrot amphora (particularly those vessels whose trunk comes to a narrow point) do not seem well suited to hold it. In addition, it is not regarded today as an exotic fruit, and usually has to be moistened to make it palatable. A further appraisal and updating of information about the type was given by S. Martin-Kilcher (1994, 434-36) who related its typology to others that share similar features (Kingsholm 117, Augst 46, Augst 47). She also recorded two further Greek inscriptions on carrot amphoras.[10] Most recently P. Vipard has analysed the distribution and dating of this type, chiefly in Gaul where it was little known before. His fine morphological study of the variants shows that there was no unique prototype but different regional models, which do not seem to evolve chronologically since different variants are contemporary.

The typology of the carrot amphora is therefore rather heterogeneous, including vessels of different sizes, rim diameters, tapered bodies and hollow spikes. Martin-Kilcher initially distinguished two varieties (1994, Abb. 196, 1.2), while Vipard (1995, 52-54) provided a thorough classification according to the complete shape, with changes in rim form marking variants. The basic classification has three shapes (fig. 1):
A – rounded body with conical outline;
B – rounded body which narrows below the handles, having a sharper conical bottom;
C – oblong short body.
Vipard defined a wide variety of rims (1 – turned down; 2 – vertical; 3 – everted; see fig. 1). Despite the small number of examples at his disposal, he could detect some chronological changes in morphology: for example, the rounded rim became thinner until A.D. 65; it tends to decrease in size, being higher in the first half of the 1st c. From the 70s onwards, the body tends to decrease in size beneath the handles, and the mouth opens up.

More carrot amphoras have turned up since Martin-Kilcher's review, with many more examples from Pannonia, Germany, Gaul and Britain giving a more complete picture of chronology and distribution. Recently, examples have been found in Spain for the first time, at Barce-

10 One from Naples, the other from Augsburg; these are in addition to the Latin *titulus pictus* known from Pompei (*CIL* IV 2834).

Fig. 2. Distribution of finds of carrot amphoras

lona and the military fort of *Petavonium* (Rosinos de Vidriales, NW Spain).[11] A total of at least 8 carrot amphoras have been found on 6 sites in Barcelona.[12] Of these, the find from Rasa de la Catedral (UE 260) and the piece from Ajuntament 96 (Cala C/103) both give a late 1st- to early 2nd-c. date. The best dating evidence comes from Correu Vell, of about A.D. 25-75.[13]

Overall, the known distribution of the type (fig. 2) concentrates in Germany, Gaul, Pannonia and Britain.[14] Even the main N African markets (including the well-studied sites of Lepcis

11 Romero and Carretero 1998. This find did not provide any useful dating evidence.

12 El Tinell, St. Iu, Ajuntament 96, Rasa de la Catedral, Correu Vell, and Pati Llimona.

13 In addition to being found in late residual contexts (UE 114, dated by ARS C ware [Lamboglia 40bis] to A.D. 230-325, it appeared in 1st-c. contexts (UE 34, dated to A.D. 20-70 by Gaulish Samian, La Graufesenque, Drag. 24/25, 24/26 or 27, and in UE 37, dated to A.D. 25-75 by Italian Samian, Arezzo, *Conspectus* 23.1, Gaulish Samian, La Graufesenque, Drag. 29b).

14 They are attested as follows: **Africa**: Carthage; **Britain**: Caerleon, Canterbury, Carlisle, Colchester, Corbridge, Chester, Exeter, Fishbourne, Inchtuthil, Inveresk, Leicester, London, Neath, Ribchester, Richborough, Segontium, Silchester, Towcester, Verulamium, Wilcote, Winchester, York; **Crete**: Knossos; **Gallia**: Ambrussum, Angers, Arras, Bordeaux, Elna, Guernsey, Horath, Limoges, Lyon, Mâlain, Marpingen, Saintes, St. Germain-Laxais, Tours, Trier, Vieux; **Germania**: Augst, Avenches, Besançon, Braives, Ersingen, Flerzheim, Hofheim, Köln, Mainz, Oberaden, Saalburg, Strasbourg (Köningshoffen, St. Médard), Vindonissa, Wiesbaden; **Spain**: Barcino, *Petavonium*; **Italy**: Emona, Naples, Ostia, Pompeii, Rome; **Moesia**: Viminacium; **Noricum**: Aguntum, Magdalensberg; **Pannonia**:

