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Summary

Fifteen Roman figurines were analysed by XRF and shown to be of a wide variety of alloys. The results are compared with those for similar objects from France.

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Eleven pieces from the British Museum collections and a further four objects which all came from excavations at Uley were analysed qualitatively by energy dispersive X-ray fluorescence (XRF). The results are presented in the Table below:

Table: Analytical results

SF No	Object	Composition
36	Jupiter bust	brass
143	wing from statuette	leaded bronze
260	Mercury bucket mount	leaded bronze/gunmetal
395	leg fragment	leaded gunmetal
407	face mask	brass with lead-rich backing
709	Sol bust	leaded bronze
933	wing	bronze
1417	cockerel	leaded bronze/gunmetal
1427	leg fragment	gunmetal
1567	Mercury statuette (naked)	leaded gunmetal
1749	Mercury statuette (cloaked)	copper/bronze
1949	goat	leaded bronze
5542	Mercury statuette (booted)	brass
7248	leg from statuette	gunmetal
8066	putto	leaded gunmetal

The alloy names have been applied as described in the report on the bracelets and rings (AML Report 65/87). The analytical results show that a wide range of copper alloys were used for the figurines found at Uley and that no specific alloy seems to be associated with a particular type of figure. For example, the three Mercury statuettes are made of quite different alloys which would have had different colours in an unpatinated state. Most of the objects appear to be cast though SF 407 is definitely wrought and SF 933 may be wrought. These two pieces are, as expected, unleaded.

Craddock (1978) analysed larger statues but found only two objects with over 1% zinc and concluded that "... zinc was never deliberately added to ... statuary bronze". Indeed, Oddy and Craddock (1986) say that Roman statues were normally leaded bronzes with 15-30% lead. Of the items from Uley, only SF 143, 709 and 1417 are likely to have such high lead contents.

More directly comparable results to those presented here are contained in the work of Picon, Condamin and Boucher (1966-73) and Beck et al (1985) who both analysed large numbers of Roman statuettes now in museums in France. Both showed that a wide range of copper alloys were used for statuettes, but with no one alloy being preferred for any particular deity.

Condamin and Boucher (1973) summarise their previous

work and identify geographical variations in the numbers of statuettes which contain over 2% zinc. These objects would have compositions described above as leaded or unleaded brass, gunmetal or bronze/gunmetal. The proportion varies from only 14% for the finds in the museum at Vienne to 33% at Autun and 53% in the Rhineland (after Jitta et al 1967-9). If one accepts that the museum collections reflect local finds and (possibly) local manufacture, then there are regional variations in the alloys used for statuettes. The work of Beck et al seems to bear this out as they too detected regional variations in preferred alloys (1985, Table 5). They found 50% of all statuettes were leaded bronzes and a further 36% leaded gunmetals with an overall figure of 41% containing significant amounts of zinc (ie, brasses or gunmetals with or without lead).

The sample from Uley is small but the proportions appear rather different to those of the French analyses. Only 8 of the 15 objects are leaded bronzes or gunmetals (cf 86% from Beck et al (1985)) and 11 of the 15 contain significant amounts of zinc, about double the average French figure. Without more analyses of British finds for comparison it is difficult to know how to interpret these differences. They could be a reflection of British taste, or of the fact that Uley was a temple site, or just a chance variation, a product of the small number of objects analysed. The availability of different metals might also be a factor.

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