



New Light on the Wine Trade with Julio-Claudian Britain

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ABSTRACT

Exports of Italian wine to Gaul were in steep decline from c. 50 B.C. A quite different picture emerges from Britain where finds of the Italian Dressel 1 amphora peak at the very end of the form c. 10 B.C. The discrepancy between Gaul and Britain is explained by the export of commodities from Britain to supply the Roman army on the Rhine, and is the expression of a direct interest in the island by the Roman state. Afterwards, the number of wine amphoras reaching Britain declined sharply: in the 50 years before the Roman invasion the volume of amphora-borne wine imported by Britons fell by between two-thirds and three-quarters. This decline is apparent from both rich graves and settlement sites. The fall in the number of wine amphoras cannot be accounted for by the replacement of the amphora by the barrel as the standard commercial wine-container: we are dealing with a real decline in the volume of wine traded. In Gaul there was a similar slump in wine imports from Italy, and the same pattern is repeated in Mediterranean shipwrecks. It can be explained by growing demand for wine in Italy itself: wine that had hitherto been exported was now consumed in the peninsula.

INTRODUCTION

This paper offers evidence to show that the volume of wine reaching Britain in amphoras declined by between two-thirds and three-quarters in the half-century before the Roman Conquest.¹ This emerged from research on the amphoras from two Essex sites, the Stanway cemetery at Colchester and the Elms Farm village at Heybridge (FIG. 1).² There were two seemingly anomalous features of both assemblages that called for attention: at Stanway, the dearth of wine amphoras was at odds with the generous provision for wine at earlier élite funerals; and at Elms Farm, the low minimum vessel count for Dressel 2-4 amphoras was at first difficult to reconcile with the greater scale of earlier wine imports in Dressel 1. These apparent anomalies were approached separately from a settlement and a funerary perspective, and it transpired that the results were convergent. So rather than repeat the argument in two separate excavation reports, it seemed better to collate the Elms Farm and Stanway data into one coherent presentation that integrated these two approaches.

¹ That Dressel 1 outnumbered Dressel 2-4 in Iron Age Britain was first noted by Fitzpatrick 2003, 14, 23, who suggested (as here) that we might be dealing with a reduction in the volume of wine reaching the country.

² Sealey 2007a; Sealey forthcoming.

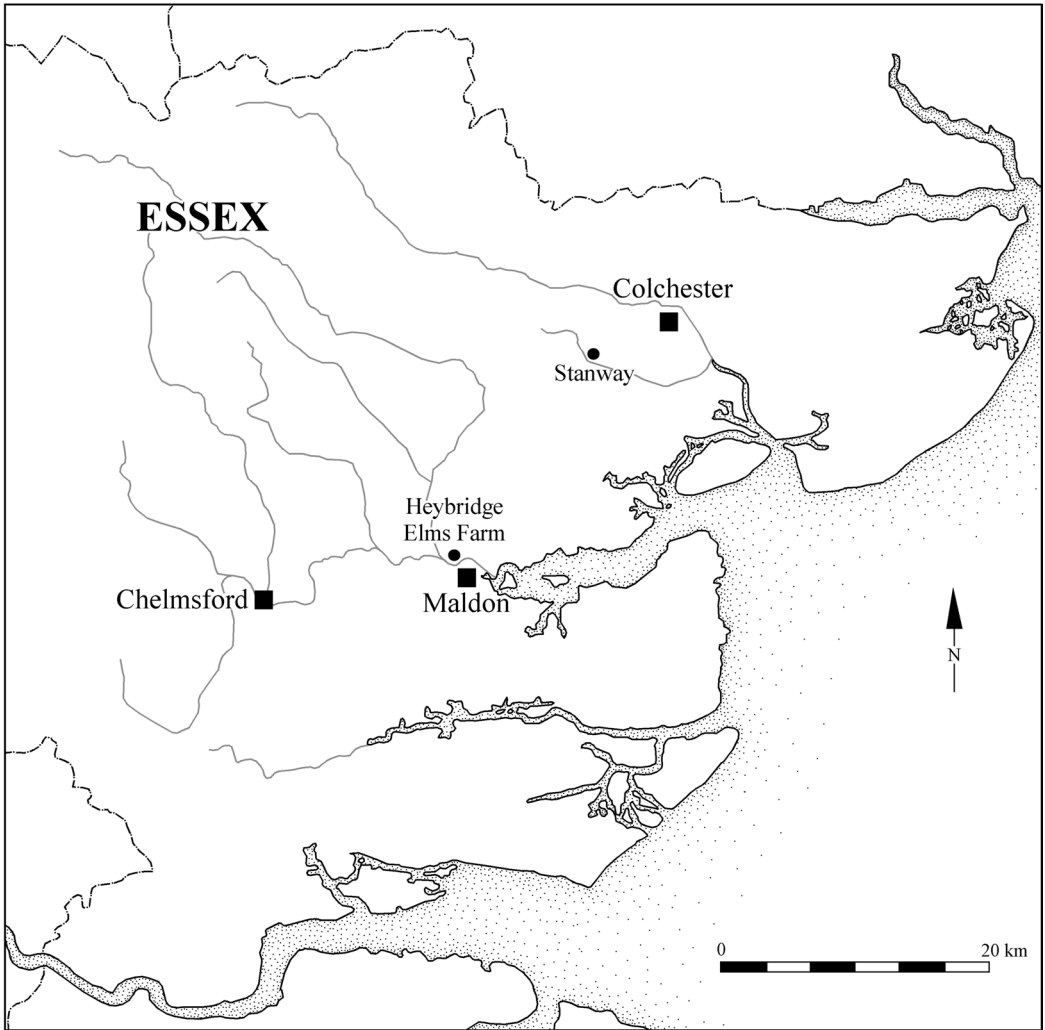


FIG. 1. Location map for Stanway and Heybridge Elms Farm.

Quantification and chronology lie at the heart of the paper. We need to know how much wine reached sites in Britain on the basis of the excavated evidence, and when. Quantification is considered at length, particularly in connection with the Elms Farm amphoras.³ Chronology is addressed in the survey of the rich Welwyn-type graves that provide such vocal source material for imports of amphora-borne commodities in late Iron Age and early Roman Britain.⁴

³ At the outset it may be pointed out that percentages in tables are correct to one decimal place, and that in the text they are rounded to the nearest whole number.

⁴ As extensive reference is made to amphoras from funerary contexts, bibliographical details for these graves and funerary chambers are given in Appendix II to avoid repetition in the text.

WINE AMPHORAS CURRENT IN IRON AGE AND EARLY ROMAN BRITAIN

Wine reached Iron Age Britain earlier than is usually allowed, by at least *c.* 150 B.C. at Hengistbury Head (Dorset).⁵ Although the excavation report placed the trade in the first century B.C.,⁶ subsequent research on amphoras allows a radical overhaul of that chronology. Dressel 1a greatly outnumbered Dressel 1b at Hengistbury Head. As the deep collar rim with concave outer face typical of Dressel 1b is now known to have appeared by the end of the second century B.C.,⁷ the many Dressel 1a at Hengistbury Head show that wine imports there must have started at least several decades earlier. Indeed the archaic features of many of the illustrated rims (with collars less than 30 mm high) suggest instead that the forms present include the predecessor of Dressel 1, the Greco-Italic type.⁸ Poux (for instance) had no hesitation in including Hengistbury Head in his distribution map of Greco-Italic amphoras in Gaul and neighbouring territories.⁹ Be that as it may, wine continued to reach Britain throughout the first century B.C., by now in developed Dressel 1b vessels. The Italian Dressel 1 remained the only wine jar to reach Britain until the last decades B.C. when it was complemented by Dressel 2-4 and Pascual 1. By then, wine was reaching Britain from the provinces as well as Italy. Dressel 2-4 was the standard wine jar of the early Empire; it was produced widely in Italy and the Western provinces, with a long history that lasted until the third century. Pascual 1 is a Catalan copy of Dressel 1 that lasted until Tiberius. By the middle of the first century A.D., Cam. 184 from Rhodes and elsewhere is attested, followed before long by the most common Gaulish wine jar, Gauloise IV.

The topic of wine imports in late Iron Age and early Roman Britain has been surveyed at length, and details of the trade are available elsewhere.¹⁰ Here the view is taken that wine was seldom bottled in Haltern 70 and Beltrán I-II amphoras, and so these pots do not feature in the discussion that follows. But as this is a minority view, the case for wine in those jars is examined more closely in Appendix I.

THE STANWAY SITE AT COLCHESTER

The Stanway excavations concentrated on a series of enclosures 250 m west of Gryme's Dyke South, one of the earthen ramparts that defended late Iron Age and early Roman Colchester (FIG. 2).¹¹ Gryme's Dyke itself was built just after the Boudican revolt. The earliest feature at Stanway was a small, middle Iron Age enclosure (Enclosure 2), occupied *c.* 300–50 B.C. When this enclosure was abandoned, a large rectangular funerary enclosure was constructed *c.* 25 B.C. immediately to the north; a contemporary pit with debris from a pyre was found elsewhere on the site. No more activity took place at Stanway until the middle of the first century A.D.

On the eve of the Roman invasion another rectangular funerary enclosure (Enclosure 3) was laid out *c.* A.D. 35–45 to the east of Enclosure 1. Two more enclosures (Enclosures 4 and 5) were added to the south *c.* A.D. 40–50. The funerary rite was cremation. Those laid to rest at Stanway were drawn from the higher echelons of society; they belonged to the indigenous population, and were not Roman newcomers. Two pyre sites were identified in Enclosure 3. Two small ditched areas in Enclosures 4 and 5 may also have been pyre sites, or places where corpses

⁵ Williams 1987.

⁶ Cunliffe 1987, 339.

⁷ Loughton 2003a, 181 for a cautious assessment.

⁸ Will 1982.

⁹ Poux 2004, 195.

¹⁰ Peacock 1971; 1977, 269–70; 1984; Williams 1981; Sealey 1985, 125–41; Fitzpatrick 2003; Fitzpatrick and Timby 2002, 162–4, 171.

¹¹ Crummy *et al.* 2007.

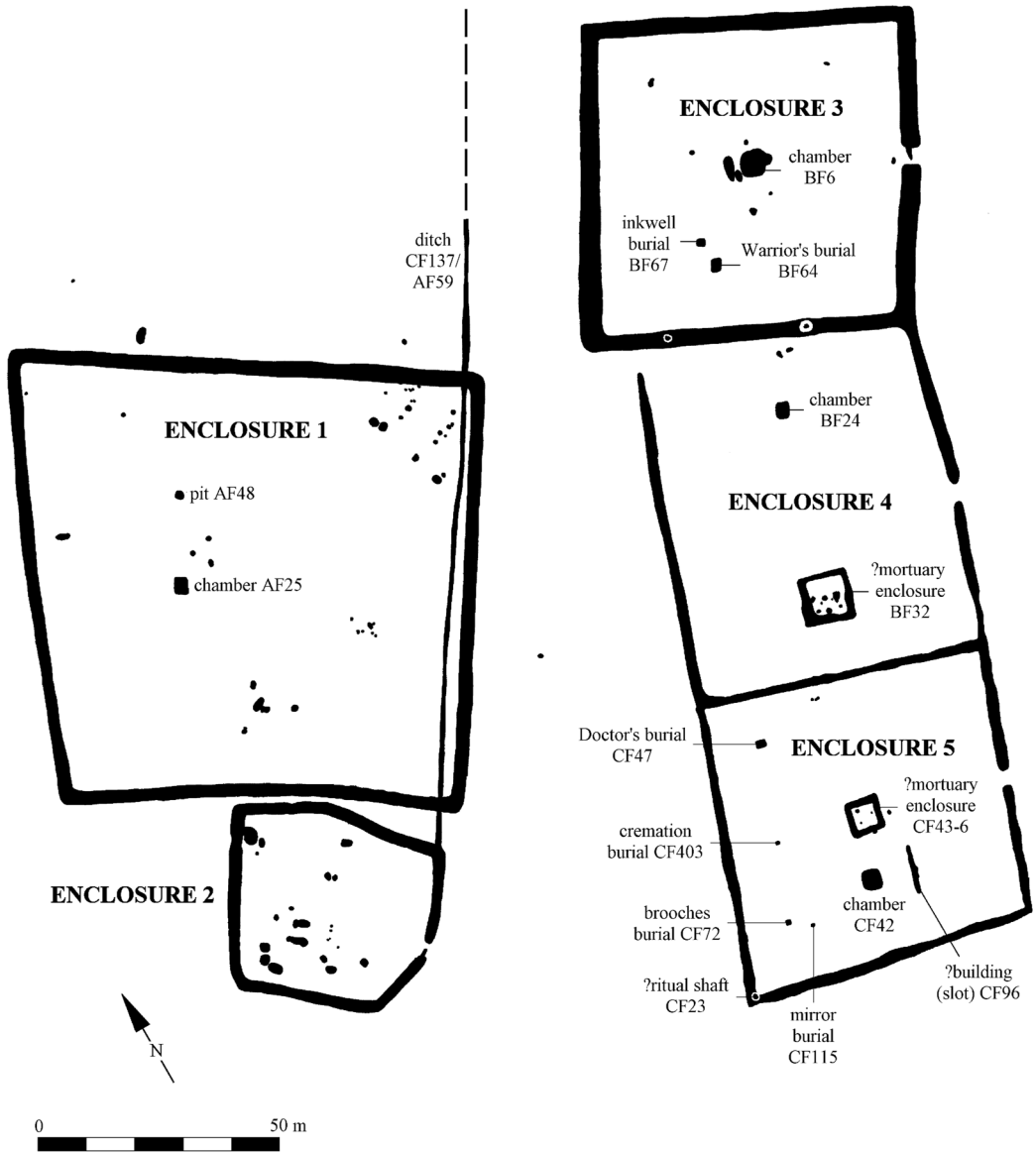


FIG. 2. Stanway site plan.

were exposed for excarnation before cremation. Each of these three enclosures had a timber-lined and nailed funerary chamber. Artefacts in the chambers had been thoroughly smashed, and only a sample had been selected for inclusion in the chamber. Although some of the chambers contained cremated human bone, they should be thought of as a stage in the funerary process rather than as graves in the sense of the last resting places of the deceased at the end of the

funerary ceremonies. Conventional cremation graves at Stanway included two with exceptional ranges of grave-goods where complete and unbroken items had been buried with the deceased. One of these was a warrior; another was a doctor.

