

A Late Roman 1 amphora recovered off Cawsand, Plymouth Sound

MARIA DUGGAN

with a contribution by STEVE HILL

This report presents a previously unpublished amphora that was discovered by a diver off Cawsand in Plymouth Sound in the early 1970s. Although brought to the attention of Plymouth City Museum at the time and recognised as a possible post-Roman import, the vessel was not included in subsequent catalogues of pottery imported to early medieval sites in Britain and Ireland. A full description of the vessel is presented to allow a close identification of type and date. Analysis of traces of residue on the interior of the fragment using photoacoustic spectroscopy suggests potential contents.

The presence of imported pottery of Mediterranean origin has been recognised at sites of early medieval date in Britain since C A Raleigh Radford's report of excavations at Tintagel, Cornwall (Radford 1956). Since then, increasing discoveries of this pottery in western Britain and Ireland have been catalogued and mapped, and models of importation and distribution have been developed (Thomas 1959; 1981; Fulford 1989; Campbell 2007). Most recently Ewan Campbell's major synthesis of imported pottery suggested a regular system of importation via Atlantic channels operating between c AD 475 and 550 (Campbell 2007). Despite the long history of this research, however, the overall quantities represented remain relatively modest, with fewer than 300 amphorae reported in Britain and Ireland (Campbell 2007). Amphorae, used to transport commodities such as wine or olive oil, are more common than tablewares, with the Late Roman 1 and Late Roman 2 amphorae of east Mediterranean origin being the most frequently identified at post-Roman sites in western Britain.

Background to the discovery

This upper part of a ceramic vessel was recovered by Mr Terry Bruce, a former police officer and sports diver of Plymouth, Devon in the early 1970s while diving off Cawsand in Plymouth Sound. The precise location has not been disclosed to the author. It was found buried upright with the rim of the neck showing above the seabed. After brushing the surrounding sand away Mr Bruce lifted the vessel by its handles. It was easily recovered and without any obvious resistance, but Mr Bruce notes that as he did not dig any further into the sand it is not certain that the lower portion of the vessel was not left beneath the seabed. The artefact appeared to be an isolated find, although Mr Bruce did not investigate the location beyond a brief examination of the surrounding sea-floor.

At the time of discovery the vessel was shown to the curator of the Plymouth City Museum and Art Gallery, Mr James Barber, who examined, drew and photographed the object; the location of the drawings and photographs is currently unknown. At this point it was tentatively identified as being an amphora of probable Mediterranean

origin and potentially dating from the fifth to the seventh century AD. Mr Barber commented on the amphora to Mr Bruce in a letter dated 17 August 1973: ‘Alas!, in spite of discussing it with many knowledgeable people, I am still unable to state categorically its age or origin. A Mediterranean place of manufacture seems, however, likely; and certain details – like the fluting of the body, and the way the handles are attached to the body – suggest a relationship to the amphorae of the Dark Ages (c 5th–7th Centuries AD).’

The amphora was returned to Mr Bruce and remains in his possession. In 2012 the amphora was brought to the attention of Mr Peter Holt as part of the SHIPS (Shipwrecks and History in Plymouth Sound) Project, a wide ranging study of the maritime history of Plymouth, and was displayed on the project website (www.promare.co.uk/ships; SHIPS Project 2012, amphora 12A10).

Although the vessel was recognised in 1973 as an amphora of possible Late Antique date, it was not published and was not included in the subsequent catalogues of Mediterranean pottery imported to early medieval Britain and Ireland (Thomas 1981; Campbell 2007). At the time of its discovery Charles Thomas was conducting research on these imports but it seems that he was made never made aware of this particular artefact.