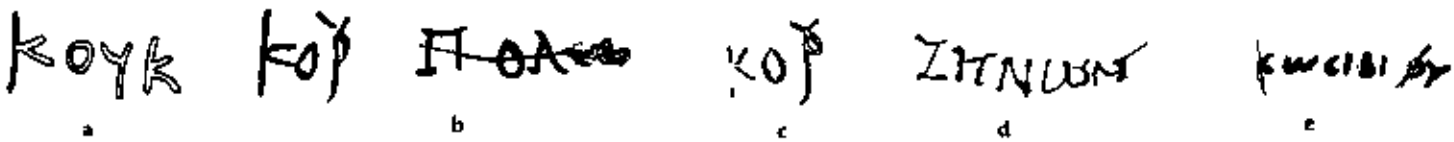

Fig. 3. Inscriptions on carrot amphora sherds: a. Carlisle; b. Pompeii (CIL IV.3.9772), c. Pompeii (*CIL* IV.3.9772b); d. Pompeii (*CIL* IV.3.9743); e. Naples.

Magna, Sabratha and Berenice) provide no evidence, except for two examples at Carthage.[15] Amphora production in Tunisia and Libya has been well documented and none of the local forms has the carrot shape or fabric. In Algeria and Morocco only a narrow range of amphora forms seems to have been produced, none of which shares the carrot fabric.[16] Indeed, the dearth of amphora kilns in Morocco has led to the suggestion that empty South Spanish vessels may have been imported for use by the local fish industry.[17]

Note that the type is absent from Syria, Palestine, Egypt, Asia Minor,[18] and Cyrenaica, even though its production sites should perhaps lie in the East. These distinctive-looking vessels have not been reported on any Roman site in Egypt,[19] though Tomlin proposed its origin there, and no workshops for carrot amphoras are reported in Egypt.[20] The type is completely lacking at Mons Claudianus, the site of extensive quarrying and a substantial military presence in the 1st c. A.D., to which practically all foodstuffs had to be imported and where a high percentage of the ceramic assemblage is local.[21]

Stones from doum palms have been found at Mons Claudianus,[22] so it would seem that these fruits may have been brought in different kinds of container. Tomlin's argument for the Egyptian origin was based on a painted inscription (fig. 3)[23] which he interpreted as *kouk(ion)*, but Pliny (*NH* 13.48) says "the date of the Thebaid is packed into casks at once before it has lost the aroma of its natural heat; if this is not done, it quickly loses its freshness and dries up unless it is warmed up again in an oven".[24] It may well be, then, that dates from this part of Egypt were not packed in amphoras; or the word on the Carlisle vessel may mean something quite different, perhaps as an abbreviation. A few inscriptions have been found on other carrot amphoras, including ones at Pompeii,[25] Naples[26] and Augsburg,[27] all written in Greek (fig. 3),

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Aquincum, Balácas, Carnuntum, Pingitzer, Poetovio, Sirmium, Solva, Tokod; **Raetia**: Augsburg, Friedberg, Oberstimm, Straubing. For **Greece** J. W. Hayes kindly informs us of two unpublished Roman (1st-2nd c.) examples from the the Athenian Agora (unidentified fabrics, not typical of Beirut or 'Tyre' fabrics) and another from Stymphalos from an upland context above the elevation of the olive-trees.

15 Martin-Kilcher 1993.

16 Ramón 1995.

17 Peacock and Williams 1986, 17.

18 No carrot finds have been documented at Ephesus (T. Bezeczky, pers. comm.) despite it being the main port in the region. However, excavations at Constantine's palace in Constantinople have unearthed amphoras that resemble the carrot type, probably derived from earlier contexts.

19 None are documented at Marina el-Alamein (Majcherek 1993), the Red Sea port of Quseir al-Qadim (Whitcomb 1982), Caenopolis to 'Abu-Sha'ar road (Riley 1991), or in the Mons Claudianus survey (Tomber 1996).

20 For the production of other amphora types in Egypt, see Empereur and Picon 1989; Ballet *et al.* 1991; Tomber and Williams 2000.

21 Tomber 1992 and 1996.

22 Tomlin 1992, n.19.

23 Price and McCarthy 1990, 163.

24 *Thebaidis fructus extemplo in cados conditur cum sui ardoris anima; ni ita fiat, celeriter expirat marcescitque non refostus furnis.*

25 Vipard 1995, 72 = *CIL* IV 3.9772 and 9772b, and 9743; fig. 3 b, c and d. The first (in red ink) has *Koru* then *Pol*; the second (in red ink) has *Koru* — both presumably refer to the amphora's contents; the third (black ink) quotes a common Greek name Zenon, which probably refers to a trader or buyer.

26 Vipard 1995, 71; fig. 3 e here. It records (in black ink) the Greek name Sosibios, which may refer to a trader or buyer.

27 The Augsburg inscription has recently been published by Sorge (1999) and quotes a Greek name Dionysios, which may refer to a trader or buyer. A new inscription has been documented recently in Augsburg

but none unambiguously identifies the contents.