AMPHORAS FROM STANWAY

Eleven amphoras were retrieved; quantification is by minimum vessel number count; all of them came from Enclosures 3–5. Nine were Dressel 2-4 wine amphoras from Italy, Catalonia, and at least one unidentified source; the remaining two amphoras were *salazones* from Baetica. Details are given in Table 1. Incomplete when excavated, the *salazón* amphora buried with the doctor presumably lost its rim in modern times. The cremation grave of the warrior had the body of a Dressel 2-4. Although neither of these two amphoras was complete, the rite is patently distinct from the treatment of amphoras in two of the funerary chambers, where only a selection of sherds was present. Chamber CF42 in Enclosure 5 had Dressel 2-4 sherds from one vessel; Chamber BF6 in Enclosure 3 had sherds from two more Dressel 2-4. Sherds from another Dressel 2-4 were present in one of the pyre sites alongside the same chamber. Four more wine amphoras and a second *salazón* amphora were recovered from the ditches of the enclosures, as well as some of the mortuary enclosures in the interiors; their presence in such features suggests their contents had been consumed at funeral feasts on the site.

TABLE 1. AMPHORAS FROM STANWAY QUANTIFIED BY MINIMUM VESSEL NUMBER COUNT

Amphora type	Minimum no. of vessels
Dressel 2-4 (Italian black sand fabric)	1
Dressel 2-4 (Italian)	2
Dressel 2-4 (red fabric Catalan)	1
Dressel 2-4 (cream fabric Catalan)	1
Dressel 2-4 (source unknown)	4
Dressel 8 <i>salazón</i> (part of Beltrán I)	1
Beltrán I <i>salazón</i>	1
Total	11

ÉLITE FUNERARY CHRONOLOGY

The dates given for the Welwyn-type graves and funerary chambers from Britain listed in Tables 2 and 4 turn on the chronology of their Roman imports and — to a lesser extent — on that of their associated brooches and native pottery. Although brooches are the most common single category of artefact in late Iron Age cremation graves, they are rare in élite burials with amphoras.¹² The only cemetery with amphoras where brooches impact significantly on site chronology is King Harry Lane. The key dating evidence for the earlier Welwyn-type graves is Dressel 1, and it is with Dressel 1 that we may begin.

DRESSEL 1 CHRONOLOGY

The most important single chronological fault-line in Table 4 is that of *c.* 10 B.C., the Dressel 1 terminal date. As doubts have been raised about the validity of this date, the topic deserves

¹² Carr 2006, 25.

an airing. The reservations come from French scholars impressed by the steep fall in Dressel 1 exports to Gaul from at least as early as *c.* 40 B.C.¹³ We must not lose sight of the painted inscriptions with first-century B.C. consular dates on Dressel 1 amphoras from Rome (inscriptions of the preceding century are not considered here). They give the years 97 B.C. (twice), 59 or 43 B.C., 34 B.C., 33 B.C., 25 B.C. (twice), 19 B.C., and 13 B.C. (twice).¹⁴ To this series of consular dates should be added one of 90 B.C. from the *oppidum* of Burriac in Catalonia,¹⁵ and a second of 25 B.C. from Carthage.¹⁶ In summary, the entire series for the first century B.C. runs as follows: 97 B.C. (twice); 90 B.C.; 59 or 43 B.C.; 34 B.C.; 33 B.C.; 25 B.C. (twice); 19 B.C.; 13 B.C. (twice).

It is difficult to reconcile these dates with an end for Dressel 1 *before* 13 B.C.¹⁷ Desbat suggests the 13 B.C. date may have been a re-used vessel, but there are *two* vessels with this date. Moreover, the painted inscription on one of them explains that its wine was the vintage of 18 B.C. and that it was not decanted into its amphora until 20 May 13 B.C. One would hardly use an old pot for a vintage wine like this, and the secondary use argument cannot apply here. A decline in Dressel 1 exports to Gaul should not be confused with the terminal date of the form, and *c.* 10 B.C. should be allowed to stand as the end date for Dressel 1.¹⁸

DRESSEL 1 TYPOLOGY

There are at least 20 painted inscriptions with consular dates on Dressel 1 amphoras. Those from Rome published by Dressel in the nineteenth century¹⁹ are of little or no use for integrating typology with chronology because none of the actual *dipinti* sherds were presented as drawings. However, we do have illustrations of vessels bearing consular *dipinti* subsequently discovered elsewhere. They have been conveniently assembled by Poux,²⁰ in what is an invaluable aid to chronology. Dressel 1 evolved from Greco-Italic amphoras in the middle of the second century B.C., and developed Dressel 1 amphoras have traditionally been divided into the variants 1a, 1b and 1c.²¹ More recently, a variant called Dressel 1G (the 'G' stands for Greco-Italic) has been identified by Loughton on the basis of evidence from the Auvergne and shipwreck cargoes.²² He noticed that contexts of late second- and early first-century B.C. date in the Auvergne sometimes had many Greco-Italic rims in assemblages where there was a dearth of Greco-Italic bodies. It would seem that these Greco-Italic rims were an archaic feature grafted onto vessels that might otherwise be called Dressel 1a.²³ Evidently the typological history of Dressel 1 was not a simple linear progression from one variant to another. Both shipwreck cargoes and land sites show that there was pronounced contemporary typological diversity. Knowing exactly where to draw the line between Dressel 1a and 1b (let alone between Dressel 1 and Greco-Italic amphoras) has

¹³ Desbat 1998, 31, 33; Poux and Selles 1998, 214; Poux 2004, 196–9.

¹⁴ Zevi 1966, 213 with refs.

¹⁵ Miró i Canals 1986.

¹⁶ Martin-Kilcher 1993, Abb. 11 no. 1, 296, being *CIL* VIII no. 22640.4.

¹⁷ Loughton 2000, 254.

¹⁸ Tchernia 1986, 126.

¹⁹ Zevi 1966, 212–13 with refs.

²⁰ Poux 2004, 46.

²¹ Dressel 1c has not been reported from Britain, and so the particular problems of the variant need not detain us here.

²² Loughton 2003b.

²³ This would explain a Greco-Italic rim from the ACS site at Stansted airport (Essex) (Williams 2004, fig. 114 no. 2). The rim in question is less than 30 mm high, one of the criteria generally used to differentiate Greco-Italic from Dressel 1a rims. The chronological difficulty of a rim as typologically early as this on a site occupied *c.* 75–25 B.C. (Havis and Brooks 2004, 79) is conveniently explained by the Loughton thesis. Having said that, the Dressel 1G is less common after *c.* 100 B.C. than before; in view of this, there is something to be said for adjusting the *c.* 75 B.C. start date of the ACS site backwards to *c.* 100 B.C. on the basis of the amphora evidence.

inevitably been an arbitrary matter and different people can classify the same amphora as Dressel 1a or 1b.²⁴ In recent years scholarship has attempted to define the differences quantitatively, on the basis of measurements such as the height and angle of the rim, the length of the basal spike and so on. Useful reviews of the state of play are available elsewhere.²⁵ A major shortcoming of much work on this problem is the tacit determination to devise a scheme of classification that will come to the rescue of the traditional tripartite division of Dressel 1 into 1a, 1b, and 1c. It might have been better to have started from scratch, as Olmer has attempted.²⁶ Certainly no scheme for the division of the form on the basis of Dressel 1 metrology commands widespread support; it is all too easy to wonder with Tchernia whether or not these are no more than academic exercises.²⁷ It is a matter for regret that the terms Dressel 1a and 1b are so entrenched in the literature that it is more or less impossible to discuss the form without reference to them. To avoid any possible confusion, the form is simply described as Dressel 1 in the tables and in most of the text.

These considerations make it hazardous to attempt to assign narrow time-brackets to graves in Britain on the basis of Dressel 1 typology. But despite the muddle at the heart of current discussions of Dressel 1 classification, one can still use typology to gain some idea of where any given vessel belongs in the Dressel 1 sequence. This leads us to the Dressel 1 from the Baldock grave. On the basis of its typology, a date of *c.* 100–75 B.C. has been suggested.²⁸ It stands at the start of the whole series of late Iron Age graves in Britain with amphoras. There was no other pottery from the Baldock grave, but a few later cremations with Dressel 1 amphoras are associated with native grog-tempered, wheel-thrown pottery of Aylesford-Swarling ‘Belgic’ type. This pottery only became significant in graves after *c.* 75 B.C.²⁹ This chronology is in accord with the more massive style of their associated Dressel 1 amphoras.

FUNERARY CHRONOLOGY FROM AUGUSTUS ONWARDS

Towards the end of the first century B.C. imported Roman table crockery puts the chronology of the late Iron Age on a sounder and more precise footing. Gallo-Belgic ware becomes widespread from *c.* 15 B.C. and remains so until after the Roman invasion. Two graves — Welwyn Garden City and Dorton — are important because they have Central Gaulish wares, but no Gallo-Belgic ware. Had Gallo-Belgic ware been available to the mourners at these funerals, it would no doubt have been present in the graves as well. This suggests that there was a short-lived horizon with Central Gaulish pottery pre-dating Gallo-Belgic imports, possibly as early as *c.* 25 B.C. or even *c.* 30 B.C., but lasting no later than *c.* 15 B.C.³⁰

Bringing these various strands together, it is possible to put graves with Dressel 1 amphoras into a sequence of four phases, apart from Lindsell, which can only be dated before *c.* 10 B.C. (Table 2). One should note the uneven distribution of wine amphoras by period. There is only one in Phase 1, seven in Phase 2, eight in Phase 3, and seventeen to nineteen in Phase 4. All the amphoras in Phase 4 come from only one site of course, the quite exceptional Lexden tumulus funerary chamber. Yet the fact remains that the number of wine amphoras increases — and increases dramatically — as one approaches the *c.* 10 B.C. terminal date of Dressel 1. We shall return to this later.

After the end of Dressel 1 *c.* 10 B.C., the chronology of graves with amphoras depends increasingly

²⁴ Loughton 2003a, 181.

²⁵ Maza 1998; Loughton 2000.

²⁶ Olmer 1998, 465.

²⁷ Tchernia 1986, 320.

²⁸ Sealey 2007b, 14.

²⁹ *ibid.*, 28–31.

³⁰ Rigby 1986, 270; Rigby and Freestone 1986, 8–9, 16; Fitzpatrick and Timby 2002, 163, 165.

TABLE 2. PHASING OF SELECTED GRAVES WITH AMPHORAS FROM SOUTH-EAST BRITAIN WITH DRESSSEL 1 AMPHORAS

Phase	Grave	Date	Amphoras and quantity
1	Baldock	c. 100–75 B.C.	Dressel 1 (1)
2	Welwyn A	c. 75–25 B.C.	Dressel 1 (1)
	Welwyn B	c. 75–25 B.C.	Dressel 1 (5)
	Hertford Heath	c. 75–25 B.C.	Dressel 1 (1)
3	Dorton	c. 25–15 B.C.	Dressel 1 (1) + Dressel 2-4 (2)
	Welwyn Garden City	c. 25–15 B.C.	Dressel 1 (5)
4	Lexden tumulus	c. 15–10 B.C.	Dressel 1 (6) + Dressel 2-4 (11-13)

on Gallo-Belgic ware and brooches. These later graves with amphoras do not lend themselves to a neat scheme of phasing like that for graves with Dressel 1 because there is so much overlap between individual graves. Arretine and samian pottery are rare in pre-Conquest Britain, where they are greatly outnumbered by Gallo-Belgic ware.³¹ Samian pottery only becomes significant in Britain after A.D. 43 when the industry expanded rapidly and dramatically.³² Nowhere is the scale of imports as striking as London c. A.D. 50/55–60/61, where nearly a fifth of the pots were samian.³³ London, of course, is exceptional because it had ready access to sea-borne imports as well as an immigrant population with a taste for Roman ceramics.

THE CHRONOLOGICAL PROBLEM AT KING HARRY LANE

This leads to the thorny question of the chronology of King Harry Lane at Verulamium, a cemetery that supplied six of the graves listed in Table 4. According to the site report, at least half of the graves belonged to Phases 2 and 3, c. A.D. 30–60. This was the very period when samian ware reached Britain in quantity, but the cemetery only produced six vessels: three are earlier than c. A.D. 25, two date c. A.D. 45–65, and the sixth is a much later vessel, belonging to the period when the cemetery saw only intermittent use.³⁴ The discrepancy between London (see above) and King Harry Lane is unsettling, even allowing for the cultural and geographical differences between the two sites. The dearth of Claudio-Neronian samian from the King Harry Lane cemetery precludes a site *floruit* that lasted until c. A.D. 60, particularly in view of the greater quantities of samian reaching other sites in Verulamium at the same time: there was more from the c. A.D. 55 Folly Lane burial there than from the whole of King Harry Lane. The simplest solution is to shunt back the terminal date of Phase 3 by at least ten or fifteen years to c. A.D. 45.

Much the same conclusion emerges from the cemetery brooches. Had the cemetery been in regular use until c. A.D. 60, there should have been more than the two Hod Hill brooches and the single Colchester-derivative brooch. Of course, there is the possibility that the proportion of graves with brooches at King Harry Lane changed over time. This is indeed the case, with declining proportions of graves with brooches through Phases 1 to 4. At the St Stephen's

³¹ Rigby 1989, 113, 115.

³² Marsh 1981, 198.

³³ Davies *et al.* 1994, 168: 17 per cent, quantified by estimated vessel equivalent.

³⁴ Rigby 1989, 113.

cemetery, 1 km to the east, only about 1 per cent of the graves in a cemetery starting in the 50s A.D. and lasting until the early fourth century had brooches.³⁵ If King Harry Lane showed the same pattern of brooch deposition, the dearth of brooches there belonging to the 40s and 50s A.D. would be more readily explicable. But even in the latest site phase (Phase 4), 13 per cent of the graves still have brooches (taking Grave 28 as Period 4, following the catalogue of graves). In view of this, Mackreth has proposed adjusting the entire chronology for King Harry Lane; in its essentials his chronology is followed here.³⁶ The only minor adjustment is the start date. There were no Dressel 1 at King Harry Lane and this suggests the cemetery is essentially post-*c.* 10 B.C., a conclusion not far removed from that of Haselgrove and Millett who put the start date in the last decade B.C. (Table 3).³⁷

TABLE 3. THE CHRONOLOGY OF THE KING HARRY LANE CEMETERY

Phase	Stead and Rigby 1989	Mackreth 1994 and 1999	Haselgrove and Millett 1997
1	<i>c.</i> A.D. 1–40	<i>c.</i> 15 B.C.–A.D. 30	starts <i>c.</i> 10/1 B.C.
2	<i>c.</i> A.D. 30–55	<i>c.</i> A.D. 20–40	
3	<i>c.</i> A.D. 40–60	<i>c.</i> A.D. 35–40/45	ends <i>c.</i> A.D. 40/50
4	<i>c.</i> A.D. 60–160	<i>c.</i> A.D. 45 +	<i>c.</i> A.D. 50+

WINE CONSUMPTION AT FUNERALS FROM BALDOCK TO STANWAY

To understand the significance of the wine amphoras from Stanway for economic history, one has to put them in context by looking at the provision for wine and other amphora-borne commodities in elite graves from South-East Britain in the late Iron Age and early Roman period. Table 4 lists selected graves with amphoras from Britain and Gaul. Some graves from Gaul have been included because they reflect some of the same trends as the material from Britain. Graves have only been selected for inclusion if one can be reasonably sure of the identity of their amphoras and have some confidence in the reliability of any associated grave-goods. Poorly documented finds of complete early amphoras have not been included, particularly if there is no good reason to suppose the discovery represents a grave. From the standpoint of chronology, the graves can be divided into two broad groups separated by the *c.* 10 B.C. terminal date for Dressel 1. The results are given in Tables 5–6.