The amphora

The surviving portion of the amphora comprises the rim, handles and upper body (Figs 1 and 3). There is some marine encrustation on the upper part of the neck and the underside of one handle, but overall the condition of the amphora is very good. The colour is variable; the exterior surface is light brown-grey with darker grey patches (varying between Munsell colours light grey, 5YR 7/1 and pale yellow, 5Y 8/2) but is noticeably more orange-brown toward the rim and paler on the body below the handles. This colour difference on the vessel and the marine growth suggests that the amphora was, at least for some time, buried upright (in the position in which it was discovered) with the upper portion partially exposed. It was not possible to make a fresh break, but the fabric has a hard, sandy feel and a buff colour (Munsell colour is grey, 5Y 5/1) and appears to contain moderate, fine, rounded black sand and angular white grains (possibly limestone) with some fine red rock fragments and rare sub-angular quartz. More detailed macroscopic examination of the fabric from a fresh break would enable a better identification of inclusions and might suggest a potential origin for the vessel. Nevertheless, the amphora can be clearly identified as the upper part of a Late Roman 1 amphora (LRA1), previously classified as Bii (Thomas 1959) in older British reports and elsewhere Class 44 (Peacock and Williams 1986).

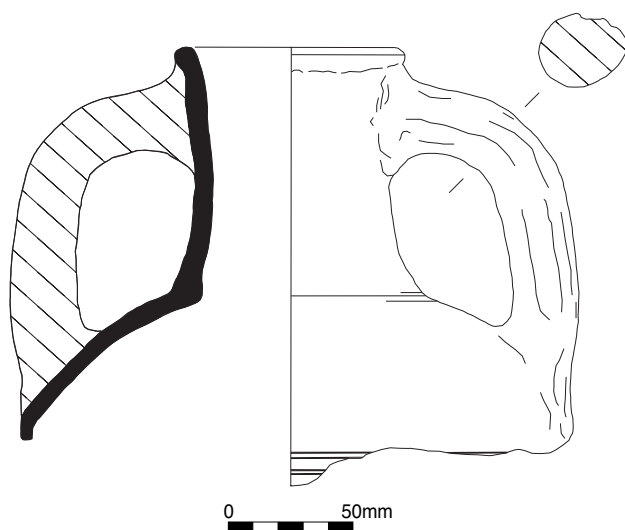


Fig 1 The Late Roman 1 amphora fragment from Plymouth Sound. (Drawing: Maria Duggan.)

The weight of the surviving portion is 1398g with a height of 154mm. The diameter of the body at its widest point is 228 mm while the diameter of the rim is 97mm (exterior) and 77mm (interior). The neck is 110mm high with an internal diameter of 101mm at the junction of the neck and body. At the shoulder the wall thickness is 10mm, but elsewhere is 6–7mm. The two grooved and slightly twisted handles, as typical for LRA1, measure up to 35mm wide by 29mm deep and join the neck high up just under the rim. There are traces of horizontal ribbing on the exterior of the body, starting just below the point where the handles are attached. The interior surface also has grooves typical of this type of amphora (Williams 2005, 159). There are no painted markings (*dipinti*) on the outside of the amphora and no graffiti (present on a number of the amphorae from Bantham: Reed *et al* 2011, 103–4).

Patches of a reddish-brown residue (Munsell colour 2.5YR 6/3) are concentrated on the lower portion of the interior walls on one side of the vessel. Chemical analysis of this residue was carried out at Plymouth University and is discussed below.

Late Roman 1 amphorae (LRA1)

The Late Roman 1 amphora (LRA1) was produced between the fourth and seventh centuries in the east Mediterranean. Production has been identified at a number of sites in the north-east Mediterranean, principally Cilicia / north Syria and Cyprus (Pieri 2005, 80–1; Williams 2005, 160–1). It is not thought to have been imported to Roman Britain and its presence at sites in western Britain is taken to represent post-Roman importation between the later fifth century and mid-sixth century (Campbell 2007). It is the most common east Mediterranean amphora imported to sites in the west Mediterranean, marking a general expansion of trade from the east by the later fifth century (Reynolds 2010). In general the LRA1 is cylindrical with a cylindrical neck, curved, rounded handles and a rounded base (University of Southampton 2005). The walls are relatively thin and there is ribbing or ridging across all or part of the body. However, there is considerable variation in these features as the form evolves over time. More recent publications on imported amphorae in Britain (specifically Campbell 2007) have followed Riley's classification of east

Mediterranean amphorae – that is, Late Roman Amphorae 1–7 – which is now in common use in the Mediterranean (Riley 1979). However, more detailed sub-divisions of these types have not been used, reflecting difficulties with the material recovered in Britain: typically sherds are small and abraded and often there are no diagnostic sherds such as rims or handles. The Cawsand amphora therefore presents an opportunity for a more specific typological identification.