Petrology

The strongest argument against an Egyptian origin, however, is the amphora's fabric, which does not correspond to the Nile valley's clays, at least with respect to samples taken in the area from Aswan[28] to Mariout.[29] Yet there are workshops of other amphora types (Early Roman, Dressel 2-4, Late Roman 7) along the Nile valley in places such as Lake Mariout, Antinoopolis, Hermopolis Magna, Zawyet el Maïetan, Oxyrhynchus, and Akôris.[30] The Egyptian fabric is generally drab chocolate-brown in colour with occasional plates of golden mica, small pieces of white limestone, and elongated voids which once held organic material. Petrological analyses conducted by Tomber and Williams show that there are major differences between carrot amphoras and Egyptian vessels at a wide range of local sites. As mentioned, none of the distinctive carrot-shaped vessels has been reported in Egypt.

Carrot amphoras are found in a hard, rough, sandy fabric, with frequent small-sized quartz grains protruding through the surfaces and with a scatter of small white pieces of limestone. The surface colour is somewhat variable, though most vessels tend to be in shades of brick red (10R 4/6) or sometimes grey (10YR 5/1). Thin-sectioning and study under the petrological microscope of a wide range of carrot vessels from many different sites shows that the dominant non-plastic inclusions are frequent, well-sorted, fairly well-rounded grains of quartz, generally below 0.40 mm in size, with one or two slightly larger grains. The quartz is fairly evenly scattered throughout a dark brown anisotropic clay matrix. Also present are small pieces of cryptocrystalline limestone, or voids with reaction rims which once held this material, occasionally small grains of calcite, foraminifera, shreds of muscovita mica, a little argillaceous material, probably clay pellets, and some opaque iron oxide. Included among the sherds thin-sectioned were three from Carlisle, including the one with the *titulus pictus* read by Tomlin.[31] In thin-section the fabric of all three sherds fitted the description given above, and the fabric of the sherd with the *titulus pictus* was very close to the illustrated rim sherd no. 11, suggesting that they may have come from the same vessel.

It may be worth noting that two other forms of all-over rilled amphora, when examined in thin section, reveal a fabric containing a similar range of inclusions: they are Peacock and Williams Class 65, the amphora containing dates from Avenches, and Class 66, a cigar-shaped form. Both of these types are considerably larger than the carrot form, but the similarity of fabric of all three suggests that they may have been made in the same general region.

If the carrot amphora does not come from Egypt, we may consider other possibilities in the same region, and Palestine or Syria come quickly to mind. In 1975 M. Shackley noted the similarity with the Palestinian fabric of an amphora of the 5th c. B.C.[32] The pottery reports from Caesarea Maritima do not record any example of the carrot type, although the related type Kingsholm 117 is attested at Caesarea[33] and at Capernaum.[34] The best-known Palestinian am-

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(Inv. 1983.1302) that reads *cottana*, a Syrian fig variety described by Pliny (*NH* 1.13; 13.10.51; 15.21.83): see Ehmig 2000.

28 Ballet *et al* 1991.

29 Empereur and Picon 1989.

30 Tomber and Williams 2000, 41.

31 Caruana 1992, fig. 8, nos. 10-12; these sherds were kindly made available by I. Caruana.

32 Vipard (1995, 51) had pointed out that the clay contains organic remains such as planktonic foraminifera, echinodermic shells, and seaweed, which may suggest that the amphoras come from a desert environment which had been occupied by the sea. In her examination of quartz grains from a carrot amphora by Scanning Electron Microscope, M. Shackley (1975, 58) mentioned that these were not similar to those found "on grains from coastal dunes". However, a coastal origin should probably not be ruled out on this basis.

33 Riley 1975, 26. However, some body sherds from similar types, such as Kingsholm 117, are difficult to distinguish from carrot amphoras simply as hand-specimens.