The view taken here is that the wine amphoras retrieved from graves represent drinks consumed at the funeral, rather than beverages consigned to the ground for the gratification of the deceased in the afterlife.³⁸ This is a reasonable enough supposition with funerary chambers like those at Stanway, Folly Lane, and the Lexden tumulus because the amphoras there had been thoroughly smashed before the burial of selected sherds in the chamber. The position with Welwyn-type graves is less straightforward because their amphoras had been placed in the grave more or less intact. Shipwrecks show that at least some Dressel 20, Haltern 70, and *salazón* amphoras were bunged with ceramic discs.³⁹ No rich grave with an intact amphora of these forms in Britain has been found with such discs, and the pots in question had apparently been placed in the graves empty. With wine amphoras of form Dressel 1 and Dressel 2-4, different types of bung were

³⁵ Niblett 2002, 71.

³⁶ Mackreth 1994, 50; 1999, 219.

³⁷ Haselgrove and Millett 1997, 291–2.

³⁸ Sealey 2007a, 304.

³⁹ Colls *et al.* 1977, 38–41.

employed. Some (but a distinct minority) were bunged with cork plugs covered with a mortar seal; sometimes these mortar seals bear symbols or literate stamps.⁴⁰ None of these seals have been reported from a grave in Britain, or indeed Gaul.⁴¹ To some extent this reflects not just their rarity but their fragility,⁴² although chance finds of them on Mediterranean beaches show their frailty should not be exaggerated.⁴³ Another factor is the discovery of Welwyn-type graves by chance, which often means that the rims of their amphoras are damaged or lost. Although most wine amphora bungs were made entirely of perishable materials such as cork, the fact remains that none of the graves considered here have produced any sign of a bung, and so we may surmise that the wine any such amphoras represent was drunk at (or before) the funeral.

TABLE 4. AMPHORAS FROM SELECTED GRAVES AND FUNERARY CHAMBERS IN BRITAIN AND GAUL
(Numbers in brackets show the number of amphoras present; no number means only one was present. The earliest graves are at the top, the latest at the bottom.)

Grave	Date	Amphoras
Baldock	<i>c.</i> 100–75 B.C.	Dressel 1
Clemency chamber	<i>c.</i> 80/75–65/60 B. C.	Dressel 1 (at least 10)
Welwyn A	<i>c.</i> 75–25 B.C.	Dressel 1
Welwyn B	<i>c.</i> 75–25 B.C.	Dressel 1 (5)
Hertford Heath	<i>c.</i> 75–25 B.C.	Dressel 1
Dorton	<i>c.</i> 25–15 B.C.	Dressel 1 + Dressel 2-4 (2)
Welwyn Garden City	<i>c.</i> 25–15 B.C.	Dressel 1 (5)
Goeblingen-Nospelt A	<i>c.</i> 30–15 B.C.	Dressel 1
Goeblingen-Nospelt B	<i>c.</i> 30–15 B.C.	Pascual 1 (2) + Dressel 10 + Dressel 12
Lexden tumulus	<i>c.</i> 15–10 B.C.	Dressel 1 (6) + Dressel 2-4 (11–13) (Italian)
Lindsell	before <i>c.</i> 10 B.C.	Dressel 1
Fléré-la-Rivière	<i>c.</i> 20–1 B.C.	Pascual 1 (13)
Lexden Cemetery Grave 10	<i>c.</i> 10 B.C.–A.D. 5	Beltrán I
King Harry Lane Grave 206	<i>c.</i> 10 B.C.–A.D. 30	Beltrán I
King Harry Lane Grave 241	<i>c.</i> 10 B.C.–A.D. 30	Haltern 70
King Harry Lane Grave 272	<i>c.</i> 10 B.C.–A.D. 30	Dressel 2-4 (Italian: contents, olive oil)
Snailwell	<i>c.</i> A.D. 25–50	Haltern 70 + Beltrán I (2)
Lexden Cemetery Grave 5	<i>c.</i> A.D. 25–50	Haltern 70
King Harry Lane Grave 117	<i>c.</i> A.D. 35–40/45	Beltrán I (rim sherds, possibly intrusive)
King Harry Lane Grave 369	<i>c.</i> A.D. 35–40/45	Cam. 184 (from the island of Rhodes)
King Harry Lane Grave 447	<i>c.</i> A.D. 35–40/45	Dressel 20 (a burnt sherd, possibly intrusive)
Stanway Chamber BF6	<i>c.</i> A.D. 35–45	Dressel 2-4 (2) (one is Catalan)
Stanway Chamber CF42	<i>c.</i> A.D. 45–55	Dressel 2-4
Stanway BF64 (warrior)	<i>c.</i> A.D. 40–50	Dressel 2-4 (Italian)
Stanway CF47 (doctor)	<i>c.</i> A.D. 40–50	Beltrán I (Dressel 8)
Verulamium Folly Lane	<i>c.</i> A.D. 55	Dressel 2-4 (4-6) (Italian)
Stanfordbury A	<i>c.</i> A.D. 43–55	Dressel 14 (Beltrán IVa) + Beltrán I (5)
Mount Bures	<i>c.</i> A.D. 40–65	Dressel 2-4 (2) + <i>salazones</i> (4)

⁴⁰ Hesnard and Gianfrotta 1989.

⁴¹ Poux 2004, 33.

⁴² *ibid.*, 32–3 on the frailty of such bungs from land sites in Gaul.

⁴³ Hesnard and Gianfrotta 1989, 412.

TABLE 5. GRAVES WITH AMPHORAS FROM BRITAIN LISTED IN TABLE 4 EARLIER THAN THE END OF DRESSSEL 1

Dressel 1 amphoras	21
Dressel 2-4 amphoras	13
total number of wine amphoras	34
number of graves with amphoras	8
average number of amphoras per grave	4.25
average number of wine amphoras per grave	4.25

TABLE 6. GRAVES WITH AMPHORAS FROM BRITAIN LISTED IN TABLE 4 LATER THAN DRESSSEL 1

number of wine amphoras (Dressel 2-4 + Cam. 184)	11
number of <i>salazón</i> amphoras (Beltrán I + IVa)	16
number of preserved olives and <i>defrutum</i> grape syrup amphoras (Haltern 70)	3
number of olive oil amphoras (Dressel 20 + Dressel 2-4 from King Harry Lane)	2
total number of amphoras	32
number of graves with amphoras	16
average number of amphoras per grave	2
average number of wine amphoras per grave	0.6

QUANTIFICATION

Dressel 1, Dressel 2-4, and Cam. 184 do not have the same capacities, and so we need to adjust the vessel numbers given in Table 4 to take this into account if we want to gauge the actual volumes of wine involved.

For a long time it was felt that developed Dressel 1 amphoras — the variant generally known as Dressel 1b — had a capacity that oscillated within a narrow band around 26 litres. This made sense if the intended capacity of the form had been the ancient fluid measure known as an *amphora* or *quadrantal* of 48 *sextarii* (equivalent to 26.25 litres, or thereabouts). In fact, measurements of 22 complete Dressel 1b amphoras have shown quite remarkable ranges in capacity (and indeed empty weight) from 21 to 28.5 litres, and the resultant average of 23.2 litres is too low to allow a meaningful linkage with the *amphora* or *quadrantal*.⁴⁴ Be that as it may, 23.2 litres is the figure for Dressel 1 capacity used here.

No comparable programme of measurement seems to have been undertaken for Dressel 2-4 amphoras, and the average figure for capacity used here is that of 27.6 litres given by the writer elsewhere.⁴⁵ Likewise the capacity of Cam. 184 is taken as 13.6 litres.⁴⁶ The Pascual 1 amphoras that will concern us later have a capacity of 25 litres, going by the two in the Goeblingen-Nospelt B grave.⁴⁷ The results of applying these capacities to the number of amphoras in rich graves in Britain before and after Dressel 1 are given in Tables 7–8.

⁴⁴ Baudoin *et al.* 1994, 15–16.

⁴⁵ Sealey 1985, 10.

⁴⁶ *ibid.*, 55.

⁴⁷ Thill 1967a, 209.

TABLE 7. VOLUMES OF WINE REPRESENTED BY AMPHORAS FROM SELECTED GRAVES IN BRITAIN EARLIER THAN THE END OF DRESSSEL 1

Amphora type	Number of vessels	Volume of wine in litres
Dressel 1	21	487.2
Dressel 2-4	13	358.8
Totals	34	846

TABLE 8. VOLUMES OF WINE REPRESENTED BY AMPHORAS FROM SELECTED GRAVES IN BRITAIN LATER THAN DRESSSEL 1

Amphora type	Number of vessels	Volume of wine in litres
Dressel 2-4	10	276
Cam. 184	1	13.6
Totals	11	289.6

WINE IMPORTS IN BRITAIN PEAK AT THE END OF DRESSSEL 1

As we have seen, imports of wine in Gaul were in steep decline from the middle of the first century B.C.⁴⁸ In Britain the situation is quite different because the number of wine amphoras in graves in the first century B.C. increases towards *c.* 10 B.C., and peaks in the large assemblage from the *c.* 15–10 B.C. Lexden tumulus. At the Elms Farm settlement in Heybridge there were 44 Dressel 1 amphoras, and the incidence of sherd count and weight by phase given in Table 10 shows that they reached the site over a brief period at the very end of the history of the form. In other words, the funerary evidence is duplicated on at least one major settlement site. Table 15 shows that Silchester also fits the pattern. Although there are far fewer wine amphoras in Britain than in Gaul, it is interesting that the trend in Gaul is not repeated in Britain. Bearing in mind that the Dressel 1 amphoras from Britain lie at the very northern limits of the distribution of the form, special circumstances need to be invoked to explain this anomaly.

Developments in Gaul and the Rhineland under Augustus hold the answer.⁴⁹ Preparations for the Roman invasion of Free Germany across the Rhine in 12 B.C. may have been underway at least a decade earlier.⁵⁰ The concentration of such an army imposed considerable strain on the resources of Gallia Belgica and the Rhineland. Supplying the frontier armies remained a taxing logistical problem until the agrarian regimes of Belgic Gaul and the Rhineland had adjusted themselves to the demand.⁵¹ The scale of the problem can be gauged from the 8,400 to 21,000 tonnes of cereals it has been estimated the Lower Rhine army consumed under Tiberius every year.⁵² Demand for leather by the army was such that after 12 B.C., the Frisii beyond the Rhine were required to pay their annual tribute in hides (Tacitus, *Annals* 4.72). So monumental was the effort to provision Germanicus for his campaign across the Rhine in A.D. 15 that Italy and the Western provinces offered arms, horses, and gold (*ibid.*, 1.71). Despite that, a year later Germanicus found that the supply of horses from Gaul was exhausted (*ibid.*, 2.5). Clearly the economic burden of these great armies was immense and became a new and powerful factor in economic realignments in Gaul, the Rhineland, and further afield.

⁴⁸ Desbat 1998, 31, 33; Poux and Selles 1998, 214; Poux 2004, 196–9.

⁴⁹ Cunliffe 1984, 4–16; Fulford 1991, 36 *pace* Millett 1990, 33.

⁵⁰ Wells 1972, 95.

⁵¹ Roymans 1996, 58–88.

⁵² *ibid.*, 59.

The Roman army raised supplies as and where it could, even from beyond the frontiers. This may account for the punitive measures taken by M. Vinicius in 25 B.C. against Germans who had massacred Roman traders beyond the frontiers (Dio Cassius 53.26.4). The celebrated list of British exports in Strabo (4.5.2) includes agricultural produce: grain, livestock and hides, as well as raw materials such as iron. The foreign cereals that may have reached Silchester (Hants.) in the late Iron Age from the Mediterranean need not impugn confidence in Strabo.⁵³ With the notable exceptions of the city of Rome and classical Athens, it was exceptional in antiquity for staple foodstuffs to be transported long distances to feed settlements on a regular basis. Most communities fed themselves; if they could not, they ran the risk of starving to death. Some of the exports listed by Strabo show that Britain had found herself drawn into the network of economic relations that led — at least in part — to the Roman garrisons across the Channel. The rise to prominence of Elms Farm under Augustus was linked to the shipping of British produce overseas to supply the Roman army; behind the archaeology of late Iron Age Elms Farm — and the greater numbers of wine amphoras in Britain in general towards *c.* 10 B.C. — lies the hand of the Roman state.

WINE IMPORTS IN BRITAIN DECLINE AFTER DRESSSEL 1

One of the interesting things to emerge from Tables 4–8 is the fall in the number of wine amphoras from burials after the end of Dressel 1. When Dressel 1 was current, we have records of eight graves in Britain with 34 wine amphoras (assuming the Lexden tumulus has 11, and not 13 Dressel 2-4). Most of these 34 are Dressel 1 itself. Although the number of graves with amphoras in Britain increases to 16 afterwards, the number of wine amphoras falls to 11 (assuming there were 4 and not 6 at Folly Lane). In other words, the number of wine amphoras available to the native élites of Britain for their funerals fell by 67 per cent in the period from *c.* 10 B.C. until Nero. Adjusting the number of amphoras to gauge the quantity of wine involved shows that the volume of wine imported fell to 66 per cent of its former levels; the correspondence between these percentages is remarkable, if fortuitous. This conclusion fits uneasily with claims that the quantity of wine reaching Britain ‘increased dramatically’ in the late first century B.C. and the early first century A.D., or that trade with the Roman world reached an apogee under Cunobelinus.⁵⁴ Perhaps more heed should have been taken of the data from King Harry Lane, where imported Roman pottery was twice as common in the first phase of the cemetery as it was later, *c.* A.D. 35–40/45.⁵⁵

This slump in wine imports cannot be explained by a shift in funerary practice because there are more graves with amphoras of all types after *c.* 10 B.C. than before. If anything, the greater number of rich graves might have led one to expect more wine amphoras, not fewer. Dwindling volumes of wine available to mourners explain why its consumption at funerals after Dressel 1 was less conspicuous than before. The fact is that there is nothing in the funerary archaeology of first-century A.D. Britain to compare with the 17 or 19 wine jars from the Lexden tumulus. Even the lavish and expensive funeral at Verulamium Folly Lane *c.* A.D. 55 had only four to six wine jars. At Stanway no grave or funerary chamber had more than two wine amphoras, and the site as a whole only produced a total of nine wine jars — still far less than the Lexden tumulus. It is also noteworthy that — with the possible exception of Folly Lane — no rich grave of first-century A.D. date has five or more wine amphoras, unlike the situation in the first century B.C. when three graves (Welwyn B, Welwyn Garden City, and the Lexden tumulus) have five or more.