The evolving typology of late Roman east Mediterranean amphorae was refined by Dominique Pieri's study of imports to France (Pieri 2005). Pieri divided the LRA1 into LRA1A and LRA1B (the latter of which was subdivided into LRA1Bi and LRA1Bii) and also identified small versions of the form (Pieri 2005). Unfortunately the bottom of the Cawsand vessel was not recovered and it is therefore not certain whether the vessel was pear-shaped, as with LRA1A, or more cylindrical, as with later versions. Nevertheless, the combination of twisted, grooved handles and a fairly wide mouth indicates a late fifth or early sixth century date (Pieri 2005; University of Southampton 2005). Pieri notes that the external diameter of the mouth of LRA1A is more constricted at 5–7cm while LRA1B is wider at 10–12.5cm (Pieri 2005, 70–5). Overall, the Cawsand amphora would seem to match more closely to Pieri's sub-type LRA1Bi.

Pieri dates the transition between LRA1A and LRA1B to the late fifth and early sixth centuries AD and LRA1B from the sixth to the mid-seventh century. A late fifth-century or earlier-sixth century date for this amphora would be a good fit for this amphora, which matches very well with the established date for imports to post-Roman Britain. The form also compares closely with an illustrated LRA1 from Bantham (Bidwell *et al* 2011, 95, fig 14: 1).

Potential contents

The issue of the commodities stored and transported within imported amphorae has been of considerable interest, although the topic has not been fully resolved. Wine and olive oil have typically been viewed as the most likely products imported to Britain (Campbell 2007, 24). Specific amphora types cannot be easily matched to specific products, as amphora forms were imitated and vessels could be reused, as suggested by the slate

amphora stoppers found at Tintagel (Barrowman *et al* 2007, 317–8). Both wine and oil have been suggested as potential contents for LRA1, although wine is increasingly seen as the more likely (Pieri 2005, 84–85; Bidwell *et al* 2011, 131). Chemical analyses of Late Roman amphorae have been conducted at Tintagel, although the results have not been very conclusive and it is not clear that any LRA1 sherds from the site have ever been tested (Hartgroves and Walker 1988, 26; Batey *et al* 1993, 61; Campbell 2007; Barrowman *et al* 2007, 256–7). A recent study of the contents of Late Roman amphorae imported to Italy concluded that of seven LRA1 analysed, all had resin coatings and five produced traces that could be related to wine, although indications of subsequent re-use were also identified (Pecci *et al* 2010). Resin or pitch coatings, intended to prevent wine seeping through the vessel walls, have been observed on LRA1 elsewhere in the Mediterranean (Williams 2005, 161).

Amphora residue sample 12A10

Steve Hill (School of Geography, Earth and Environmental Sciences, Plymouth University)

Analysis of the residue observed on the interior surface of the Cawsand amphora was carried out at Plymouth University using photoacoustic spectroscopy, a method based on the absorption of modulated infrared light leading to the local warming of the absorbing gas. The generated pressure waves are detected by a pressure detector (that is, a microphone) producing a signal proportional to the absorption (Hill 2013). Photoacoustic spectroscopy was used as a scanning technique to characterise the sample against library materials at Plymouth University, although it would require authenticated standards for a fully validated comparison. Mass spectrometry would have been more robust, but would have required more work and increased costs.