34 Loffreda 1974, 26. Note that the type Kingsholm 117 is documented in two shipwrecks off the south of

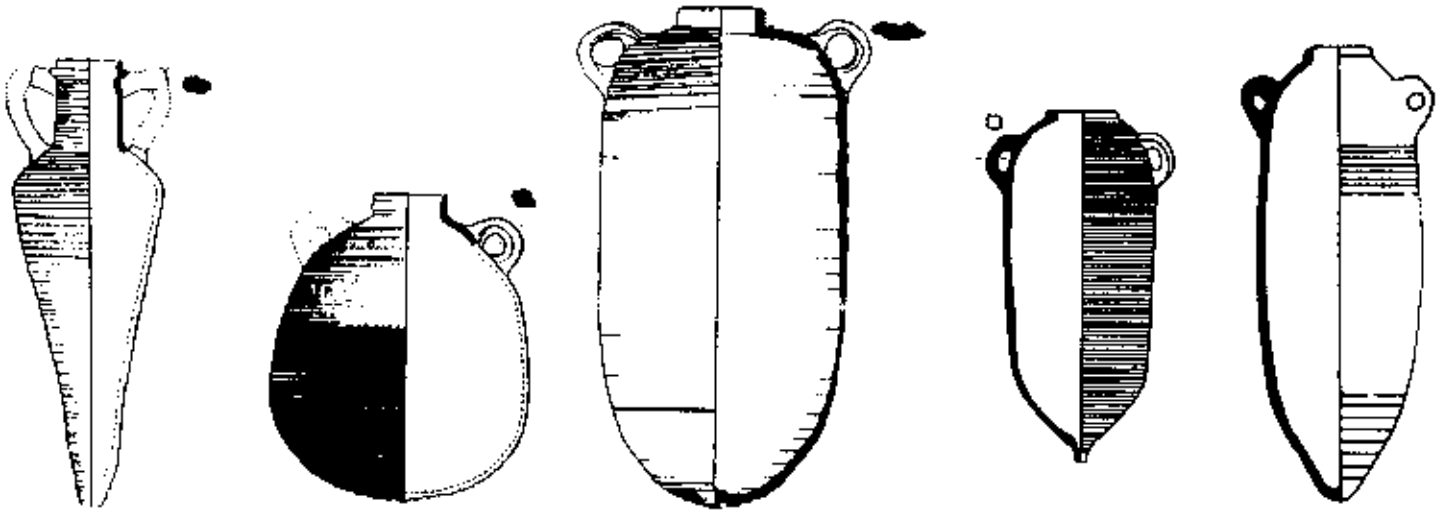


Fig. 4 (left to right) Agora M-334; Bag-shaped amphora; Gaza amphora; Kingsholm 117; Late Roman 4.

phoras are the Late Roman types 4 and 5, which come from the coastal strip around Ashkelon and Gaza (fig. 4), but although there are some similarities in fabric, neither of these is identical to the carrot type. More recently, another Palestinian amphora ("Agora M 334") has been identified, the fabric of which is said to resemble the carrot amphora.[35] It seems to be the successor in shape of the carrot vessel, appearing in contexts of the 4th to late 7th c.,[36] but this leaves the problem of what happened in the 'gap' of the 3rd-4th c.

Hayes has reported that carrot amphoras (Peacock and Williams Class 12) were made at Beirut,[37] although no details of kilns or wasters are given. Given the possibility of diffused production of these amphoras, it may be that carrot amphoras were made there — or perhaps imitations of an export type.[38]

In order to pursue the hypothesis of a Palestinian or Syrian origin, encouraged by the apparent similarities in shape and fabric between carrot amphoras and other Palestinian vessels, we examined samples of Roman coarse wares taken from various projects, at Palmyra, Gerasa, Petra, Caesarea, Jericho, and Karkur (a Byzantine site in the Negev). Macroscopic analyses with a x20 lens allowed Palmyra and Karkur to be eliminated as a possible source, since their fabrics show clear differences in colour, inclusions and texture. The closest fabrics, at least at the macroscopic level, were the samples from Jericho, Gerasa, Petra and Caesarea Maritima (fig. 5).

Therefore it was decided to carry out further analyses on these four by X-Ray Fluorescence. The analyses were undertaken in the Servei Científic i Tècnic (Universitat de Barcelona) and Departamento de Química (Universidad de Sevilla) under the supervision of M. González. They are summarised as follows (Table 1 overleaf). The Table includes all the values obtained from X-Ray Fluorescence. It indicates that Jericho fabrics are quite similar to clays present in our samples of carrot amphoras except for the CaO and SiO_2 content. The Petra fabrics have a different matrix so that source may be rejected as a possible origin for the amphora workshops. Fabrics from both Gerasa and Caesarea are relatively close to the carrot samples: the main

France (La Tradelière and Dramont D), the former dating to *c.*30 B.C., the latter to *c.*A.D. 40-50. The distribution of Kingsholm 117 is treated by De Caprariis *et al.* 1988, though some of their illustrated examples from Rome may belong to carrot amphoras.

35 Arthur and Oren 1998, 201; Reynolds 1998. J. W. Hayes kindly informs us that the source is probably in the Tyre or Ptolemais/Akko region, probably the latter.

36 Examples are known from Jalame, Tell el-Her, Yassi Ada off Turkey, and the Crypta Balbi in Rome.

37 Hayes 1997, 32 and 96. Hayes has seen the sherds in question; his informant was I. Kowatly who is excavating at Beirut.