⁵³ Fulford and Timby 2000, 551.

⁵⁴ de Jersey 2001, 11; Sealey 1996, 60.

⁵⁵ Rigby 1989, 207, 210.

It has been suggested that imported commodities such as wine were an integral part of a prestige goods system in the Iron Age.⁵⁶ On this view the tribal élites who controlled the resources of livestock, grain, slaves, and other commodities needed to pay for imported goods exercised a monopoly over this exchange. Imports from the Roman world enhanced the prestige of these leaders through their conspicuous consumption (such as with wine) or display (such as with silver plate) and their integration in existing systems of gift exchange. After the Conquest the spending power of the army of invasion sucked into the province imports on an unprecedented scale. The greater availability of wine amphoras and other imports after A.D. 43 debased the social value that had been invested in them in pre-Conquest gift exchange systems. Once these imports suffered an erosion of their earlier overtones of exclusiveness, privilege, and status, the traditional prestige goods system was undermined. Hence the disappearance soon after A.D. 43 of glamorous graves like Welwyn Garden City with their emphasis on imported luxuries.⁵⁷

The prestige goods model does not now enjoy the vogue it once did,⁵⁸ but it is worth pointing out how it might explain some of the features of amphora distribution at early Roman Colchester. They were common in the legionary fortress and the early *colonia*;⁵⁹ more than 100 amphoras reached the industrial suburb at Sheepen between A.D. 43 and the Boudican revolt.⁶⁰ By comparison, the numbers that found their way into the graves at Stanway are decidedly modest. Out in the countryside the pace of change was slower: the contemporary grave at Mount Bures with its six amphoras lies 11 km distant from the Colchester *colonia*.

After Nero, wine amphoras seldom feature as grave-goods in Britain. When they do, it can be as little more than a convenient lid or container for the other grave-goods. An example is a third-century cremation from Colchester with a Gauloise IV wine jar inverted as a funerary chamber.⁶¹ The last true Welwyn-type grave would be Stanfordbury B, if one can trust the coin of Titus claimed for the grave,⁶² but the identity of the amphoras is unknown. A grave at Stansted Airport (Essex), dated *c.* A.D. 100–150, with a carrot-shaped amphora that would have held dates has no real link with these earlier cremations. Welwyn-type burials did not outlive the Flavians and the rite was in decline much earlier, in the aftermath of the Roman invasion.

The modest number of wine amphoras in the Stanway graves is part of a trend of dwindling wine provision in rich graves from Britain under Augustus and his Julio-Claudian successors. Wine in funerary contexts reached an apogee of extravagance in the *c.* 15–10 B.C. Lexden tumulus. After the end of Dressel 1 *c.* 10 B.C. the élites of South-East Britain turned increasingly to other amphora-borne foodstuffs to add variety, novelty, and spice to their funeral feasts. This is reflected in the number of *salazón*, olive oil, grape syrup, and preserved-olive amphoras recovered from graves in the 75 years from the Lexden tumulus to the Mount Bures grave. After the Roman invasion the erosion of the prestige goods system that had been practised by native élites in the Iron Age made the inclusion of amphoras of any kind in rich graves a redundant exercise; this in turn led to fewer and fewer amphoras finding their way into the funerary record. But this should not be allowed too obscure the fact that — to judge by their funerals — Britons found it increasingly difficult to obtain wine in the 50 years before A.D. 43.

We may now turn to the evidence from settlement sites to see if the decline in wine imports revealed in the funerary record is replicated there.

⁵⁶ Haselgrove 1982; Roymans 1990, 41–3; Pitts 2005, 144 for a dissenting view.

⁵⁷ Millett 1990, 58; Trow 1990, 108.

⁵⁸ Williams, J.H.C. 2005, 34 with refs.

⁵⁹ Symonds and Wade 1999, 137–64.

⁶⁰ Sealey 1985.

⁶¹ Symonds and Wade 1989.

⁶² Dryden 1845, 18.

THE ELMS FARM SETTLEMENT AT HEYBRIDGE

Heybridge is an Essex village on the north bank of the river Blackwater opposite the town of Maldon, where the rivers Chelmer and Blackwater enter the North Sea through the Blackwater estuary. Excavations and chance discoveries since the nineteenth century west of the modern village indicate an extensive Roman settlement preceded by major Iron Age activity on the flood plain.⁶³ In 1993–95 a major campaign of excavations shed new light on the settlement.⁶⁴

Occupation at late Iron Age Heybridge began in the middle of the first century B.C. An undefended settlement extended over some 20 ha, although the density of housing was generally low. Individual properties were set in small ditched compounds; most were roundhouses, but some rectilinear structures were also identified. A prominent feature of the village was a small temple complex, consisting of a rectangular, ditched shrine with a central pit and an adjacent roundhouse; a miniature pot had been buried inside the house. Both structures were located on a low, natural gravel eminence. Iron-working and the production of copper-alloy artefacts took place in the village. The Iron Age coin list includes 12 potins and a wealth of bronze issues: there were 5 of Tasciovanus, 4 of Dubnovellaunos and 83 of Cunobelin. In the middle of the first century A.D. extensive remodelling of the site effectively removed all but the deepest Iron Age features and made it difficult to reconstruct the morphology of the first settlement in detail. Extensive areas of topsoil were removed down to the natural gravel. A rectangular street-grid of gravelled roads was laid out on beds of sand; land between these streets was treated with spreads of coarser gravel, sometimes incorporating amphora sherds and animal bone. The Iron Age shrine was replaced by a more ambitious temple precinct. These changes took place over a short period of time and bear every appearance of a major project directed by some central authority. One would like to know if this happened on the eve of the Roman invasion or in the Conquest period, but the dating evidence does not allow such precision.

Although there were only two late Iron Age cremations at Elms Farm, some pyre sites were discovered, as well as 14 pits in which a selection of pyre debris had been buried. The most striking pyre debris feature was Pit 15417 with 58.5 kg of pottery; much of it had been burnt: indeed, some sherds had been exposed to temperatures high enough to melt them. Twenty-five vessels were present, including three Dressel 1 wine amphoras (FIG. 3, Nos 21–24), a Pompeian red ware dish, a mortarium, and imported beakers and flagons. This is the largest and most important collection of pyre debris from Iron Age Britain. Wine amphoras feature in four other pyre debris pits; the forms present are Dressel 1 and Dressel 2–4. As wine amphoras played a part in funerary rites at Elms Farm, it is reasonable to think that imported wine was consumed on site rather than decanted into other containers such as barrels for trading inland.

AMPHORAS FROM LATE IRON AGE AND EARLY ROMAN ELMS FARM

The extensive 1993–95 excavations produced a large assemblage of at least 118 wine amphoras. Most of them reached the site in the late Iron Age and early Roman period before *c.* A.D. 125. Table 12 gives the minimum vessel count by form. Remarkably, the most common type was Dressel 1. Indeed these 44 amphoras are the largest single group of Dressel 1 excavated in Britain since 1945. A selection of early wine amphora sherds is illustrated (FIGS 3–5).

Nine hectares at Elms Farm were stripped, planned, and sampled in total, although only 2.5 ha were sampled on a systematic basis. Taking these two figures of 9 and 2.5 ha, one gets Dressel 1 densities per hectare of 4.9 and 17.6 respectively for the 44 vessels recovered. Whichever figure

⁶³ Wickenden 1987.

⁶⁴ Atkinson and Preston 1998.

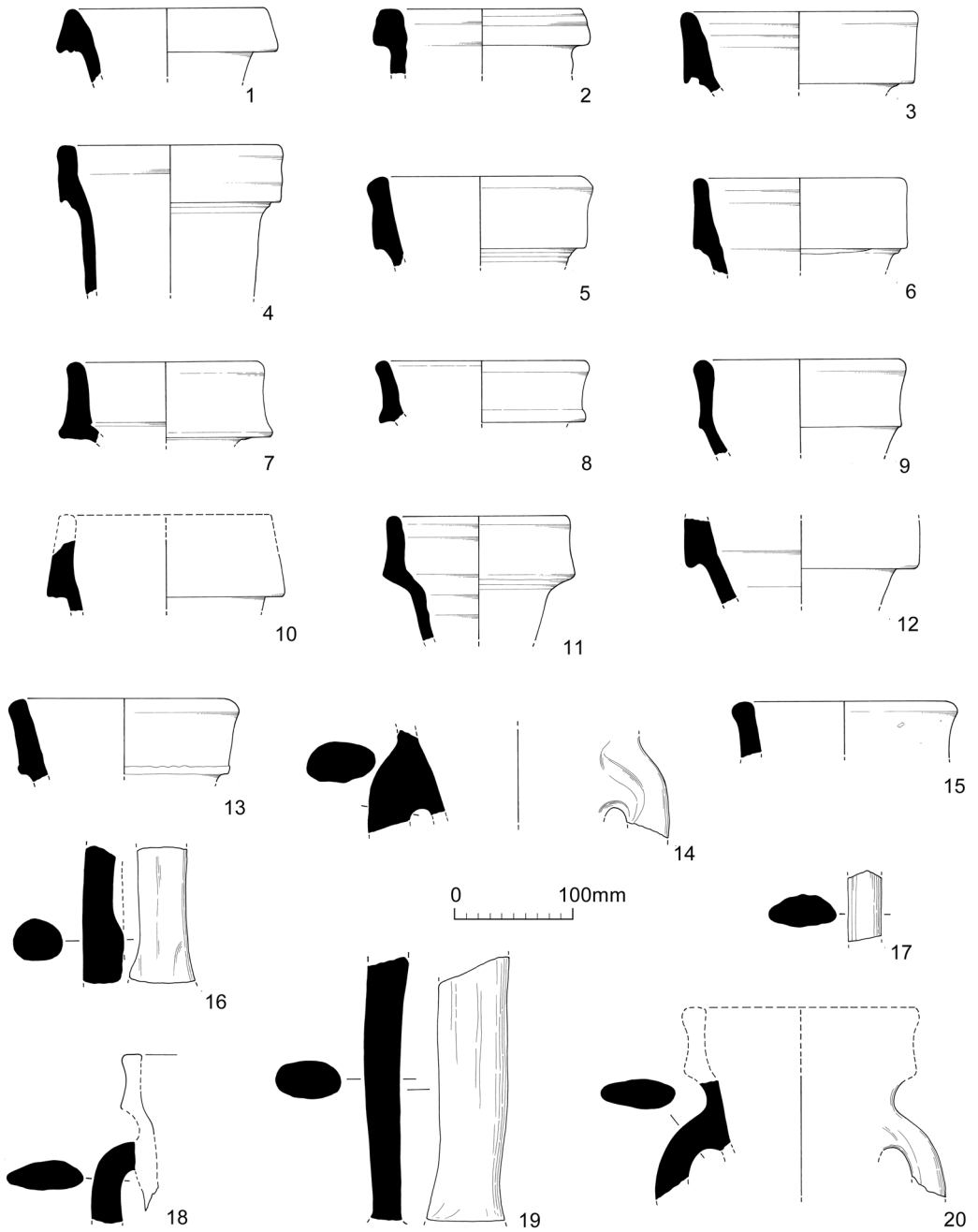


FIG. 3. Dressel 1 amphoras from Heybridge Elms Farm.

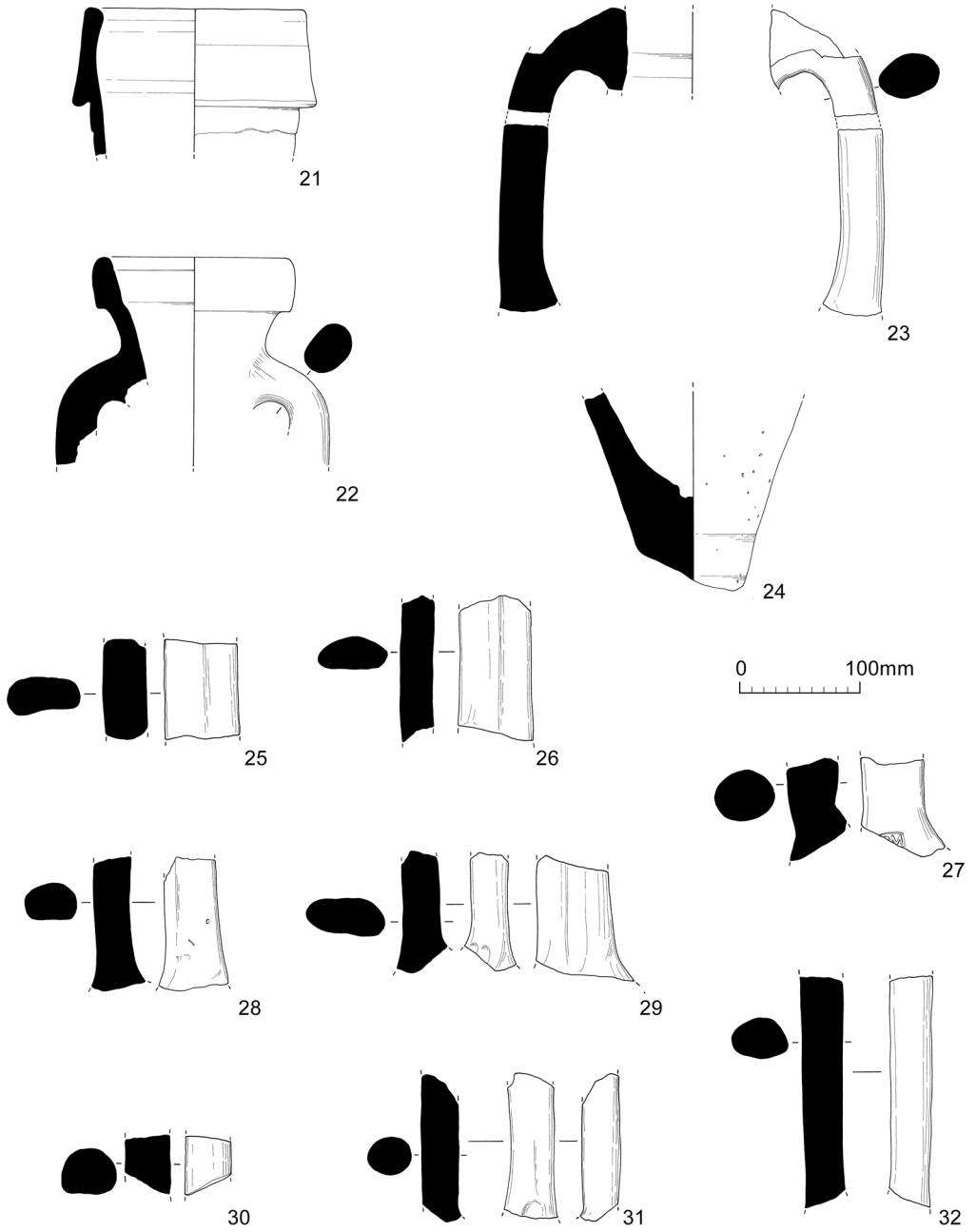


FIG. 4. Dressel 1 amphoras from Heybridge Elms Farm.