The uncarbonised parts appear to be a clear red resin under the microscope. The sample responded well with the photoacoustic cell and produced a good spectrum with some phenolic activity but interestingly no traces of triglycerides. The latter would be present in olive oil. There is also some unsaturation. Tartaric acid is the usual signature for wine as it occurs in all grapes; tartaric acid was identified in the sample. The best fit for the

spectroscopic information would therefore be wine. If the resin was hydrocarbon based, it would have absorbed some of the contents in transit and this might explain this result. Ascorbic acid residues can be found in white wine but not in red, although this might not necessarily survive in ancient white wine samples. The absence of ascorbic acid in the sample possibly suggests red wine.

The identification of wine as the likely product contained in this vessel matches well with our understanding of this type of amphora, although, as noted, this may not have been the original contents.

Discussion

No sites with imported early medieval pottery have been identified to date on the Rame Peninsula, on which Cawsand is located, but it is tempting to see this amphora as signalling imported material arriving in this area, or otherwise the shipping of goods across Plymouth Sound. The closest sites with early medieval imported pottery are Looe Island (Cornwall) to the west, and to the east, across Plymouth Sound and into Devon, the coastal sites of Mothecombe and Bantham (Fig 2).

Campbell (after Olson 1989) notes that the imported pottery at Looe Island might be linked to the presence of an early monastery, but overall argues against a direct link between imported pottery and early medieval religious settlements (Campbell 2007, 122). Mothecombe and Bantham in Devon have generally been regarded as seasonal trading points or ‘beach markets’. However, following recently published excavations at Bantham the site has now been interpreted as a possible port with a resident population (Reed *et al* 2011, 132). Excavations at Mothecombe revealed the foundations of two large, successive structures, suggesting sustained settlement associated with the consumption of imported commodities (Agate *et al* 2012).

As noted, the main types of amphorae imported to post-Roman Britain were LRA1 and LRA2 amphorae (the latter formerly known as Bi). The pattern of imports to western Britain has been identified as distinctive, especially in relation to contemporary sites in the western Mediterranean, due to the high proportion of LRA2 (Reynolds 2010, 106–7). LRA2 is the most commonly identified amphora at Tintagel (Barrowman *et al* 2007), although LRA1 is the most common overall