38 We do not exclude that Berytus and other Eastern Mediterranean ports may have produced and shipped carrot amphorae filled with dates, coming from their own territory or inland plantations.

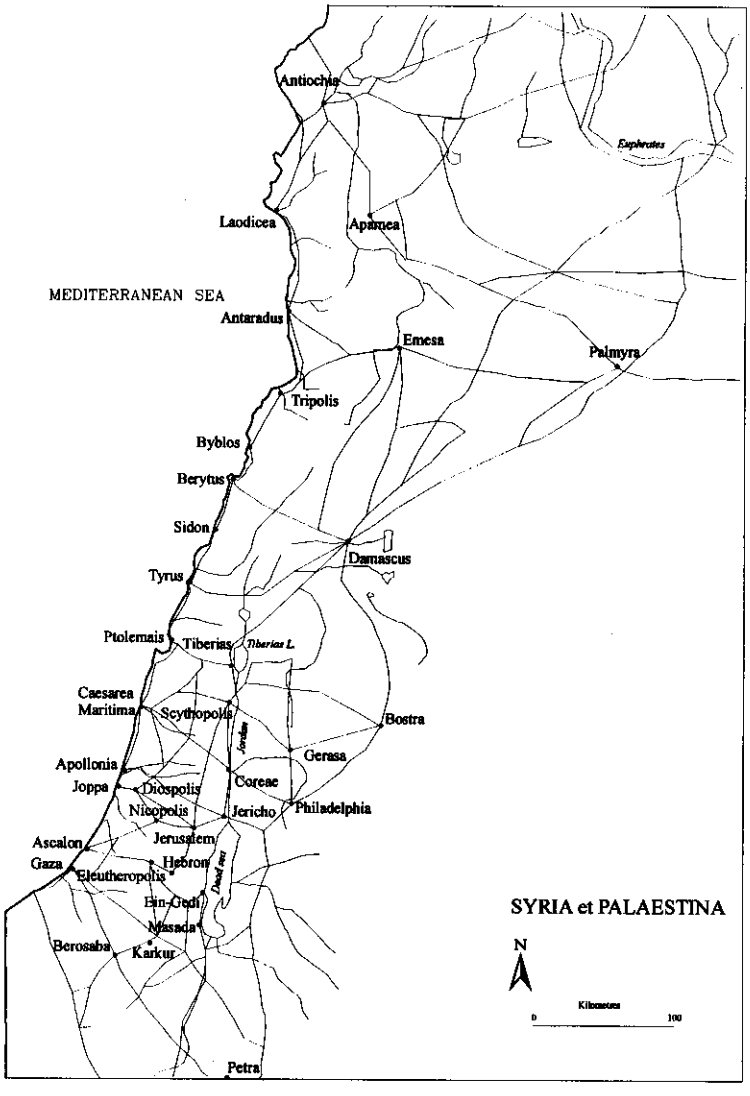
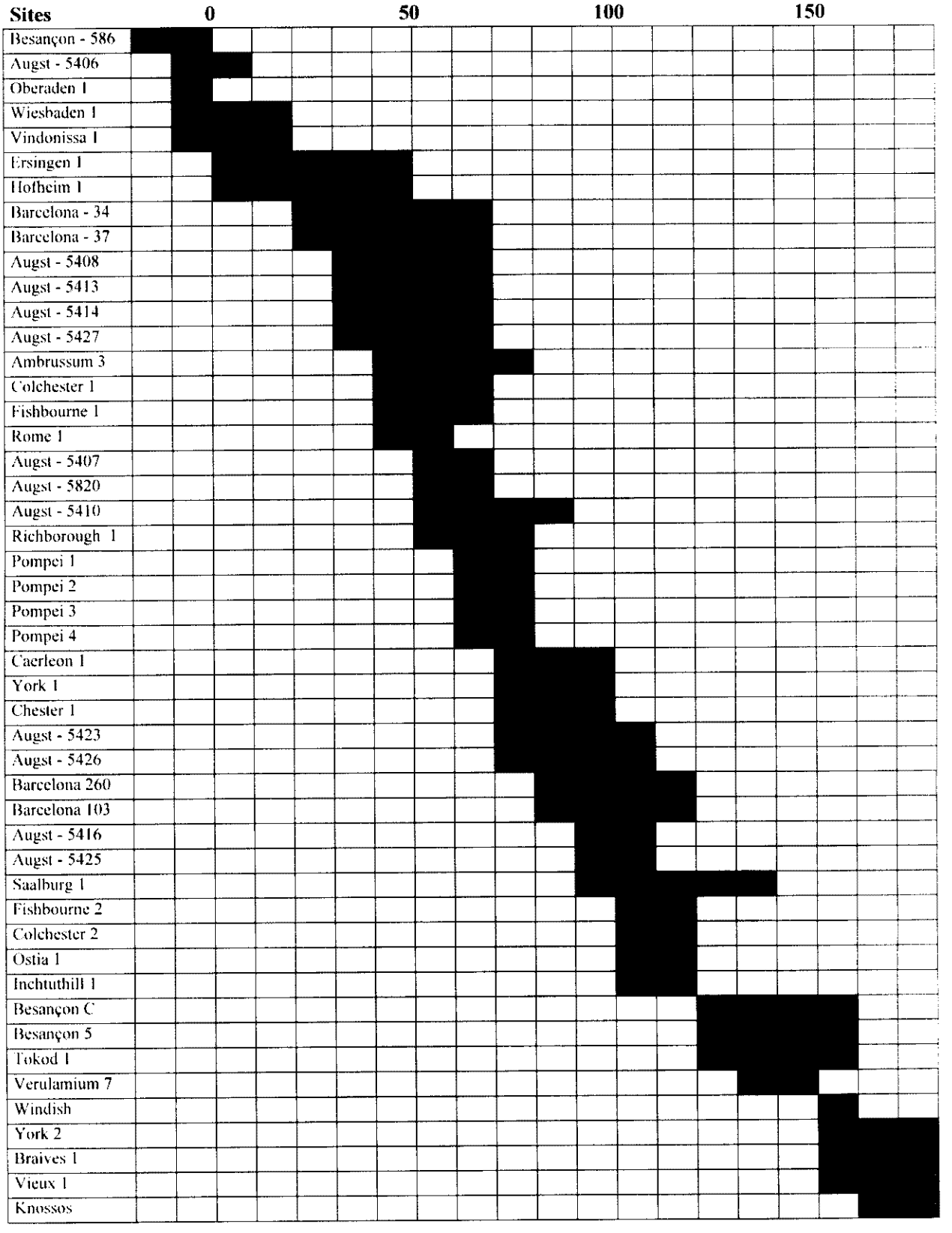