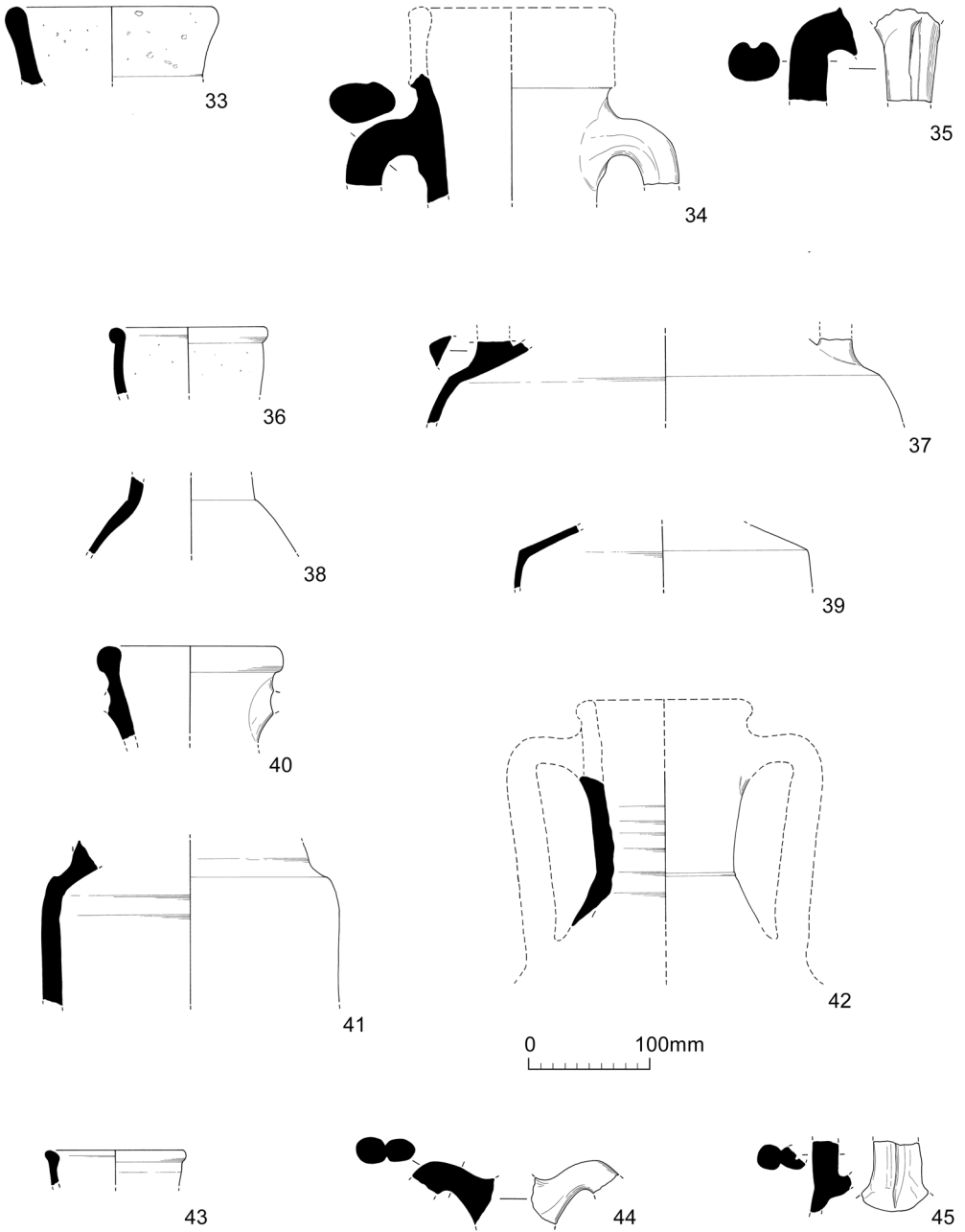


FIG. 5. Amphoras from Heybridge Elms Farm. Pascual 1, 33–35; Dressel 2-4, 36–45.

one takes, the density of Dressel 1 per hectare lies at the lower end of the scale for results from Picardy,⁶⁵ and confirms the impression that the numbers of Dressel 1 reaching Britain were far lower than in Belgic Gaul.

After Dressel 1, wine continued to reach late Iron Age Heybridge in Pascual 1 and Dressel 2-4, although in lower numbers. After the Roman invasion Gaulish wine amphoras made their debut, but only in limited quantities.

QUANTIFICATION AND CHRONOLOGY OF THE ELMS FARM AMPHORAS

Quantification by estimated vessel equivalents or eves for short (a technique that depends on the survival of rims) was not attempted. It has not gone unnoticed that the typology of some vessels can lead to their over-representation when quantified by eves.⁶⁶ With amphoras, the problem is acute under-representation: their shape means that the rim is a far smaller proportion of the pot than on most other categories of vessel, and rim survival cannot therefore be taken as a reliable index of the original vessel population.⁶⁷ There were no rims at all in the amphora assemblage from Stanway, and it is hard to justify using a quantification technique where a large body of material might not even register. At the other end of the spectrum, smaller vessels can slip through the eves net because their rims might also not be present. This was the case at Elms Farm where many such vessel types were only registered by sherd counts and weights, and not by eves.⁶⁸ The same problem was noted for the Iron Age ditch at Fishbourne (West Sussex) but there the astonishing claim was nevertheless made that quantification by eves was 'more reliable'.⁶⁹ Pitts and Perring take the same view *à propos* the Elms Farm pottery,⁷⁰ but the uncomfortable fact is that quantification by eves can lead to a situation in which some types of vessel or fabric are left out in their entirety and distort the picture.

Quantification at Elms Farm began with minimum vessel number count, supplemented by sherd weight and count. An attempt was then made to merge sherd count and weight with minimum vessel number count and amphora capacity. Amphoras that could be no more closely identified than Dressel 1 or Dressel 2-4 (3 examples) and Pascual 1 or Dressel 2-4 (1 example) were not taken into account at this stage.

Activity at Heybridge Elms Farm was divided into eleven ceramic phases. Only the first six concern us here; their dates are given in Table 9. Sherd counts and weights for the wine amphoras in these six phases are given in Table 10, and minimum vessel number counts in Table 11.

TABLE 9. DATES OF THE EARLY CERAMIC PHASES AT HEYBRIDGE ELMS FARM

Ceramic phase	Date
1	c. 50–15 B.C.
2	c. 15 B.C.–A.D. 20
3	c. A.D. 20–55
4	c. A.D. 55–80
5	c. A.D. 80–125
6	c. A.D. 125–170

⁶⁵ Haselgrove 1996, 171.

⁶⁶ Pitts 2005, 151.

⁶⁷ Peacock and Williams 1986, 18–19.

⁶⁸ Pitts 2003, 18–19.

⁶⁹ Lyne 2005, 67.

⁷⁰ Pitts and Perring 2006, 198.

TABLE 10. SHERD COUNTS AND WEIGHTS IN GRAMMES FOR AMPHORAS AT HEYBRIDGE ELMS FARM IN CERAMIC PHASES 1–6

	CP 1		CP 2		CP 3		CP 4		CP 5		CP 6	
	no.	wgt	no.	wgt	no.	wgt	no.	wgt	no.	wgt	no.	wgt
Dressel 1	1	314	903	53718	18	1587	51	4567	2	167	5	588
Dressel 2-4	4	27	11	540	15	1269	8	162	4	99	0	0
Pascual 1	0	0	3	562	10	1541	1	205	0	0	0	0
Gauloise IV	0	0	0	0	18	334	2	323	9	142	1	52
Dressel 20	0	0	6	253	12	1032	62	3901	108	13140	104	25911
<i>Salazones</i>	0	0	21	1659	18	1282	15	859	4	330	2	115
Totals	5	341	944	56732	91	7045	139	10017	127	13878	112	26666

TABLE 11. MINIMUM VESSEL NUMBER COUNTS FOR THE EARLY WINE AMPHORAS FROM HEYBRIDGE ELMS FARM

Amphora type	Minimum vessel number
Dressel 1	44
Dressel 1 or 2-4	3
Dressel 2-4	27
Pascual 1	4
Pascual 1 or Dressel 2-4	1
Gauloise IV	9

Table 10 gives amphora sherd counts and weights for the first six ceramic phases of the site. It shows a pronounced dip in the quantities of wine amphora sherds from the start of the *c.* A.D. 20–55 Ceramic Phase 3. These data inevitably exaggerate the fall in wine imports after the end of Dressel 1 because Dressel 2-4 is a lighter and thinner-walled vessel than Dressel 1. As Dressel 2-4 had much thinner walls, the ratio of packaging weight to contents weight was much more favourable and that was one of the reasons for the replacement of Dressel 1 by 2-4.⁷¹ The corollary is that on sites where both types are present, comparison of sherd weights is misleading as an indicator of the volumes of wine involved because Dressel 1 was so much heavier than Dressel 2-4. We can get a truer picture of what happened by looking at the minimum vessel number counts for the amphoras in question: 44 Dressel 1, 4 Pascual 1, and 27 Dressel 2-4. This is a useful corrective for the sherd count and sherd weight data, but still shows that wine imports declined after the end of Dressel 1.

The absence of Dressel 2-4 in the *c.* A.D. 125–170 Ceramic Phase 6 suggests that imports of the form at Elms Farm had come to an end by then. The form was present on the site from Ceramic Phases 1 to 5 inclusive and if we assume that the 27 vessels reached Elms Farm at a consistent rate, we could assign 5.4 Dressel 2-4 amphoras to each ceramic phase. It might be objected that the incidence of Dressel 2-4 by sherd count and sherd weight was at its height in the *c.* A.D. 20–55 Ceramic Phase 3. It should be borne in mind that there were many more contexts for that phase than for the preceding and subsequent phases and that the quantity of Dressel 2-4 in

⁷¹ Peacock and Williams 1986, 24–5, 51–3.

Ceramic Phase 3 only accounts for 6 per cent and 15 per cent of the total Dressel 2-4 sherds from the site by count and weight respectively, so the impression of a peak is misleading.

We know that Dressel 1 was not imported after *c.* 10 B.C. and so all 44 vessels must have reached the site before then, in Ceramic Phases 1 and 2. Production of Pascual 1 ceased under Tiberius, in our Ceramic Phase 3. It first reached the site in Ceramic Phase 2. Only four vessels are represented, and the sherd count and sherd weight distribution suggests it would not be unreasonable to assign one of them to Ceramic Phase 2 and the remaining three to Ceramic Phase 3.

Merging this data, we reach a hypothetical picture of wine imports in these three forms expressed in terms of vessel number (Table 12). It is assumed in Table 12 that the 44 Dressel 1 can be divided equally between Ceramic Phases 1 and 2. Tables 13 and 14 take this quantification a stage further. Volumes of wine are given for each phase, followed by data for the amalgamated Ceramic Phases 1–2 and 3–5. For these merged phases the volume of wine was divided by the number of years represented to give an estimate of the average annual wine imports.

TABLE 12. HYPOTHETICAL LEVELS OF DRESSSEL 1, PASCUAL 1 AND DRESSSEL 2-4 IMPORTS AT HEYBRIDGE ELMS FARM BY CERAMIC PHASE

Ceramic Phase 1	Ceramic Phase 2	Ceramic Phase 3	Ceramic Phase 4	Ceramic Phase 5
27.4 amphoras	28.4 amphoras	8.4 amphoras	5.4 amphoras	5.4 amphoras

TABLE 13. HYPOTHETICAL VOLUMES OF WINE IMPORTS IN DRESSSEL 1, PASCUAL 1 AND DRESSSEL 2-4 AT HEYBRIDGE ELMS FARM BY CERAMIC PHASE

Ceramic Phase 1	Ceramic Phase 2	Ceramic Phase 3	Ceramic Phase 4	Ceramic Phase 5
659.4 litres	682.6 litres	218.5 litres	149 litres	149 litres

TABLE 14. VOLUMES OF WINE IMPORTS IN DRESSSEL 1, PASCUAL 1 AND DRESSSEL 2-4 AT HEYBRIDGE ELMS FARM BY GROUPED CERAMIC PHASES AND BY YEAR

50 B.C.–A.D. 20 Ceramic Phases 1–2	A.D. 20–125 Ceramic Phases 3–5
number of years: 70	number of years: 105
litres of wine: 1342	litres of wine: 516.5
average annual wine imports of 19.2 litres	average annual wine imports of 4.9 litres

WINE IMPORTS AT ELMS FARM

The data above show that the volume of wine reaching Elms Farm in Ceramic Phases 3–5 fell to one quarter (26 per cent to be precise) of the volume that had reached the site in Ceramic Phases 1–2, assessed on the basis of an average annual import figure for Ceramic Phases 1–2 and 3–5. The survey of the funerary record for South-East Britain showed a fall to one third (34 per cent to be precise) of the volume of wine imported between *c.* 10 B.C. and Nero, compared to earlier periods. This broad correspondence in the percentage falls from Elms Farm and the funerary evidence encourages confidence in the general validity of the essay in quantification above. The size of the sample of amphoras available for study at Elms Farm evidently seems to have been large enough to give reliable results.

We know this fall in wine imports at Elms Farm is not a reflection of declining site status

because (if we trust sherd counts and weights) imports of *salazones* and Dressel 20 were more or less sustained (*salazones*) or even increased (Dressel 20) over Ceramic Phases 2 and 3. This suggests that the decline in wine imports was not a reflection of local tastes or circumstances, but an expression of a wider trend. The number of amphoras in the *c.* 15 B.C.–A.D. 20 Ceramic Phase 2 at Elms Farm is dominated by Dressel 1. As production of the form had ceased by *c.* 10 B.C., it follows that the decline in wine imports was already under way in that phase, by (let us say) *c.* 1 B.C. at latest.

