ANCIENT MONUMENTS LABORATORY

REPORT

3735

SERIES/No CONSULTANT

AUTHOR R F Tylecote 9 April 1977

TITLE A Note on the Mucking slag; (+ MS notes by Leo Biek

A note on Mucking slag.

R. F. Tylecote.
(this note by IB)

The Mucking furnace bottoms or Schlackenklotze belong to a fairly common type of furnace in North Europe dated to between the 1st century and the 8th century AD. It is known from Poland, Czechoslovakia, North Germany, North France, Sweden and Denmark. It is now referred to as the slag-pit type. The first example of such a product in Britain is that from Aylsham now residing in the Norwich Museum. A similar type of furnace is known from Africa north of the equator, dated to about 400 BC, and it would seem that it was in general use over a wide area of the iron-making world before the Roman period, antedating the slag-tapping type.

A pit is first dug into the ground immediately below where the furnace shaft is going to be built. This may be in sand (Denmark) or decomposed granite (Taruma-Nigeria). It may have a depth of 0.5 m (Fig. 1) or be even greater as found in Denmark and modelled by Thomsen (Fig. 2).

Although some experiments have been made on this type, no experimenter has yet been able to get it to work properly. What is clear from the section of the Mucking material is that the slag entered the pit in one go and that the block is not the result of many successive "tappings" of slag on top of one another. We find that the initial run of slag has solidified fairly rapidly in the large piece over a good deal of charcoal; the later portion contains more; we do not know whether this has come down with the slag or has been in the pit originally. Most sites, including those in Nigeria, show some signs of previous pit filling (cereal stalks etc.) and it is very probable, and confirmed by recent ethnographic evidence, that the pit is full of partly carburised fuel before the slag is allowed in. It would in fact be very difficult to keep it out as one would need a fire resistant false bottom to the furnace and there is no evidence for this.

[Some tentatively identified as Oak Quercus sp. at AML Lab.]

Therefore, it is suggested that the pit is full of charcoal etc. when smelting starts, and as the air from the tuyeres goes up and not down, it is not burnt but remains capable of holding the slag and bloom up until a critical moment is reached. Presumably this is when the slag level reaches the tuyeres.

Then either the "false" bottom is disturbed or air is admitted via a second tuyere to the pit, burning out the charcoal and allowing no slag to run into the space arising. Perhaps both techniques are necessary, ~~and~~ burning out the charcoal first, followed by disturbing the "false" bottom. There is some evidence for the second tuyere in the remains of the Polish furnaces.

Once the pit was filled no effort was made to clear it but the shaft, if still whole, was moved over a new pit next to the old one, so that Polish sites show fields of slag blocks in situ.

Mucking Wetther/"bear" was found in situ, but they are unlikely to have moved far from their pits.

The smaller 'bear' is almost certainly Saxon in date — found in a pit with grass-tempered pottery; the larger was unstratified. The "pudding stone" is not that - but is described by Dr F.W Anderson as a ferruginous concretionary nodule, "natural", geologically recent, "loosely" formed from heterogeneous inclusions (ie., some rounded, some sharp; some patinated, other is not; some "burnt", some 'intrusive; etc) & set in an "iron-pan"-like matrix. Could have been collected as possible "iron ore" but probably of doubtful value...?

12 April 1977

Rejected

HS.