Fig. 5. Main sites mentioned in the provinces of Syria and Palestine.

TABLE 1

samples	Al_2O_3	CaO	MgO	Fe_2O_3	Na_2O	K_2O	SiO_2	Pp
Carlisle 1	1.001	8.338	2.122	4.372	0.539	1.252	82.376	5.635
Barcelona 2	1.057	8.366	2.188	5.548	0.768	1.180	80.893	1.731
Barcelona 2n	1.095	8.044	2.188	5.601	0.781	1.216	81.075	1.795
Barcelona 3	0.850	4.840	0.630	4.401	0.593	1.107	87.579	3.252
Caesarea -1	0.925	6.631	1.061	4.229	0.579	1.011	85.564	5.406
Caesarea - 2	0.906	7.876	1.873	4.186	0.593	1.216	83.35	8.724
Petra - 1	0.264	3.133	0.371	0.743	0.283	1.745	93.461	2.671
Petra - 2	1.284	6.113	1.707	5.773	0.242	1.661	83.22	1.863
Petra - 3	8.613	1.902	0.795	2.743	0.323	1.517	84.107	1.192
Petra - 4	1.360	6.995	2.055	5.944	0.310	1.781	81.555	0.563
Petra - 5	0.694	5.940	1.633	2.205	0.416	2.017	87.095	******
Petra - 6	1.208	5.973	2.089	5.673	0.350	1.709	82.197	2.82
Gerasa - 1	1.246	7.610	1.442	4.587	0.269	1.312	83.534	2.645
Gerasa - 2	1.095	6.645	1.359	3.829	0.269	1.324	85.479	2.213
Gerasa - 3	1.284	7.848	1.558	4.358	0.269	1.204	83.479	3.233
Gerasa - 4	1.076	4.252	1.193	3.772	0.283	1.023	88.401	0.867
Gerasa - 5	1.341	1.846	0.331	2.457	0.202	1.035	92.773	0.68
Jericho - 1	1.152	30.778	1.740	5.315	0.080	1.685	59.25	9.031
Jericho 2R	0.755	14.325	1.144	2.486	0.417	1.216	79.657	18.95
Jericho 2N	0.868	42.529	1.193	2.286	0.404	1.204	51.516	20.94
Jericho - 3	0.982	39.731	0.945	5.758	0.390	1.565	50.629	16.30
Jericho 4R	1.291	14.643	1.480	3.530	0.531	4.052	74.473	******
Jericho 4N	1.322	26.301	1.707	4.429	0.350	6.838	59.053	6.36

TABLE 2. DATING SPANS OF SOME EXCAVATED EXAMPLES OF CARROT AMPHORAS



(slight) difference in the Caesarea samples is in the amount of MgO while in the Gerasa samples it is in the content of Na_2O. This preliminary analysis therefore suggests that carrot vessels may have been produced somewhere between the Mediterranean coast and the Jordan valley in some kind of desert environment. In this connection we also note that S. Martin-Kilcher (1994, 434 n.566) has reported the presence of "Wüstensand" in a vessel from Augst S425. More systematic studies are required to pin down the exact production centres.