THE WIDER PICTURE

BRITAIN

Supporting evidence for a decline in wine imports after Dressel 1 is forthcoming from other settlement sites, and a selection is discussed here. Foxholes Farm (Herts.) produced at least two Dressel 1 rims, but only one Dressel 2-4 sherd.⁷² At Canterbury as well, Italian Dressel 2-4 were less common than Dressel 1.⁷³ Communities on the Dorset coast were also apparently finding it difficult to obtain wine in Italian Dressel 2-4 in the first decades A.D.⁷⁴ It is also significant that a ditch dated *c.* 10 B.C.–A.D. 25 at Fishbourne Palace (West Sussex) had no wine amphoras, although Dressel 7-11 and Dressel 20 were present, along with a range of other imported pots.⁷⁵

A decline in the volume of Dressel 2-4 amphoras reaching Britain in the first half of the first century A.D. is also evident at Silchester (Table 15). The significant fact about the Silchester data is the decline in the weight of Dressel 2-4 sherds by a fifth (22 per cent to be precise) in the period *c.* A.D. 40–50/60, compared to the period *c.* 15 B.C.–A.D. 40/50. It should also be borne in mind that some of these post-Conquest Dressel 2-4 must be residual from the late Iron Age. The scale of residuality in the period A.D. 40–50/60 is clear from the continuing presence of Dressel 1 sherds in some quantity. Moreover, pottery from contexts dated *c.* A.D. 40–50/60 amounts to no less than 40 per cent of the total excavated.⁷⁶ The decline in Dressel 2-4 then cannot be explained away by the under-representation of contexts of that date and suggests instead that the site experienced a real dwindling of wine imports from traditional sources of supply at the time of the Roman invasion. Exports of wine from Gaul were getting under way then and went some way towards making up the shortfall but the fact remains that the Silchester data show some native communities were still finding it difficult to secure access to wine after the Roman invasion, compared to previous levels of consumption.⁷⁷

GAUL AND THE MEDITERRANEAN SEA

Sites in Gaul show a similar fall in wine imports under the Julio-Claudians to that identified in Britain. There, the number of Dressel 1 amphoras reaching the country was in decline from at least 40 or 50 years before the *c.* 10 B.C. terminal date of Dressel 1.

⁷² Peacock and Williams 1989.

⁷³ Arthur 1986, 240–2.

⁷⁴ Williams 2000, 220.

⁷⁵ Manley and Rudkin 2005; Williams, D.F. 2005.

⁷⁶ Fulford and Timby 2000, 297.

⁷⁷ One of the academic referees for this paper felt that the Silchester data are deceptive because of a decline in the intensity of occupation on the forum-basilica site in the Conquest period. Although a turf-line over street metalling does indeed hint at the possibility of a brief period of abandonment between the end of the Period 3 settlement and the Roman structures of the succeeding period (Fulford and Timby 2000, 14), the pottery report is explicit that the major Period 3 rubbish pits ‘were essentially open and still accumulating material in the late Neronian period’ (ibid., 297). As that material included Claudian-Neronian pottery, the composition of the amphora assemblage may not unreasonably be taken as representative of the trends explored here, whether or not many people actually lived in the excavated area.

TABLE 15. WINE AMPHORA SHERD WEIGHTS IN GRAMMES FROM EARLY CONTEXTS AT SILCHESTER

(after Williams 2000, 221)

	Period 1 c. 25–15 B.C.	Period 2 c. 15 B.C.–A.D. 40/50	Period 3 c. A.D. 40–50/60
Dressel 1b	0	318	60
Dressel 1sp	119	848	1218
Dressel 2-4	977	1466	1137
Dressel 1 or 2-4	32	487	153
Pascual 1	0	52	4
Pascual 1 or Dr 2-4	0	176	568
Gallic	0	91	861

After Dressel 1, no assemblages of wine amphoras are found in Gaul on a comparable scale to the huge accumulations of Dressel 1. Not only are there far fewer Dressel 2-4 than Dressel 1, but the number of sites with Dressel 2-4 is far less than for Dressel 1.⁷⁸ This is particularly striking for Armorica: distribution maps for Dressel 1 and 2-4 from the region show that Dressel 1 sites easily outnumber Dressel 2-4 findspots.⁷⁹ Many other regional surveys and site reports dwell on how settlements prolific in Dressel 1 received little or no wine in successor forms. A survey of amphoras from the Aisne in late La Tène could find few other wine amphoras to put alongside the prodigious imports of Dressel 1.⁸⁰ At Roanne (Loire), Dressel 1 amphoras (which had been imported in quantity) were simply not replaced by other types after the end of the form.⁸¹ Even at major urban sites like Lyon and Saint-Romain-en-Gal (Rhône), Dressel 2-4 is rare in first-century A.D. contexts.⁸²

Shipwrecks tell the same story of a reduction in the volume of wine traded over distance after the end of Dressel 1. In his magisterial survey of the Roman wine trade, Tchernia cited 44 Dressel 1 shipwrecks off the coast of France, against which he could range only 10 Dressel 2-4 shipwrecks.⁸³ For the Mediterranean Sea in its entirety, Parker could list 124 Dressel 1 wrecks, but only 64 for Dressel 2-4.⁸⁴

CONCLUSIONS

The excursus into the archaeology of the wine trade in Gaul and the Mediterranean above shows that the slide in wine imports in late Iron Age Britain was part of a general attenuation of the movement of Dressel 2-4 amphoras under the Julio-Claudians. But how are we to account for this? Suggestions that the Gauls in particular lost an appetite for wine after at least a hundred years of conspicuous consumption are as unconvincing as the prospect of Roman merchants relinquishing the loss of such a lucrative market without a struggle.⁸⁵ Two factors regularly feature in discussions of the problem: dolia and barrels, and it is to these that we should now turn.

⁷⁸ Tchernia 1986, 136–7.

⁷⁹ Galliou 1984, figs 11–12.

⁸⁰ Henon 1995, 179–81.

⁸¹ Lavendhomme and Guichard 1997, 364.

⁸² Desbat *et al.* 1990, 208.

⁸³ Tchernia 1986, 137.

⁸⁴ Parker 1992, 16–17.

⁸⁵ Desbat 1998, 34.

DOLIA AND BARRELS AND THE WINE TRADE

DOLIA

A feature of Julio-Claudian shipping was the installation of dolia in the holds of ships for the bulk transport of wine. The practice might even have started earlier if the two dolia on board the c. 100 B.C. Cap Bénat B wreck with its cargo of Pompeian Dressel 1c were permanent fixtures in the hold, as opposed to shipboard equipment.⁸⁶ Otherwise dolia shipwrecks are confined to the period between Augustus and Nero.⁸⁷ Dolia are huge terracotta wine vats weighing as much as a tonne and capable of holding up to 3,000 litres of wine. They were fitted with lids and are often lined with pitch or resin. As a rule, these dolia ships also carried a cargo of Dressel 2-4 amphoras. The dolia were not removed when the ship berthed; any wine was decanted into other containers such as amphoras or (perishable) skins and barrels. Overall the effect would have been to reduce the number of amphoras in circulation. But there are only three dolia shipwrecks off the south coast of France, and the volume of wine carried in them cannot make up the shortfall in wine reaching the region after the slump in Dressel 1 imports.⁸⁸

BARRELS

Wooden barrels have also been advanced to account for the fall in the number of imported wine amphoras reported from Gaul in the second half of the first century B.C. and later.⁸⁹ The barrel was an invention of the Gauls themselves, in use from at least the time of Caesar.⁹⁰ They were traded in some quantity from Augustus, to judge by the numbers recovered from the 60 or so wells in the 11–8/7 B.C. Roman military base at Oberaden.⁹¹ A stave from Oberaden had tartrate residues; other barrels from elsewhere have pitch or resin linings,⁹² and both strands of evidence suggest wine was one of the main commodities transported in barrels.

The difficulty with championing the barrel as the wine container responsible for the fall in wine amphoras in Gaul is the source of the wine. It cannot have been Italian or Spanish wine that reached Gaul in dolia because there are not enough dolia shipwrecks. Rebottling imported amphora-borne wine in Gaul in barrels should have created massive dumps of broken Dressel 2-4 and other amphoras where the repackaging took place, but no such dumps have been discovered. In any case, it is difficult to see how wine would have continued to reach northern Gaul and Britain in amphoras at all if barrels had displaced them.

It is unlikely that Gaul was the source of the wine. In Narbonensis archaeological evidence for wine production on any significant scale is not forthcoming until Nero and Vespasian, when Gauloise IV amphoras made their debut.⁹³ The Rhône valley was the major centre of barrel production in the early Roman period in Gaul.⁹⁴ There were extensive vineyards in the Tricastin of the middle Rhône from the early first century A.D. Amphora workshops are rare in the region and so this could have been a source of barrelled wine.⁹⁵ We know too that the Allobroges made wine from the end of the first century B.C. in a region of the Rhône where there are very few

⁸⁶ Parker 1992, 98.

⁸⁷ Hesnard and Carre 1988, 151.

⁸⁸ Tchernia 1986, 138, 140.

⁸⁹ Desbat 1998, 34.

⁹⁰ Marlière 2001, 186, citing Caesar, *De Bello Gallico* 8.42.1 and *Bellum Civile* 2.11.

⁹¹ Albrecht 1938, 19, Taf. 20 and 38; Kühlborn 1995, 118–19.

⁹² Boon 1975, 55 with refs.

⁹³ Brun and Laubenheimer 2001, 207.

⁹⁴ Marlière 2001, 187.

⁹⁵ Jung *et al.* 2001, 127.

amphora workshops. It is quite possible that their wines were bottled in barrels as well, rather than in amphoras.⁹⁶ But in neither case do we have any real idea of the scale of the output of these *vignobles* and it seems inconceivable that they could have caused the major dislocation of the wine trade explored here, particularly as the slackening of Italian wine exports to Gaul was underway as early as the middle of the first century B.C.

Confidence that Roman barrels were usually bottled with wine is less securely-based than is generally allowed. It should be remembered that one of the preferred woods — silver fir — for Roman barrels would have spoiled the drink.⁹⁷ Moreover barrels are not well-suited to the ageing and preservation of wines. Unlike an amphora, a barrel is not air-tight and secondary fermentation of the wine could begin after the drink had been decanted into the barrel.⁹⁸

The bung-holes and vent-holes found in barrels would have been equally appropriate for beer.⁹⁹ The so-called Celtic beer known as *cervesia* was produced in quantity in the northern provinces. One of the documents from the Vindolanda archive shows that the Roman garrison there was issued with more beer than wine.¹⁰⁰ Technically, of course, the drink was ale because hops were not added to the drink to make beer until the Middle Ages.¹⁰¹ A linkage between at least some barrels and the trade in *cervesia* (if not cider as well) makes sense because of the markedly northern distribution of Roman barrels and the Gaulish origins of barrel technology.¹⁰² This northerly distribution of barrels is usually taken as a reflection of the circumstances of their survival, as well-linings in the cooler and damper conditions there. But the distribution of other evidence for the production and use of barrels, such as inscriptions mentioning coopers and images of barrels in sculpture, suggests they were produced in the same regions.¹⁰³

The preferred wood for Roman barrels in Gaul and neighbouring provinces seems to have been the larch and silver fir, two species not native to Britain.¹⁰⁴ Barrels found in Britain made of these woods must therefore have been imported. Although such barrels have been recovered from Roman Britain, none has yet been found in an Iron Age context. There *are* barrels in pre-Roman contexts, but there is no reason to think they are anything other than local products. Two Essex examples that come to mind are the oak base of an early first-century A.D. barrel found at Chigborough Farm¹⁰⁵ and the oak staves from a middle Iron Age pit at Asheldam Camp.¹⁰⁶ What might have been the impression of another barrel was found at Stanway,¹⁰⁷ but we have no way of telling if it was local or imported.

TOWARDS NEW PERSPECTIVES ON THE WINE TRADE WITH JULIO-CLAUDIAN BRITAIN

In Gaul, wine imports were in decline from the middle of the first century B.C., but that picture was not repeated in Britain. Here, the evidence furnished by élite graves and the Elms Farm settlement at Heybridge shows that imports peaked *c.* 10 B.C. at the end of Dressel 1. This anomaly needs explaining. At the root of the discrepancy is the need of the Roman state to secure

⁹⁶ Marlière 2001, 187.

⁹⁷ Wilmott 1982, 47.

⁹⁸ Marlière 2001, 192.

⁹⁹ Boon 1975, 55.

¹⁰⁰ Bowman and Thomas 1983, 83–93.

¹⁰¹ Mabey 1996, 64; Dietler 1990, 393 n. 17.

¹⁰² Marlière 2001, 186, 190.

¹⁰³ Boon 1975, fig. 3; Desbat 1991, figs 7–8; Marlière 2001, figs 101 and 104.

¹⁰⁴ Boon 1975, 53, 55–6 with refs.

¹⁰⁵ Isserlin 1998.

¹⁰⁶ Murphy 1991, 34; Brown 1991, 28 for associated pottery.

¹⁰⁷ Crummy *et al.* 2007, 104, 157–8.

supplies for the armies involved in the invasion of Germany in 12 B.C. Livestock, grain, and other commodities from Britain helped provision those great armies, and the rise in the number of wine jars in Britain was a key element in these exchanges.

Fifty years later a different situation prevailed. At the great elite funerals of Stanway and Folly Lane in early Roman Britain, wine was not consumed on the same scale as it had been in the last decades B.C. A survey of selected graves with amphoras shows that in the period between the end of Dressel 1 *c.* 10 B.C. and the Stanway and Folly Lane funerals, the number of wine amphoras in graves in South-East Britain fell by 67 per cent (representing a reduction in the volume of wine imported of 66 per cent). A rather greater fall in the volume of wine reaching Britain is apparent from the large assemblage of wine amphoras from the Elms Farm settlement at Heybridge: there, the volume of wine imports fell by 74 per cent after at least *c.* 1 B.C. Of course, we are only dealing with data from one settlement site and a modest database of elite graves, but the broad congruence in the results from Heybridge and these rich graves suggests we have caught a glimpse here of a real economic trend. It is ironic that at the very time when the volume of wine reaching Iron Age Britain was in decline, wine imagery should have begun to feature on local coinages: perhaps difficulties in securing supplies simply enhanced its value for the élites that drank it.¹⁰⁸

Moreover, this decline in the wine trade is evident from other sites. It is clear that even after the Roman invasion, native élites were not consuming wine on the scale that their families had in previous decades. Sites in Gaul show a similar slump in wine imports, particularly from Italy. Mediterranean shipwreck cargoes also show a reduction in the volume of wine traded after the end of Dressel 1 *c.* 10 B.C. Increasing demand for wine in Italy itself was the root cause; although increased imports of Catalan wine in Britain and Gaul made up some of the shortfall, the heady days of the Clemency and Lexden tumulus funerals were gone for ever.

Dolia and barrels are of only marginal relevance to the declining numbers of wine amphoras found in Gaul from the late first century B.C. Developments in Italy were of greater importance. The root cause of the dwindling flow of wine to Gaul (and therefore Britain) was the growing demand for wine in the peninsula from the end of the Republic and the reign of Augustus.

The topic has been explored by Purcell.¹⁰⁹ Free distributions of wine to their clients by patrons fostered an appetite for the drink that had hitherto been latent. In Italy this led to the development of a wine-bar culture, where serving the drink in public became popular as never before. Colleges of the urban poor were established to provide meals and wine for members. The city of Rome in particular acquired a reputation for insobriety that it retained until Late Antiquity. One might add that the celebrations of wine and intoxication by the court poet Horace — most famously in the ode addressed to Messalla Corvinus — lent an aesthetic endorsement to the vogue for wine (*Odes* 3.21). Purcell showed how this burgeoning demand for wine in Italy created vineyards that were geared to the production of wine in quantity, rather than a smaller, quality output. A shift took place in the location of the major *vignobles*. Previously they were to be found near the coast in a position to supply the lucrative overseas markets in Gaul and elsewhere; now they lay increasingly in inland regions with access to the greatest market of all, the city of Rome.

