GeoArch

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Assessment of archaeometallurgical residues from Box House, Box, Wilts.

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Abstract

The small size of this assemblage prevents detailed interpretation. The presence of a possible consolidated bloom/billet fragment and a hearth slag that might derive either from a large hearth or small furnace, hint at the possibility of iron production at the site. Box does not have local iron ore resources, but many Roman sites in the Cotswold show evidence for iron production, possibly as a means of utilising estates' woodland resources to generate income or possibly because of on-site production of iron required for building projects (or, indeed, both).

This assemblage has very limited potential for further work and none is recommended on the slag, although confirmation of the nature of the iron block would be useful.

Contents

Abstract 1

Methods 1

Results
- Description of Residues .....
  - Iron 1
  - Iron slag 1
  - Coke 1
- Distribution of residues 2

Interpretation 2

Discussion 2

Further work 2

Table 1: 3

Methods

All materials were examined visually, with a low-powered binocular microscope where required. As an evaluation, the materials were not subjected to any high-magnification optical inspection, not to any form of instrumental analysis. The identifications of materials in this report are therefore necessarily limited and must be regarded as provisional.

The examined materials are listed in Table 1.

This project was commissioned by Nick Corcos, of Avon Archaeology Limited.

Results

Description of residues

The submitted materials amounted to an overall total of approximately 26kg.

Iron

The collection includes a single large lump of iron, measuring approximately 70x60x50mm. The piece has a weathered surface, precluding interpretation of its original shape. If the piece was as irregular as appears from its present form, then it may be a block of consolidated iron bloom or billet. Alternatively the piece might be an eroded block of post-medieval cast iron, either from a damaged artefact or as foundry waste. X-radiography of the piece might clarify its nature.

Iron slag

A single large block (overall dimensions 130x65x65mm) deriving from interaction of fluid iron lag with hearth/furnace wall or floor. It is possible to interpret the piece as a fractured smithing hearth cake (SHC), with a vertical fracture passing through glassy slag that has weathered to a gold-coloured iridescent sheen, but it is more likely that this glassy slag was originally on the upper surface of the slag cake. In this alternative orientation, the piece would be from the burr region of a large slag cake (the burr is a zone below the air input into a hearth or furnace, where the hot-zone of the hearth/furnace impinges on the wall to produce a very dense slag with a bulbous surface where the dense slag has eroded into the wall). Burrs may be formed, under appropriate conditions, in both smelting furnace and smithing hearths. In this case the large width (130mm) of the burr suggests either a modest smelting furnace or a large smithing hearth.

Coke

A single unstratified fragment of coke was recovered.

Distribution of residues

The archaeometallurgical residues were recovered during a small evaluation from contexts ((206) and (207)) of uncertain age, with Roman CBM (206) and medieval pottery (207).

A small fragment of coke was unstratified.

Interpretation

The small size of this assemblage prevents detailed interpretation. The presence of a possible of a possible bloom/billet fragment and a hearth slag that might derive from a large hearth or small furnace, hint at the possibility of iron production at the site. Box does not have iron ore resources, but many Roman Cotswold sites show evidence for iron production, possibly as a means of utilising estates' woodland resources to generate income or possibly because of on-site production of iron required for building projects (or, indeed, both). However, it should be noted that context producing the large slag fragment also produced medieval pottery and very large smithing slag cakes are not uncommon on medieval sites.

Although Roman sites commonly employed coal as a fuel (both domestically and as a fuel for blacksmithing), a single fragment of unstratified coke might equally be derived from a more modern hearth, or from steam-powered agricultural machinery.

Recommendation

Little additional information could be gained by detailed analysis of the iron slag.

The iron fragment is, however, interesting and should be investigated further by X-radiography. If this suggests it is of cast iron, then producing a fresh fracture to confirm would be useful, as cast iron is very likely (almost certain) to be of post-medieval age.

Table 1: summary catalogue.

context	weight	number	notes
206	400	1	irregular lump of iron, approximately 70x60x50mm
207	562	1	fragment (now broken in two) of irregular weathered SHC. Just possibly a double layered SHC with odd fracture (large rounded voids with iridescent, gold coloured, surface), but more likely, to be interpreted in an orientation so that the 'fracture' is actually the top (with decomposed glass) and it is a double-layered burr. If so the latter, then it is more likely to be from a smelting furnace, because the burr is so wide (130mm), although not impossibly from a large hearth. Overall 130x65x65mm.
u/s TR7	1	1	coke

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