The normal contents of these amphoras, which seem to be dates rather than the doum palm fruit, also favours this region.[39] The Avenches find contained burned dates inside, though the other example of the same type contained olives. Dates were found in one of these vessels on the La Tradelière shipwreck (though one of the eastern Dressel 2-4s also transported this fruit).[40] Martin-Kilcher (1994, 434) recorded an amphora from Augst (5422) whose external wall shows the mark of a grape pip and concluded that the workshop may have been near a vineyard. Lastly, a wall-painting of a carrot-shaped container from the House of Julia Felix at Pompeii shows it holding a wide variety of fruits, and Martial (13.28) mentions a twisted cone (*torta meta*) being used to carry *cottana* (Syrian figs)[41]. Carrot amphoras may therefore have carried a variety of fruits — dates, olives,[42] perhaps figs (see the inscription from Augsburg published by Ehmig) — and perhaps were made in a region where grapes too were grown.

The chronological range for this amphora type is also of interest (Table 2). The earliest well-dated example is an Augustan deposit of the last decade B.C. from Oberaden and Augst. The latest are late Antonine contexts at Tokod, Inveresk, Knossos, and Vieux. Most carrot amphoras, however, belong to the Flavian period.[43]

This is not the place for a complete collection and review of the ancient sources relating to date-palm trees and the production of dates. The most renowned dates were the *caryotae*, which Pliny (*NH* 13.9.44) says supply "a great deal of food but also juice, from which the principal wines of the East are made; these strongly affect the head, to which the date owes its name". In the same place he indicates that the *caryotae* variety was abundant in Judaea: "the most famous are found there, and not in the whole of that country but especially in Jericho, although those growing in the valleys of Archelais and Phaselis and Livias in the same country are also highly spoken of".[44] Pliny (*NH* 13.9.49) reports that a "Syrian variety, called sweetmeats, seem to be a low-class fruit; for those in other parts of Phoenicia and Cilicia have the local name of acorn-dates". It seems that the main date plantations of *caryotae* were concentrated around Jericho,[45] Ein Gedi on the Dead Sea, and in the Beth She'an valley around Scythopolis.[46] A second variety of this fruit was known as Nicolaus's dates.[47] According to

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39 The main regions inside the Roman Empire for growing different kinds of dates were Palestine, Syria, Cyprus, and the Thebaid of Egypt. Outside its boundaries, dates were produced in the oases of the Arabian desert and in Babylonia. Between latitudes 15 and 30° dates were staples for the nomadic tribes of Africa and India, and dates were important in the camel caravans (Curtin 1984, 23-24).

40 Pollino 1986; Parker 1992, 433 no. 1174.

41 He says: '... if they were bigger, they would be a fig, perhaps alluding to the small size of the Syrian variety of figs.

42 Olive groves were rare in Egypt.

43 Some dates are provided by Vipard 1995, 62. Flavian contexts include Barcelona, Caerleon and Chester.

44 *... ab his caryotae maxime celebrantur, et cibo quidem sed et suco uberrimae, ex quibus praecipua vina orienti, inimica capiti, unde pomo nomen. Sed ut copia ibi atque fertilitas, ita nobilitas in Iudaea, nec in tota sed Hiericunte maxime quamquam laudata et Archelaide et Phaselide atque Liviade.* Cf. also Strabo 16.2.41 on a plantation of palms called Phoenikon in the Jericho Valley. Varro (*RR* 2.1.27, ed. Keil and Goetz p. 76) said that Syrian caryotes grew in Judea, but not in Italy: *non scitis palmulas careotas Syrias parere in Iudaea, in Italia non posse?* Judea was part of Syria at that time.

45 Deut. 34.3 calls it the "city of palms", as it still is today.

46 Safrai 1994, 138.

47 Named from Nicolaus of Damascus who offered Augustus in Rome the finest dates (Athen., *Deip.* 14.652 (Loeb edn. vol. 6, 522-23).