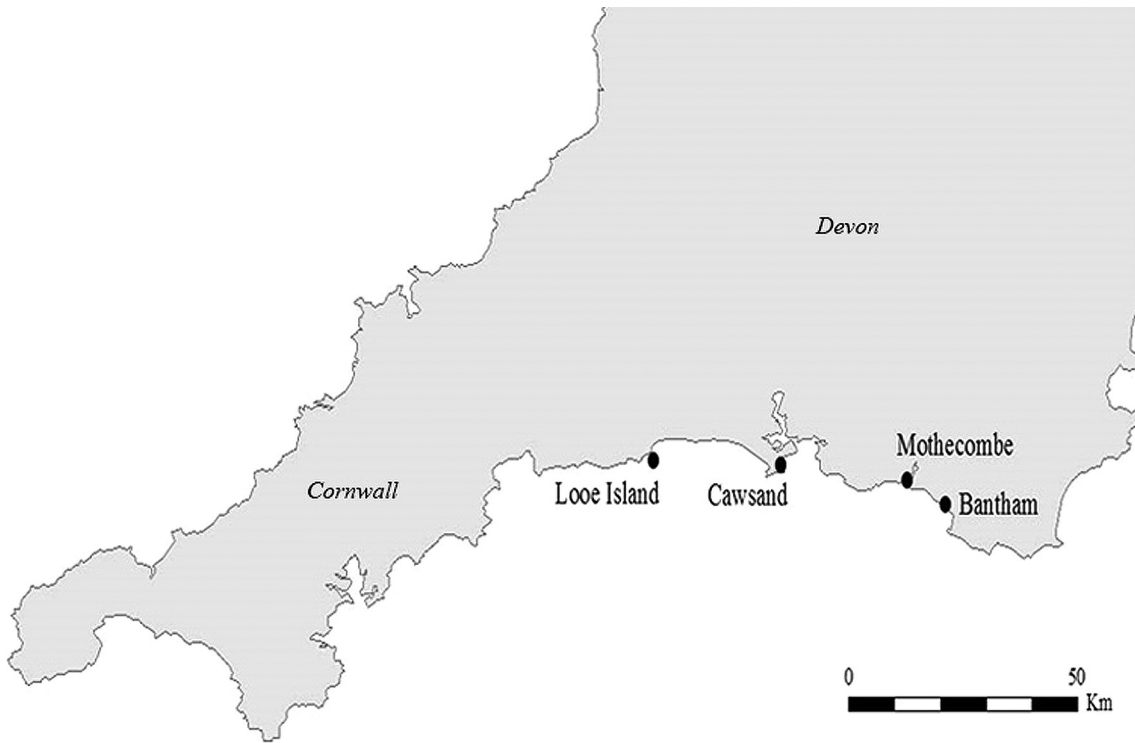


Fig 2 Selected sites with imported post-Roman ceramics in east Cornwall and Devon

for sites in Britain. LRA1 was the most common amphora recovered at High Peak (Rainbird *et al* 2013) and Mothecombe (Agate *et al* 2012) and provided by far the biggest proportion from Bantham (Bidwell *et al* 2011). As such, the discovery of a LRA1 of this date in waters close to the south Devon coast would certainly be exceptional in its discovery, but not unusual in its type. Further analysis might suggest specific patterns of importation heading east from Plymouth Sound. The single sherd of amphora recovered as a surface find at Looe Island was identified as LRA2 (Thomas 1981; Todd 1983). The recovery of forty tin ingots of possible early medieval date from the sea off Mothecombe provides a potential precedent for marine discoveries connected to these exchange systems (Fox 1995, 21–22).

Much remains to be understood about the specific mechanisms of shipments reaching south-west Britain. Although the ceramic vessels originate in the Mediterranean, it seems likely that amphorae were redistributed after their primary importation,

possibly linked to local political dynamics. In addition, recent findings suggest a more complex picture for the arrival of Mediterranean pottery than previously recognised. Rather than reflecting direct links to the east Mediterranean, this pottery might indicate that south-west Britain was tied into trade networks operating along the Atlantic seaboard. Recent research at the site of Vigo in north-west Spain has produced large quantities of imported Mediterranean pottery, of which LRA1 is the most common imported amphora from the mid-fifth century (Fernández Fernández 2010, 234–5).

Although the Cawsand amphora was not recovered from a firm archaeological context, it fits extremely well with the chronology and pattern of material recovered from local sites with early medieval imported pottery. As such, it seems reasonable to consider the vessel as a potentially genuine post-Roman import, rather than an ‘antiquarian’ object that ended up in a marine context. This cannot be proven and the specific circumstances of its deposition remain unclear, but



Fig 3 The amphora.
(Photograph: Maria Duggan.)

it does seem reasonable to consider it as potentially another example of east Mediterranean pottery imported to early medieval Britain.

Acknowledgements

With grateful thanks to Peter Holt, Project Manager for the SHIPS Project, for all his assistance, Fiona Pitt, curator at Plymouth City Museum, Professor Steve Hill of Plymouth University, Professor Sam Turner, Dr Mark Jackson and Dr James Gerrard of Newcastle University, and to the original finder, Terry Bruce, for his help and hospitality.

