(425)

Ancient Monuments Laboratory
Report 67/90

SOME CRUCIBLE FRAGMENTS FROM ALCESTER, WARWICKSHIRE.

Justine Bayley

Ancient Monuments Laboratory Report 67/90

SOME CRUCIBLE FRAGMENTS FROM ALCESTER, WARWICKSHIRE.

Justine Bayley

Summary

Six fragments from at least two types of Roman crucibles were examined and the metal-rich deposits on them analysed qualitatively by XRF. All were from vessels that had been used to melt copper alloys.

Author's address :-

Justine Bayley

Ancient Monuments Laboratory
English Heritage
23 Savile Row
London
W1X 2HE

SOME CRUCIBLE FRAGMENTS FROM ALCESTER, WARWICKSHIRE

A total of six crucible fragments were examined and their surfaces analysed qualitatively by energy dispersive X-ray fluorescence (XRF). The metals detected are listed in the Table (in order of XRF signal strength; those in brackets only gave weak signals). The fragments all showed some signs of vitrification, either of the crucible itself or of the added extra outer layer (EOL) of less refractory clay. The vitrification did not penetrate deeply into the crucibles, showing them to be well suited to their function.

At least two different types of crucible are represented by the sherds. One is a beaker form with a pedestal base which is common throughout Roman Britain (Bayley 1988, Fig 5,4); dated examples belong mainly to the late 1st or 2nd century and include those from Colchester (Bayley 1984A) and Baldock (Stead and Rigby 1986, Fig 63, 410). An added extra outer layer of less refractory clay is a common feature of this type of crucible and could be used as evidence to suggest that the three body sherds are also likely to be from crucibles of the same general form as the base (SL 30), though there is no suggestion that they are parts of the same vessel. SL 30 is from a late 4th century pit, and has a rather narrower base relative to its overall size than is common for crucibles of this type. It could thus be seen as a transitional form, falling between the broad-base beakers and the conical-based crucibles (see below) which might explain its late date, though it could of course be residual in the context in which it was found. The body sherds are either unstratified or unphased.

The second base (ST 5) is conical (cf Bayley 1988, Fig 5,5) which is normally a later Roman crucible form though the example here is from an unphased context. The rim (P 3), which is from a mid 4th century context, may be from another vessel of this form though its internal rim diameter (40-50 mm) is considerably less than the maximum diameter of the vessel which is unusual in conical-based crucibles. Published examples include those from Gestingthorpe (Draper 1985, Fig 38, 434-5) and Sewingshields (Bayley 1984B, Fig 20, 1).

Table: Analytical results

site reference		sherd type	metals detected
A I 4E. 70.	P3	rim	Zn (Cu Pb)
A X 5. 107.	ST5	base	Cu Zn (Pb)
ABA L6 12.	P76	body + EOL	Zn Cu (Pb)
B III 4. 119.	SL28/P16	body + EOL	Zn Cu
B IV 1. 68.	SL27	body + EOL	Zn Cu Pb Sn
G I 24A. 111.	SL30	base + EOL	Cu Pb Sn (Zn)

Key: Cu = copper, Zn = zinc, Pb = lead, Sn = tin

Because each metal has a different pattern of chemical behaviour, the amounts of them that remain on the crucibles are not in the same proportions as in the metal that was being melted. The relative amounts are further altered by corrosion

during burial and, on top of all this, the XRF signals detected are not in direct proportion to the amount of each metal present. It can be seen then that the analytical results, as presented in the Table, do not give a good indication of the nature of the alloys that were being melted. They can however be interpreted in the light of experience and this leads to the suggestion that two of the beaker form crucibles (SL 27 & 30) were used to melt bronzes (copper-tin alloys) or gunmetals (copper-tin-zinc alloys), with or without added lead. The analytical results for body sherd P 76 only show it comes from a crucible that has been used to melt copper alloys of some sort. The other three sherds (SL 28, P 3 & ST 5) are from crucibles that may possibly have been used to melt brasses (copper-zinc alloys).

References

Bayley, J (1984A) Some technological finds from Lion Walk and Balkerne Lane. In: P Crummy, Excavations at Lion Walk, Balkerne Lane, and Middleborough, Colchester, England. Colchester Archaeological Report 3, 214-5.

Bayley, J (1984B) Technological finds from Sewingshields. In: D Haigh and M J D Savage, Sewingshields. Arch Aeliana 5th ser, 12, 33-147.

Bayley, J (1988) Non-ferrous metalworking - continuity and change. In: E A Slater and J O Tate (eds), Science and Archaeology, Glasgow 1987. BAR Brit Ser 196, 193-208.

Draper, J (1985) Excavations by Mr H P Cooper on the Roman site at Hill Farm, Gestingthorpe, Essex. EAA 25.

Stead, I M and Rigby, V (1986) Baldock: the excavation of a Roman and pre-Roman settlement, 1968-72. Britannia Monograph no 7.