Pliny (*NH* 13.9.45) it is "not so juicy but exceptionally large in size, 4 put end-to-end making a length of 18 inches". They too were cropped in Syrian provinces and Judea, and Jericho was a main production area.[48] Nicolaus's dates are mentioned in Talmudic texts as grown there.[49]

Dates exported from this region are mentioned by Silius Italicus (*Pun.* 3.600), that 'Idumaean' (by poetic licence for Judean) dates were considered of high quality in western markets. Most dates from around Jericho were probably taken to the ports of Jaffa, Ascalon and Gaza for export; dates from around Scythopolis, Tiberias and Coreae were probably exported from Caesarea.

The palm-trees may have stood on public and private lands. Private ownership is attested by "Babatha's archive"[50] for the town of Zoara on the Dead Sea, which provides some information on a share-cropping arrangement, with the share-cropper paying for part of the yield. The yield-value depended on the freshness of the dates, and dry dates were rated at half the price of the moist ones. But there are also indications that Herod the Great exploited plantations of balsam and palm-trees near Jericho. He had had to hand over to Cleopatra the balsam and palm groves of Jericho but they were restored to him by Octavian after Actium, and this seems to be when their full exploitation and export of the fruit started. We recall Nicolaus's dates presented in 10 B.C. to Augustus in Rome: that seems to have introduced this fruit to the Roman aristocracy,[51] and the first carrot amphoras in the West appear at Oberaden and Augst in the last decade B.C. After Herod's death, the palm plantations of Jericho were inherited by his sister Salome; after her death, the estates passed under her will to Livia, so that the imperial *patrimonium* received the royal estates of Jericho, Archelais and Phaselis, and they were administered by procurators. By Flavian times the date trade appears to have been fully under imperial control, and profits from palm plantations perhaps went directly to the Roman *fiscus*.[52] The quantities and distribution patterns of the carrot amphoras could be explained by this imperial network which perhaps made use of public transport facilities, as in the case of supplies for the army.

Not surprisingly, consumption of dates seems to have been high in their areas of production: dates were considered a staple in those parts of Egypt and Palestine.[53] *P.Mich* 470 records a demand for dates by Roman troops established in Egypt. Diocletian's *Prices Edict* shows that in the Late Empire even the more expensive variety of Nicolaus's dates were comparable in price to the prices of other fruits.[54] As H.-J. Drexhage reports,[55] in Egypt (c.2nd-3rd c.) people consumed not only local dates but also "Syrian" ones at a reasonable price.

One problem remains: why are finds of carrot amphora so rare in Palestine and the region if it was a container for dates produced around Jericho? A possible explanation may be found in the nature of the contents. Since dates could readily be obtained by simply picking them off the trees, and did not require preparation, there was little point in transporting them within Palestine and Syria in clay vessels. In this respect dates differ from other typical contents of amphoras — wine, olive oil, fish products — which all require various stages of preparation

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48 *Expositio Totius Mundi et Gentium* 31 (mid 4th c.): *Nicolaum itaque palmulam in Palaestines* (ms.) *regione loco qui sic vocatur Iericho.*

49 Safrai 1994, 139, citing the Jerusalem Talmud, Demai 2:1 (22c).

50 *P. Yadin* 16, 21 and 22; Lewis *et al.* 1989; Cotton and Yardeni 1997.

51 It is in the Augustan period that dry and moist dates are mentioned by different authors in the context of Roman meals: André 1961, 9; Dosi and Schnell 1990, 223, 248 and 250. They remained exotic fruit in upper-class Roman cuisine but never became a staple in the Italian diet (Darby *et al.* 1977, 724), although Apicius put dates in many of his recipes (e.g., 7.6, 7.11, 8.1, 8.6, etc.).

52 Safrai (1994, 140, 153-55, 322-26) defends his hypothesis based on Talmudic sources.

53 Broshi 1986, 11.

54 *CIL* III, 2 p. 830 para 6, l.81.

55 1991, 35-36 with *P. Mich.* 12. 657. However, Drexhage (ibid. 35) questions whether these are not simply of the Syrian type rather than imported products.

before they are fit to be consumed. Containers for wine or olive oil are normally found in the production areas; dates did not have to be transported around Palestine and Syria (or N Africa, for that matter) in sealed clay vessels. This explains the seemingly odd distribution pattern for carrot amphoras: they concentrate in places where dates did not grow, they are absent in places where dates did grow.[56] The contents were packaged only, it seems, for a specialized overseas market, and that was probably the army, given the preponderance of finds associated with military sites.

Clearly, this paper has not provided answers as to the exact production sites for the carrot amphora or conclusive evidence for their contents, but it is hoped that it will focus the attention of researchers on possible sources in Palestine and Syria.

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56 Carreras 2000, 150-51; see also Martin-Kilcher 1994, 436.

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