AML Report 3608
Copy sent to Excavator

THE SLAGS FROM BATTLE ABBEY, SUSSEX

Justine Bayley Ancient Monuments Lab

The total weight of slag (AML 811655) submitted for examination was only 2-3 kg. A wide variety of origins were identified (see tables below). A few pieces were analysed qualitatively by x-ray fluorescence (XRF) but the majority were only examined as hard specimens.

There is slight evidence for the melting of both lead and copper alloys and for iron smithing. The majority of the slag was however produced in iron smelting operations. Here two different processes are evidenced as there are quantities of both iron rich tap slag and low-iron blast furnace slag. The latter represents an improved technology as a higher proportion of the iron in the ore was recovered as metal but the resulting slag has a higher free-running temperature and so the process requires higher furnace temperatures which were not obtainable until the post-medieval period. The relatively small quantities of smelting slag found could be interpreted as imports to the site, perhaps intended as hardcore or road metalling. Far larger amounts of slag as well as furnaces and hearths would be expected if the smelting was an on-site industry.

The remainder of the slags are accidentally produced; they may be associated with eg the destruction of buildings.

BAT 78

R/I	207	Smithing hearth bottom; plano-convex bun, diameter c.9cm. This was the slag that collected in the bottom of a hearth where iron was being smithed.
R/II	206	Tap slag. Slag run out of a smelting furnace.
R/II	213	Hearth lining (ie fired clay, vitrified on one surface) with a blob of copper alloy in its surface, suggesting the hearth was used for melting the metal. Copper, lead, zinc and ?tin were detected by XRF.

BAT 79

E/F	306	Fuel ash slag. Formed by the action of ash on silica-rich material (eg clay) at high temperatures. It is often, though not invariable, formed in metalworking hearths.
J	515	Fuel ash slag with traces of copper alloy. Copper, zinc, tin and lead detected by XRF.
M	337	Glass containing lead both dissolved in the glass and as discrete blobs (confirmed by XRF). Probably formed when a leaded window was destroyed in a fire. Similar material has been found in destruction layers at Eltham Palace.

N	412	Blast furnace slag (which must be post-medieval and was tapped out of the blast furnace) and fired clay or stone with accidental fuel ash slag "glaze".
N	415	Blast furnace slag, coal and fired clay with a fuel ash slag "glaze".
RIII	230	A piece of scrap lead and a lump of mixed lead and lead oxides, probably resulting from lead melting on a large scale.
RIII	264	Tap slag.
RVI	201	Tap slag.

BAT 80

C H Baulk

E/J	302	Blast furnace slag.
L	376	Blast furnace slag and tap slag.
RI	636	Ironstone pebble (natural).
RI	656	Tap slag.
RI	859	Fuel ash slag "glaze" on daub. This most probably formed when the daubed structure burnt down.
RII	807	Tap slag.

RII	811	Tap slag.
RII	817	Tap slag and fuel ash slag.
RII	818	Tap slag.
RIII	230	Tap slag.
RIII	264	Fuel ash slag.
RIV	640	Tap slag.
RVF	367	Fuel ash slag "glaze" on stone.
RVI	241	Tap slag.
RVI	269	Fuel ash slag.
RVI	641	Tap slag.
RVI	649	Fuel and ash slag "glaze" on fired clay.