

# Roman Glassmakers of Quarley

**Recycling  
glass is not  
new  
technology**

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**O**n April 25th 2012, there was a well attended BACAS excursion to the Roman Glassmakers' workshops at Quarley near Andover. The Roman Glassmakers, Mark Taylor and David Hill, use modern technology to create glass vessels from both historical periods and fictional worlds, and from their experimental archaeology they have also made a major contribution to the understanding of Roman glassworking.

Ask an archaeologist what they know about Roman glass and the usual response is 'not a lot', usually because not a great deal of glass is found during excavations of Romano-British sites. Small fragments of glass vessels may be recovered, perhaps along with window glass, but anything complete is usually the reserve of burials, where glass vessels were either reused as cremation urns or included as grave goods.

The earliest glass in Britain was in the form of imported beads or occasionally bangles found in Bronze Age contexts, followed by both imported and manufactured beads during the Iron Age. There is limited evidence of glass vessels in use in Britain pre-AD43. Where found, these have consisted of mould blown imports from the Mediterranean, recovered from both settlement and burial sites. Post conquest, there is evidence of high quality glass tableware being imported into Britain from Italy and southern Gaul, with a change in the later first Century to imports from the Rhineland (Price and Cottam, 1998).

It was in the second half of the first Century that glass vessels started to be produced in Roman Britain. Evidence of Roman glassworking (the melting of glass and blowing of vessels) comes in the categories of: furnaces, glass melting ceramic crucibles and glass waste. In Britain, evidence of Roman glassworking has been confirmed from excavations at twenty-two Roman towns or military bases, plus one rural site near Frome in Somerset (the author's project) and the evidence has ranged from fragments of crucible, to quantities of glass waste, to remains of furnaces at Mancetter and Leicester (Wilson and Price, 2002).

So why is glass so uncommon at excavations of Roman sites? The rarity of glass is not due to its fragility but due to its ability to be recycled. Broken glass, known as cullet, appears to have been a valuable commodity in Roman Britain, and elsewhere in the empire, as glass could not be readily manufactured from the raw materials required: silica (sand), soda and calcium (lime). Only one glassworking site, at Coppergate in York, which dates to the late second Century has evidence of potential use of the raw materials.

Elsewhere at glassworking sites, the collected cullet was deposited into a tank furnace (early Roman period) or put into glass-melting crucibles and heated in a small circular furnace (later Roman period) to temperatures of 1100-1300°C in order for the glass to liquidise to a point that it could be blown and worked into a

**Figure 1**  
**A replica of a Roman oil lamp found in Slovenia, depicting glassworking in progress.**



vessel. An annealing oven, operated at a lower temperature would have been situated close by in order for the vessels to cool slowly and keep their form (Allen, 1998).

In addition to the cullet, wasters and glass waste from the blowing process were also added to the crucibles and melted. The recycling of broken vessels and the resulting waste from the glassworking process has been described by glass experts as environmentally friendly, but archaeologically hostile, as this recycling removes evidence from the archaeological record. It is almost impossible to confirm at a glassworking site, which fragments are cullet and which relate to the vessels being produced.

Crucibles, which were used in the later Roman period, appear to have been constructed for the purpose of melting glass, yet are rarely a recognisable pottery form and usually are coarseware vessels. Evidence from York has indicated that the local Ebor ware was used as crucibles and a third or fourth Century Black-burnished ware bowl was used in Worcester (Wilson and Price, 2002). To the untrained eye, used crucible fragments, with their thin coating of melted glass, can look like sherds of post-Medieval glazed pottery.

The greatest quantity of evidence comes from London, where there are at least twenty-one known glassworking sites. During excavations at Basinghall Street between 2002 and 2006, Museum of London Archaeology discovered one of the largest collections of glass waste ever found. The excavated site was part of a glassmaker's workshop dating to the second Century where over 10,000 fragments of glass and glass waste, weighing 70kg were recovered. However, no furnace was found (Shepherd and Wardle, 2009).

The tools for glassworking – the blowing iron used to gather and inflate the glass, the pontil iron used to hold the vessel at the bottom while decoration was applied – have yet to be found at a Romano-British site and, given that they would have been made from iron, and other tools relating to production from wood, they are likely to either have been indistinguishable or have not survived. There are few surviving representations of Roman glassworking and furnaces, the most notable being a terracotta winged figure from Egypt dating from the first to second Century AD and the same depiction of glassworking in progress on pottery oil lamps found in Croatia, Italy and Slovenia (see Figure 1).

**Figure 2**  
**Glassworking in progress.**



So how have the Roman Glassmakers improved our knowledge of Roman glassworking? There are quite clearly gaps in knowledge in terms of furnace construction, the tools used in the glass working process and the technical aspects of melting glass using a wood fired furnace.

In 2005, as part of the Roman Furnace project, Mark and David constructed and ran a tank furnace and annealing oven over a period of several weeks, experimenting with glass melting and working practices. The furnace and oven were then partially dismantled and observed as they deteriorated, before finally being dismantled.

In 2006 the project continued with the construction of a circular furnace with a separate annealing oven known as a *lehr*, built from donated *tegula* from excavated Roman sites. A variety of replica Roman vessels were blown over a period of weeks, allowing experimentation with furnace temperatures, fuel use and techniques. During the winter of 2007, the furnace and *lehr* were uncovered and left exposed to the elements. The aim of this was to let the structures completely disintegrate to enable this progress to be monitored, and archaeologists to benefit by comparing the furnace structure with potential furnace material from excavations.



**Figure 3a**  
The furnace in use in 2006 (Shepherd and Wardle, 2009).

The BACAS excursion incorporated both a demonstration by Mark and David of glassblowing (see Figure 2) and a presentation on the Roman Furnace project, with a short walk to the site of the furnace and *lehr*. By the time of BACAS' visit in 2012 the outer layer of the furnace had completely weathered away (see Figures 3a/b).

The experimental archaeological Roman Furnace project, involving both the construction of a furnace based on excavation plans and blowing replica vessels has increased the archaeological knowledge of this comparatively little-known industry and inspired other glassworking experimental archaeology activities.



**Figure 3b**  
The weathered furnace at the time of the BACAS visit in 2012 (courtesy of Sophie Hawke).

#### References:

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[www.romanglassmakers.co.uk](http://www.romanglassmakers.co.uk) The Roman Glassmakers' website