References

- Agate, A, Duggan, M, Roskams, S, and Turner, S, 2012. Early medieval settlement at Mothecombe, Devon: the interaction of local, regional and long-distance dynamics, *Arch Jnl*, **169**, 343–94
- Barrowman, R C, Batey, C E, and Morris, C D, 2007. *Excavations at Tintagel Castle, Cornwall, 1990–1999*, London
- Batey, C, Sharpe, A, and Thorpe, C, 1993. Tintagel Castle: archaeological investigation of the Steps area 1989 and 1990, *Cornish Archaeol*, **32**, 47–66
- Bidwell, P, Croom, A T, and McBride, R, 2011. The pottery assemblage, in Reed *et al* 2011, 93–117
- Campbell, E, 2007. *Continental and Mediterranean imports to Atlantic Britain and Ireland, AD 400–800*, CBA Res Repts, **157**, York
- Fernández Fernández, A, 2010. Rías Baixas and Vigo (Vicus Eleni), in C Carreras, and R Morais, eds, *The western Roman Atlantic façade. A study of the economy and trade in the Mar Exterior from the Republic to the Principate*, Brit Arch Repts, Int Ser, **2162**, Oxford, 229–37
- Fulford, M G, 1989. Byzantium and Britain: a Mediterranean perspective on post-Roman Mediterranean imports in Western Britain and Ireland, *Med Arch*, **33**, 1–6
- Fox, A, 1995. Tin ingots from Bigbury Bay, south Devon, *Proc Devon Arch Soc*, **53**, 11–23
- Hartgroves, S, and Walker, R, 1988. Excavations in the Lower Ward, Tintagel Castle, 1986, *Cornish Stud*, **16**, 9–30
- Hill, S, 2013. Amphora residue sample 12A10 (unpublished report for SHIPS project)
- Olson, L, 1989. *Early monasteries in Cornwall*, Woodbridge
- Peacock, D P S, and Williams, D F, 1986. *Amphorae and the Roman economy: an introductory guide*, London
- Pecci, A, Salvini, L, and Cantini, F, 2010. Residue analysis of some Late Roman amphora coming from the excavations in the historical centre of Florence, in S Menchelli, S Santoro, M Pasquinucci and G Guiducci, eds, *LRCW3 Late Roman coarse wares, cooking wares and amphorae in the Mediterranean. Archaeology and archaeometry. Comparison between western and eastern Mediterranean. Volume I*, Brit Arch Repts, Int Ser, **2185**, Oxford, 363–367
- Pieri, D, 2005. *Le commerce du vin oriental à l'Époque Byzantine (Ve–VIIe siècles): le témoignage des amphores en Gaule*, Beyrouth
- Radford, C A R, 1956. Imported pottery found at Tintagel, Cornwall, in D Harden, ed, *Dark Age Britain. Studies presented to E T Leeds*, London, 59–70

A LATE ROMAN 1 AMPHORA RECOVERED OFF CAWSAND, PLYMOUTH SOUND

- Rainbird, P, Hughes, S, Allen, M J, Duggan, M, Payne, N, Quinnell, H, Simmons, S, and Taylor, R, 2013. Excavations at the Early Neolithic and post-Roman site of High Peak Camp, Otterton, east Devon, *Proc Devon Arch Soc*, **71**, 25–53
- Reed, S, Bidwell, P and Allan, J, 2011. Excavation at Bantham, South Devon, and post-Roman trade in south-west England, *Med Arch*, **55**, 82–138
- Reynolds, P, 2010. *Hispania and the Roman Mediterranean, AD 100–700: ceramics and trade*, London
- Riley, J A, 1979. Coarse pottery, in J A Lloyd, ed, *Excavations at Sidi Khrebish, Benghazi (Berenice). Volume 2: Amphoras and plain wares*, Supplements to Libya Antiqua, Tripoli, 112–236
- Thomas, A C, 1959. Imported pottery in Dark Age western Britain, *Med Arch*, **3**, 89–111
- Thomas, A C, 1981. *A provisional list of imported pottery in post-Roman western Britain and Ireland*, Inst. Cornish Studies Spec Repts, **7**, Redruth
- Todd, M, 1983. Lammana, *Cornish Archaeol*, **22**, 122–3
- University of Southampton, 2005. Roman amphorae: a digital resource, Archaeology Data Service, York. Online at http://archaeologydataservice.ac.uk/archives/view/amphora_ahrb_2005/index.cfm?CFID=573996&CFTOKEN=39545028 [accessed: 20.12.2012]. (doi:10.5284/1000021)
- Williams, D, 2005. Late Roman amphora 1: a study of diversification, in M B Briese and L E Vaag, eds, *Trade relations in the eastern Mediterranean from the Late Hellenistic period to Late Antiquity: the ceramic evidence*, Odense, 157–68