We can now understand the slide in exports of Italian amphora-borne wine to Gaul and neighbouring provinces: wine that might hitherto have been shipped overseas was staying in Italy. The Purcell model also accounts for the disparity in the numbers of Dressel 1 and Dressel 2-4 shipwrecks.

In Gaul and Britain demand for wine was increasingly met from Spain rather than Italy, although in both countries the overall level of wine imports declined. At Heybridge Elms Farm

¹⁰⁸ Williams, J.H.C. 2005, 37–8.

¹⁰⁹ Purcell 1985, 9–15.

in the *c.* A.D. 20–55 Ceramic Phase 3, the sherd count and weight of Pascual 1 amphoras is three times what it had been in the preceding phase. Those communities on the Dorset coast that found it difficult to secure wine in Italian Dressel 2-4 in the first decades A.D. imported Catalan wine in Pascual 1 instead.¹¹⁰ At Maiden Castle (Dorset) there were three Italian Dressel 2-4 amphoras and four Pascual 1. Stratigraphy shows that although there was an overlap period between both forms, Pascual 1 continued to reach the site after the end of Dressel 2-4 imports.¹¹¹

There is something to be said for the view that Pascual 1 replaced Dressel 1 in parts of Gaul and Britain.¹¹² This should come as no surprise because as Dressel 1 exports to Gaul were in retreat, Gaul became the most important market for Pascual 1 amphoras.¹¹³ A striking demonstration is the assemblage of amphoras from an Augustan *vide sanitaire* (drain) at the Malard site in Narbonne (Aude) (Table 16).¹¹⁴ This shift in supply from Italy to Spain is also apparent in rich graves from Gaul with amphoras. At the *c.* 80/75–65/60 B.C. funeral at Clemency there are at least ten Dressel 1 amphoras in the funerary chamber, with another 20 or 30 from related contemporary features in the immediate vicinity. By Augustus the volume of wine consumed at funerals is generally less dramatic, and Catalan wine begins to displace Italian. Goeblingen-Nospelt Grave A has only one Dressel 1, and the contemporary grave of Goeblingen-Nospelt B with its pair of Pascual 1 and two Beltrán I *salazones* has a suite of exclusively Spanish amphoras. Likewise the Augustan grave of Fléré-la-Rivière is furnished entirely with Catalan wine jars; in this case, 13 Pascual 1 amphoras. The trade in Catalan wine with Gaul survived the disappearance of Pascual 1 under Tiberius. Half of the Mediterranean shipwrecks with Catalan Dressel 2-4 are off the coast of France,¹¹⁵ and it is clear that the main thrust of exports was still towards Gaul.

TABLE 16. AMPHORAS FROM THE MALARD DRAIN AT NARBONNE
(after Arlaud *et al.* 1998, 198)

Amphora type	Minimum vessel number count
Dressel 1	4
Pascual 1	193
Haltern 70	15
Dressel 7-11	19
Dressel 12	4
Dressel 20	4
Chios	1
Dressel 2-4	10
Unidentified	1
Total	251

At Stanway, two of the wine amphoras are Catalan, another three are Italian, but the remaining four cannot be related to a source region. It is interesting that at the more ostentatious funeral of the leader at Folly Lane outside Verulamium, all of the four to six Dressel 2-4 amphoras

¹¹⁰ Williams 2000, 220.

¹¹¹ Williams 1991.

¹¹² Fitzpatrick 1985, 319.

¹¹³ Comas 1998, 228; Parker 1992, 19.

¹¹⁴ Arlaud *et al.* 1998, 198.

¹¹⁵ Corsi-Sciallano and Liou 1985, 10.

are Italian. Williams asks,¹¹⁶ ‘Was it accident or design that he, or his mourners, seems to have preferred an Italian vintage?’ The answer must be that it was indeed deliberate selection because at the time of the funeral and for some 50 years previously, it was Italian wine that was increasingly difficult to find in Gaul and Britain. This must have invested the Italian vintages with a particular allure and chic. Creighton has emphasised the *Romanitas* of the grave goods at Folly Lane.¹¹⁷ He suggests that Italian wines were preferred at the funeral because they might in some sense have been seen as more Roman than Spanish or other provincial wines. Mourners at Stanway did not attempt to match the extravagance of the Folly Lane funeral: unable to muster exclusively Italian wines, they consoled themselves with both provincial and Italian wines, so that even in the choice of wines the social distance between Folly Lane and Stanway is evident.

It only remains to point out that a fall of between two-thirds and three-quarters in the volume of wine imported by Britain in the half-century before the Conquest has implications for other Roman imports reaching these shores. In ancient Mediterranean shipping mixed cargoes were the rule rather than the exception. When table crockery is present on a shipwreck, it is usually as a minority element in a hold largely taken up by amphoras.¹¹⁸ If this were the case with shipping in Channel waters, it would account for the reduction in the quantity of Roman pottery reaching the King Harry Lane cemetery in the decades prior to the Roman invasion.

APPENDIX I. THE CASE FOR WINE IN HALTERN 70 AND BELTRÁN I-II AMPHORAS

Three categories of amphora not considered in this paper to have been wine amphoras are Haltern 70 and Beltrán I–II, three types from the province of Baetica in the south of Spain. In the case of Haltern 70, this view is not held unanimously and so the topic deserves examination. The case for wine as a significant minor component of Beltrán I and II rests to some extent on misunderstandings of the contents of Haltern 70, and so it is with Haltern 70 that we should begin.

HALTERN 70

Painted inscriptions show that the main contents of the form were *defrutum* and *sapa*, and olives preserved in *defrutum*. Finds of olive stones from the form in shipwrecks will be the remains of olives preserved in this way.¹¹⁹ *Defrutum* and *sapa* were non-alcoholic syrups made from boiled must (fermenting grape juice).¹²⁰ One takes this view of *defrutum* and *sapa* because boiling down must to make these products would kill the yeast and stop fermentation; any alcohol already formed would evaporate because it boils at a lower temperature than water. Reducing the water content of the boiling must concentrates the sugar present and creates a viscous and sweet non-alcoholic syrup, quite unlike wine. *Defrutum* and *sapa* would have resembled the canned grape syrups on sale in Britain for those who make home-made wines and we should think of these Roman syrups as grape concentrates.¹²¹

On the European mainland the view was taken that the grape syrups *defrutum* and *sapa* had been fermented to make sweet wines, by analogy with modern *vin cuits*;¹²² it was further

¹¹⁶ Williams 1999, 193.

¹¹⁷ Creighton 2001, 403.

¹¹⁸ Parker 1992, 16.

¹¹⁹ Liou 1982, 444.

¹²⁰ Parker and Price 1981, 223; amplified by Sealey 1985, 62–3.

¹²¹ Thurmond 2006, 289.

¹²² van der Werff 1984, 380–1; 1990, 324.

suggested that other, unspecified wines from Baetica were bottled in Haltern 70. But in his last statement on the problem, one of the most articulate spokesmen of the wine school of thought relented and adopted the same view as the writer.¹²³ Martin-Kilcher¹²⁴ is of the same mind; so too is García Vargas,¹²⁵ who notes the polarity of views between Britain and France. Ehmig¹²⁶ simply described the contents of Haltern 70 as preserved olives, *eingelegte Oliven*. Scholarship in France is still unconvinced, and remains of the opinion that Haltern 70 was a wine amphora.¹²⁷

The only wine bottled in the form was the honey wine known as *mulsum*, attested on two painted inscriptions from Spain.¹²⁸ There are also painted inscriptions on two Haltern 70 amphoras showing the contents sometimes included the fish-sauce *muria*; there is no doubt about the readings of the inscriptions ‘*mur(ia)*’ on examples of the type from London¹²⁹ and Mainz.¹³⁰ Ehmig says that olives were sometimes preserved in *muria*, although neither *dipinto* mentions that fruit. Fish-sauce in Haltern 70 is surprising because most of these amphoras were produced well inland in the valley of the Guadalquivir, but the discovery that the form was also made on the coast at Cadiz¹³¹ would explain the bottling of *muria* in the type.

Drawing these strands together, it seems reasonable to postulate non-alcoholic grape syrups and olives preserved therein as the primary contents of Haltern 70. A few were also bottled with fish-sauce but the only alcoholic drink bottled in the form was the honey wine *mulsum*. In view of this, it is unlikely that many, if any, of the Haltern 70 reaching Britain contained wine.

BELTRÁN I AND II

We are concerned here with two categories of amphora from Baetica bottled primarily with fish-sauces and salted fish, the so-called *salazones*. The case for *salazón* products as the main contents of these pots is based on the many painted inscriptions specifying sauces such as *garum* and *muria*.¹³² Beltrán II is not attested in any quantity until at least the last years of Nero,¹³³ and so it need only concern us inasmuch as evidence for wine in the form might have implications for its predecessor, Beltrán I.

Two painted inscriptions show that wine was certainly a minor component of Beltrán IIB. One comes from Arles (Gard) and names the contents as matured wine, ‘*vin(um)/si ... vetus/diadu*’.¹³⁴ The other was found in the c. A.D. 150 Saint-Gervais C shipwreck and contained mature red wine, ‘*vin(um)/r(ubrum) aur(elianum?) vet(us)*’.¹³⁵

It has been argued that the case for wine in Beltrán I and II is strengthened by discoveries of grape pips in amphoras from maritime contexts and by analyses of organic residues trapped in the walls of amphoras and in their pitch linings.¹³⁶ Grape pips are unlikely to have survived the adventures of pressing, fermentation, and decanting of the wine into the amphora. In cases like the 50 grape pips from a Dressel 10 amphora at La Punta de La Nao near Cadiz, we must

¹²³ van der Werff 2002.

¹²⁴ Martin-Kilcher 1994, 387.

¹²⁵ García Vargas 2004, 507.

¹²⁶ Ehmig 2003, 52–6.

¹²⁷ Silvino *et al.* 2005, 507.

¹²⁸ García Vargas 2004, 507; van der Werff 2002, 447–8.

¹²⁹ Davies *et al.* 1994, 11, fig. 5 no. 9.

¹³⁰ Ehmig 2003, 54, 56.

¹³¹ García Vargas 1998, 98; Lavado Florido 2004, 479.

¹³² Ehmig 2003, 2–7.

¹³³ Sealey 2007a, 300.

¹³⁴ Liou 1987, 116–18.

¹³⁵ Liou and Gassend 1991, 209–10.

¹³⁶ Silvino *et al.* 2005, 509–11.

be dealing with fruit deliberately introduced into the amphora.¹³⁷ Presumably they had been preserved in wine, *sapa*, must or *dulcia*, a generic word for sweet concoctions, be they wine or grape syrups like *defrutum* (Cato, *De Agri Cultura* 7; Pliny, *Naturalis Historia* 23.7.11). Such products represented a delicacy rather than a wine amphora *per se*. Analysis of the resin lining of this particular Dressel 10 indicated the presence of substances linked to tannin; study of five other Dressel 7-11 amphoras has given similar results.¹³⁸ But none of this proves the presence of wine because, although the tannin indicates a wine or wine-derivative product, we might in fact be dealing with the grape syrups *defrutum* or *sapa* instead.

There is indeed evidence for *defrutum* in some Beltrán II amphoras. A sherd of Spanish amphora with the painted inscription '*defr(utum) excell(ens)*' was discovered at Fos (Bouches-du-Rhône). It was described as Beltrán IIb in the Port-Vendres B report,¹³⁹ but the definitive publication was less specific. It was identified there as southern Spanish, but Liou and Marichal¹⁴⁰ added coyly that it could perhaps be evidence for the export of wine from Baetica after Haltern 70 (which was then held to have come to an end *c.* A.D. 50). A *defrutum* inscription on an amphora of form Schöne-Mau VII (Beltrán IIa) from Pompeii is also relevant.¹⁴¹ It has been suggested that the vessel might instead have been a Haltern 70 that was assimilated in error to Schöne-Mau VII.¹⁴² There is indeed a general lack of confidence in the scheme of amphora classification used for the inscriptions from the Vesuvian cities and their environs.¹⁴³ But the fact remains that Schöne-Mau VII *can* equate with Beltrán IIa, and so if we take the inscription at face value we have more evidence for *defrutum* in a Baetican *salazon* amphora.

One of the more inscrutable features of the epigraphy of Baetican *salazón* amphoras is inscriptions that name a commodity variously abbreviated as *lum*, *lump*, *limp* or *lymp*.¹⁴⁴ These words are apparently related and presumably refer to the same contents. A possible resolution of one of these abbreviations is *lymphatum*, derived from the Latin verb *lymphare*, meaning to blend or dilute with water. Ehmig lists 37 examples of these inscriptions,¹⁴⁵ 29 are on Schöne-Mau VII (Beltrán IIb) amphoras, with only 7 on the earlier Dressel 7-11 (Beltrán I).

But what exactly was being diluted with water in these pots? Latin texts from Late Antiquity and the Middle Ages show that wine blended with water could be called *limpidum*.¹⁴⁶ And indeed we now have the painted inscription '*vin(um) lump(atum)*' on a Dressel 9 from the shipwreck Pisa B in Italian waters.¹⁴⁷ Dressel 9 sherds from the *c.* A.D. 25–50 shipwreck of Cala Rossano, off the Italian island of Ventotene (Lazio), also have a bearing on the question. Inside a Dressel 9 base sherd from the wreck there was a grape stalk. Grape pips were present in quantity adhering to the walls of other Dressel 9 sherds, and many more pips were noted dispersed in the sand in the course of the excavation.¹⁴⁸ Bearing in mind the painted inscription '*lum*' on other Dressel 9 sherds from the shipwreck, there is a possibility that these grapes had been preserved in diluted wine.¹⁴⁹

But *vinum limpidum* was a mediocrity,¹⁵⁰ difficult to reconcile with its regular transport

¹³⁷ *ibid.*, 510.

¹³⁸ *ibid.*, 510–11.

¹³⁹ Colls *et al.* 1977, 87 n. 208.

¹⁴⁰ Liou and Marichal 1979, 144–5, no. 35.

¹⁴¹ *CIL* IV no. 9324.

¹⁴² Colls *et al.* 1977, 87.

¹⁴³ Peña 2007, 235.

¹⁴⁴ Manacorda 1977, 127; Arata 1994, 494–5.

¹⁴⁵ Ehmig 2003, 66–7.

¹⁴⁶ Silvino *et al.* 2005, 508 with refs.

¹⁴⁷ García Vargas 2004, 510 with ref.

¹⁴⁸ Arata 1994, 479, 492, 494–5.

¹⁴⁹ Silvino *et al.* 2005, 508.

