Report no. 3711

A socketed axe from Beeston Castle. (AM

This, the second axe, was excavated during a controlled excavation together with some of the soil (AM 810416/7) surrounding it. A small piece was removed from the cutting edge. It was polished and etched in the usual way. The surfaces were badly corroded and the extreme cutting edge had been dissolved away leaving a rounded edge. The thickness of intergranular corrosion in this area was 250 μm whereas on the sides it varied from 120-150 μm. The extent of the corrosion in these areas is shown in the Figure.

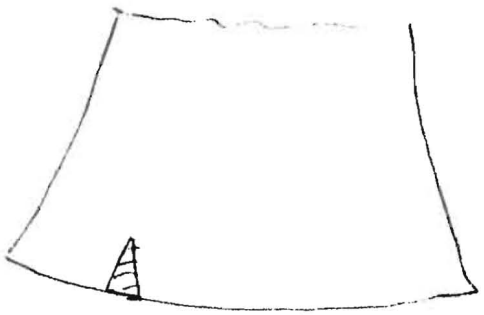
The part of the section furthest away from the edges has a hardness of 104 HV1 while that near the cutting edge has been hardened to 143 HV1. The core consists of a homogenised alpha copper-base solid solution nicely twinned with no residual delta. It has a very fine grain and deformation markings provide evidence of cold work. There are some very fine inclusions which are blue/black in the unetched state.

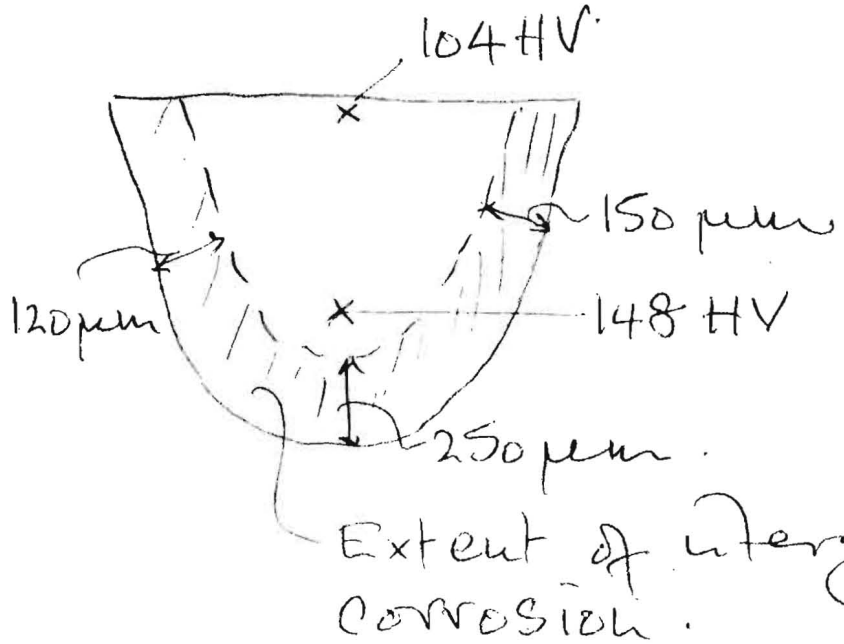
The soil in general has been examined by R. Macphail. The pH was in the range 6.4-7.2 near the medieval gate house, but that of the soil in contact with the axe was found to be 4.2. (Further samples from the BA site will be examined by R.M.)

This is a homogenised tin bronze with less than 13% tin and little, if any, lead. It has been corroded in a very acid soil causing intense penetration to the order of 140 μm on the sides and rather more on the cutting edge. The metal in this region had been work hardened.

R.F. Tylecote.

June 29th 1981.
Mount 429.





Beeston Castle. 1981

Socketed axe. No 2.

RF.

23/7/81