¹⁵⁰ García Vargas 2004, 510–11.

long distances in amphoras when wine could more easily have been diluted at the point of consumption. Some other contents might better explain most of the *lum*, *lump*, *limp* or *lymp* inscriptions on *salazón* amphoras. Fish-sauce was also sometimes diluted with water; it was known as *hydrogarum*. The word is cited in ancient texts, albeit rarely (Apicius, *De Re Coquinaria* 1.18). On this view, amphoras with *lymphatum* painted inscriptions may have been bottled with fish-sauce diluted with water. It is not impossible that *lymphatum* included sauce that had been blended with (diluted) wine to produce *oenogarum*, a cocktail of wine and sauce that also features in the recipes handed down by Apicius (e.g. 1.17, 2.5.4 and 3.8).

To sum up: there is no doubt that a very few Beltrán IIb amphoras had been bottled with wine. Logic suggests the same might have been true of its predecessor, Beltrán I. Finds of grape-derived organic compounds in the walls and linings of Beltrán I and II amphoras are inconclusive evidence of wine because the product could equally well have been the grape syrups *defrutum* and *sapa*. Some other *salazón* amphoras were bottled with diluted wine but it seems inherently unlikely that such an undistinguished product can explain all *lymphatum* inscriptions on these amphoras. A very few of the *salazón* amphoras in Julio-Claudian Britain might conceivably have been bottled with wine, but the majority were fish-sauce amphoras.

APPENDIX II. GRAVES AND FUNERARY CHAMBERS WITH AMPHORAS

This appendix provides a bibliography for the graves and funerary chambers from Britain and Gaul mentioned in the text; they are listed in alphabetical order. Amphoras present are indicated, and (where appropriate) reference is made to how the graves have been dated.

Baldock (Herts.): one Dressel 1, typologically the earliest amphora from a grave in South-East Britain.¹⁵¹ A date bracket of c. 100–75 B.C. for the vessel has been proposed by the writer;¹⁵² Poux¹⁵³ variously suggests c. 80–10 B.C. or La Tène D1b to D2, i.e. c. 120–30 B.C.

Clemency (Luxembourg): sherds representing at least 10 Dressel 1 amphoras were present in the actual funerary chamber. Sherds representing another 20 or 30 Dressel 1 amphoras were recovered from other features, with most coming from the pyre site and a pavement of sherds trampled over the post-holes of the presumed excarnation platform. The site was dated c. 80/75–65/60 B.C. on the basis of the typology of the Dressel 1 amphoras.¹⁵⁴

Dorton (Bucks.): one Dressel 1 and two Dressel 2-4 amphoras. Imported Central Gaulish table crockery — with no Gallo-Belgic wares — suggests a date for the funeral of c. 25–15 B.C., shortly before the introduction of Gallo-Belgic ware c. 15 B.C. Late Iron Age grog-tempered ‘Belgic’ Aylesford-Swarling pottery is also present, suggesting the grave is later than c. 75 B.C.¹⁵⁵

Fléré-la-Rivière (Indre): 13 Pascual 1 amphoras. The grave can be closely and securely dated c. 20–1 B.C. on the basis of an Augustan coin issued at Nîmes, and a service of pottery that includes *terra nigra*, stamped Arretine ware, and an Aco beaker.¹⁵⁶

Goeblingen-Nospelt A (Luxembourg): one Dressel 1 amphora. The grave is securely dated c. 30–15 B.C. by the service of Roman pottery, including Arretine ware and Aco beakers.¹⁵⁷

¹⁵¹ Stead and Rigby 1986, 53, fig. 21 no. 2.

¹⁵² Sealey 2007b, 14.

¹⁵³ Poux 2004, 189, 558.

¹⁵⁴ Metzler *et al.* 1991, 86.

¹⁵⁵ Farley 1983; Williams 1983.

¹⁵⁶ Ferdière and Villard 1993.

¹⁵⁷ Thill 1966; 1967a; 1967b.

Goeblingen-Nospelt B (Luxembourg): two *salazón* amphoras of form Dressel 10 (Beltrán I) and Dressel 12, and two Pascual 1 amphoras. The grave is securely dated *c.* 30–15 B.C. by the large service of Roman pottery, including Arretine ware and Aco beakers.¹⁵⁸

Hertford Heath (Herts.): one Dressel 1 amphora; no other Roman pottery was present. An imported Mediterranean glass bowl is earlier than *c.* 70 B.C.,¹⁵⁹ but decorated glass roundels from the grave find their only parallels in the *c.* 15–10 B.C. Lexden tumulus. Late Iron Age grog-tempered ‘Belgic’ Aylesford-Swarling pottery is also present, suggesting the grave is later than *c.* 75 B.C.¹⁶⁰

King Harry Lane Grave 117 (Herts.): two rim sherds of a Beltrán I amphora placed with the cremated bone at the side of the grave pit with two complete pots and two brooches, but regarded by the excavator as possibly intrusive.¹⁶¹ The date of the grave has been adjusted from *c.* A.D. 40–60 (the date in the excavation report) to *c.* A.D. 35–40/45.

King Harry Lane Grave 206 (Herts.): sherds of a Beltrán I amphora found between 20 and 35 cm from the bottom of the grave pit and which restored to give most of the profile — only the lowest part of the body and the spike are missing. Pyre debris in the form of ‘molten’ copper alloy was present. The grave was not central to its enclosure.¹⁶² The date of the grave has been adjusted from *c.* A.D. 1–40 (the date in the excavation report) to *c.* 10 B.C.–A.D. 30.

King Harry Lane Grave 241 (Herts.): abraded sherds of Haltern 70 in the grave fill which restored to give the neck with handle and rim; there were black stains on the inside and outside of sherds. Pyre debris in the form of ‘molten’ copper alloy was present. The grave was central to its enclosure.¹⁶³ The date of the grave has been adjusted from *c.* A.D. 1–40 (the date in the excavation report) to *c.* 10 B.C.–A.D. 30.

King Harry Lane Grave 272 (Herts.): the body and shoulder of an Italian black sand Dressel 2-4; neck and rim sherds were also present. The amphora is said to have been placed in the grave complete and it is suggested that the top had been destroyed by ploughing. This is quite possible because to judge by the drawing of the amphora and its angle of inclination in the grave, only about 15 cm would need to have been sliced off to give what survived. Scientific analysis showed the contents had been olive oil, not wine. Pyre debris in the form of ‘molten’ copper alloy was present. The grave was central to its enclosure.¹⁶⁴ The date of the grave has been adjusted from *c.* A.D. 1–40 (the date in the excavation report) to *c.* 10 B.C.–A.D. 30.

King Harry Lane Grave 369 (Herts.): large neck and shoulder sherd of a Cam. 184 amphora inverted to take the spike from the same amphora and used as a receptacle for the cremated bones, a ‘makeshift urn’. The fabric shows the pot was made on the island of Rhodes.¹⁶⁵ The date of the grave has been adjusted from *c.* A.D. 40–60 (the date in the excavation report) to *c.* A.D. 35–40/45.

King Harry Lane Grave 447 (Herts.): single burnt Dressel 20 body sherd placed upright in the grave pit, and regarded as possibly intrusive by the excavator.¹⁶⁶ The date of the grave has been adjusted from *c.* A.D. 40–60 (the date in the excavation report) to *c.* A.D. 35–40/45.

¹⁵⁸ *ibid.*

¹⁵⁹ Cool 2007, 343.

¹⁶⁰ Holmes and Frennd 1959; Hüssen 1983.

¹⁶¹ Stead and Rigby 1989, fig. 108, 302; Williams 1989, 116.

¹⁶² Stead and Rigby 1989, 326, fig. 128; Williams 1989, 116.

¹⁶³ Stead and Rigby 1989, 334, fig. 135; Williams 1989, 115–16.

¹⁶⁴ Stead and Rigby 1989, fig. 128, 342; Williams 1989, 115; Evans 1989.

¹⁶⁵ Stead and Rigby 1989, 366, fig. 164; Williams 1989, 116.

¹⁶⁶ Stead and Rigby 1989, 386, fig. 177; Williams 1989, 116.

Lexden Cemetery Grave 5 (Essex): the surviving grave goods are a Haltern 70 amphora, a Cam. 76a *terra rubra* cup which dates *c.* A.D. 25–50,¹⁶⁷ and a Cam. 161 flagon. There is no reason to think a rim with neck and handles from a stamped Dressel 1 amphora was part of the same grave.¹⁶⁸

Lexden Cemetery Grave 10 (Essex): a Beltrán I amphora was discovered when an electricity cable trench was cut in 1964 in Fitzwalter Road; P.J. Crummy tells me that further work by contractors at the same spot in 1973 brought to light a Haltern 45 flagon and a Skeleton Green Type 9 *terra nigra* platter. Neither the flagon nor the platter are types present at Sheepen, founded *c.* A.D. 5. At Skeleton Green this platter type was present *c.* 10 B.C.–A.D. 20.¹⁶⁹ The grave is only 20 m from the ditch of the Lexden tumulus and might be a later, satellite burial. A date of *c.* 10 B.C.–A.D. 5 seems reasonable.¹⁷⁰

Lexden Tumulus (Essex): there were the remains of 6 Dressel 1 and between 11 and 13 Dressel 2–4 amphoras; all of them had been smashed before burial. Petrological analysis shows the Dressel 2–4 are Italian.¹⁷¹ Comparison with Folly Lane and Stanway suggests the Lexden tumulus may in fact have been a funerary chamber, rather than the final resting place of the deceased.¹⁷²

Lindsell (Essex): one Dressel 1 amphora containing ‘burnt bone and ashes’; the neck, rim and one handle are missing.¹⁷³

Mount Bures (Essex): V.A. Rigby explained to me that the funeral can be dated *c.* A.D. 40–65 by the stamp of the potter Benios on one of the Gallo-Belgic *terra nigra* platters from the grave.¹⁷⁴ The six amphoras in the grave are difficult to evaluate. A Conquest period date makes it very unlikely that any of the amphoras were Dressel 1, despite what has been claimed.¹⁷⁵ There was one Dressel 2–4 whose neck had been removed before burial; a smashed amphora alongside may have been the same type. Identification of the four other identical amphoras is no easier. The careful sketches made by the Colchester artist, Josiah Parish,¹⁷⁶ indicate a *salazón* form from the coast of Baetica in Roman Spain. They lie somewhere between forms Dressel 9 and Dressel 12. Production of both had come to an end some decades before the Roman invasion,¹⁷⁷ and so here they were presumably old vessels when they were buried.

Snailwell (Cams.): one Haltern 70 and two Beltrán I amphoras.¹⁷⁸ Rigby¹⁷⁹ dates the die of the Gallo-Belgic potter Julios on a *terra nigra* cup from the grave *c.* A.D. 25–55; the affinities of one of the *terra rubra* cups with Cam. 76a allows the date of the funeral to be adjusted to *c.* A.D. 25–50.¹⁸⁰

Stanfordbury A (Beds.): there were six amphoras in the grave but only one survives, a miniature Dressel 14 *salazón* from Baetica and hence Beltrán IVa (Beltrán IVb is Lusitanian). The only amphora illustrated in the original report is also a *salazón* but a different type, possibly Dressel 7 or 10 but certainly Beltrán I (which includes Dressel forms 7–11). The six amphoras from the grave were

¹⁶⁷ Stead and Rigby 1989, 132.

¹⁶⁸ Hull 1932, 26, pl. 8 nos 1–2, 32, 35; Hawkes and Hull 1947, 14 no. 5; Peacock 1971, 184; Thompson 1982, 765.

¹⁶⁹ Rigby 1981, 170.

¹⁷⁰ Peacock 1971, 183; Hawkes and Crummy 1995, fig. 6.17, 130 for the position and number of the grave; Crummy 1974, 6 for a photograph of the flagon.

¹⁷¹ Laver 1927; Peacock 1971, 183; Foster 1986; Williams 1986.

¹⁷² Niblett 1999, 395–6; Crummy 2007, 426.

¹⁷³ Hull 1963, 155–6; Peacock 1971, 184.

¹⁷⁴ Smith 1852, 34–5; Stead and Rigby 1989, 129.

¹⁷⁵ *pace* Peacock 1971, 184.

¹⁷⁶ Smith 1852, 25–7.

¹⁷⁷ Martin-Kilcher 1994, 399 for Dressel 12; Baudoux 1996, 70 for Dressel 9.

¹⁷⁸ Lethbridge 1954, 35, pl. 4.

¹⁷⁹ Rigby 1981, 49.

¹⁸⁰ Rigby 1989, 132; Rigby 1999b, 218.

not the same but it seems reasonable to assume they were all *salazones*. Roman tile had been used to line the floor of the grave, so the funeral took place after A.D. 43. If the samian ware said to have been present can be trusted, the grave is Claudian. A date of A.D. 43–c. 55 can be suggested.¹⁸¹

Stansted Airport (Essex): one carrot-shaped amphora of form Cam. 189 from a rich grave dated c. A.D. 100–50, Cremation 25.¹⁸²

Stanway (Essex): a summary is given above in Table 1.¹⁸³

Verulamium Folly Lane (Herts.): sherds representing between four and six Dressel 2-4 amphoras were recovered from the central shaft with its funerary chamber and the adjacent cremation burial; petrological analysis established an Italian origin for the amphoras.¹⁸⁴ The c. A.D. 55 date has been challenged by Creighton,¹⁸⁵ but Rigby is explicit about the date of the fine wares: ‘after A.D. 50 and before A.D. 60’.¹⁸⁶

Welwyn A (Herts.): one Dressel 1 amphora. Late Iron Age grog-tempered ‘Belgic’ Aylesford-Swarling pottery is also present, suggesting the grave is later than c. 75 B.C.¹⁸⁷

Welwyn B (Herts.): five Dressel 1 amphoras. Late Iron Age grog-tempered ‘Belgic’ Aylesford-Swarling pottery is also present, suggesting the grave is later than c. 75 B.C.¹⁸⁸

Welwyn Garden City (Herts.): five Dressel 1 amphoras. Imported Central Gaulish table crockery — with no Gallo-Belgic wares — suggests a date for the funeral of c. 25–15 B.C., shortly before the introduction of Gallo-Belgic ware c. 15 B.C.¹⁸⁹

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¹⁸¹ Dryden 1845, 15–18; Smith 1912, 9–11; Stead 1967, 47, 50, 55; Peacock 1971, 182.

¹⁸² Havis and Brooks 2004, 216–27; Wallace 2004, 242.

¹⁸³ After Sealey 2007a.

¹⁸⁴ Niblett 1999; Williams 1999.

¹⁸⁵ Creighton 2001, 402.

¹⁸⁶ Rigby 1999a, 185.

¹⁸⁷ Smith 1912; Stead 1967, 8 for the amphora stamp; Peacock 1971, 185 for the petrology.

¹⁸⁸ Smith 1912; Stead 1967, 8 for a stamp on one of the amphoras; Peacock 1971, 185 for their petrology.

¹⁸⁹ Stead 1967; Peacock 1971, 185 for the petrology of the amphoras.

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