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Assessment of archaeometallurgical residues from Ipswich, (ESF25191/C-17)

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Assessment of archaeometallurgical residues from near Ipswich (ESF25191-c-17)

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Abstract

The examined assemblage was extremely small, 6 pieces with a total weight of 116g.

Two unstratified pieces were both hearth wall-related, one being indurated hearth wall with attached dense iron slag, the other a slag derived from melted hearth ceramic. One of the stratified pieces (from context (2447)) was also a strongly lining-influenced slag, probably from near the hearth blowhole. A second stratified piece (from context (1107)) was also lining-influenced, but probably formed within the fuel bed. A denser piece of slag from context (2243) was a fragment of burr (the point of contact between a smithing hearth cake and the hearth wall). The other piece from (2243) was a rounded nub of hearth slag.

All the materials would be compatible with an origin in charcoal-fuelled iron working (smithing), but none provides significant detail or any evidence to indicate age. The denser materials are certainly from iron-working, but the low-density lining-influenced materials are less certainly so.

A single piece of the low-density lining slag was from a context (2447) that is otherwise dated as Late Bronze Age. Although it is possible this fragment was from the working of non-ferrous metals, there is no conclusive evidence. It is at least equally likely that the material is from iron-working and either intrusive, or possibly suggestive that the deposit may have accumulated over a longer time-interval than currently thought.

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Methods

All materials were examined visually, using a low-powered binocular microscope where required. As an assessment, 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.

This assessment was conducted in February 2019 and was commissioned by Siân Thomas of Archaeology Wales. All items carried the site code ESF25191-c-17.

Description of the assemblage

(1107) <58>
A small sub-triangular pad of slag, 35x25x10mm, weighing 10g. The surface of the slag is variegated between a maroonish-brown and an almost black glass on the top and maroon and dull-grey on the base. The base is deeply indented by presumed fuel contacts, the top is smooth and more gently dimpled. One margin shows signs of less viscous flow and incudes a snapped stalactite of black glass. The top includes some areas where the upper surface is missing, revealing a vesicular interior of slag with a finely granular texture. A small area of fracture close to the most flowed material shows a section through a quartz gravel grain; no other clasts can be observed.

(2243) *piece #1*
An 18g fragment from the lateral margin of a small 'burr' (the zone of intense melting of the wall of a hearth below the blow-hole), probably from a smithing slag. The wall remnant is sandy with some large quartzose granules and one of 10mm passing into the slag. The main slag is dense, almost purely olivine, the slag passes laterally into some thin fuel dimpled material against the presumed line of the wall (but not interacting with it). The top of the slag shows an irregular surface with some maroon-surfaced smooth patches. There was no evidence for the fuel.

(2243) *piece #2*.
28g. a very irregularly rounded lump of dense slag, 40x35x22mm, with only a minor fractured area – so essentially a complete nub. One face shows irregular slightly wispy lobate slags with a dull, matt dark surface; the other face shows deep dimples from fuel – one with the impression of a charcoal lump preserved, much of this face shows a black glassy and sand-rich slag.

(2447)
An irregular, rounded, somewhat dimpled, nub of low-density slag, weighing 22g and 46x26x26mm. Much of the surface has a slightly maroon matt colour, other areas have a glassier appearance with a variably dark green colour. Probably a nub of strongly lining-influenced slag from in front of the blowhole of a smithing hearth.

u/s piece #1
A 24g fragment of slag, 25x23x26mm, attached to a thin indurated wall remnant. The wall ceramic shows narrow, elongate voids, probably moulds of organic material (grass?), and is fronted by small lobes of dense slag with a maroon surface. The slag is overflown in a blebby, viscous manner by sandy and probably gravelly lining lag with a dark (mostly) glass.

u/s piece #2
A 14g, 35x25x18mm, fragment of slag formed from lobes of sandy wall material, coated in a thin, locally maroon, dark layer. One surface shows dimples, two of which are striated, suggesting contact with charcoal.

Distribution of the assemblage

The assemblage was very sparse considering the excavated area. Context (1107) (a colluvium layer) produced a single fragment, context (2243) (a ditch fill with late Saxon material) produced the two pieces certainly from iron working (smithing) and context (2447) (a Late Bronze Age ditch fill) produced a single piece of lining slag.

Interpretation

This assemblage was very small considering the scale of the excavation, so a very low level of metallurgical activity, probably well-away from the excavated area, is indicated.

Two pieces ((2243) piece #1 and u/s piece #1) are from the area of slag adhesion and interaction with the earth wall below the blow-hole in a clay-walled smithing hearth. The density and mineralogy of this material indicates the involvement of iron in their formation. The dimpled slag pad from (1107) is of a similar density and in the lack of surface colouration indicating the involvement of non-ferrous metals, this too may be attributed to an origin in iron working reasonably confidently.

The other three pieces ((2243) piece #2, (2447) and u/s piece #2) are low-density slags, and less certainly, therefore, to be associated with iron-working. Nonetheless, all three are probably smithing slags, probably dominated by material sloughed from the hearth wall, with the dark glass and maroon surfaces that are present locally providing indicators of iron enrichment.

The pieces are all of sufficiently similar colour, texture and preservation that they could all derive from the same phase of ironworking – although that is not necessarily the case. The pieces are not intrinsically dateable, beyond post-dating the introduction of the use of iron. Two of the six bear evidence for the use of charcoal as fuel; none of the pieces has any positive evidence for the use of coal. It would appear likely that all may have charcoal-fuelled. The use of charcoal increases the likelihood that these materials are early, either prehistoric or earlier medieval, as coal was employed for smithing locally in the Roman period and then increasingly from the medieval period onwards becoming almost ubiquitous during the nineteenth century.

If the pieces were all derived from a single phase of ironworking, then they would be suggestive of residues from low-intensity forge-work, perhaps from a village or estate smithy that undertook only light work and perhaps worked only intermittently. The amount of material is, however, very low and there is no certainty the various pieces are related.

Further work

The assemblage has very limited research potential and no further work is suggested. The only exception is if the occurrence of the dense slag fragment (probably from iron-working) from a context interpreted as of Bronze Age date be considered sufficiently archaeologically problematic that further work is indicated in order to clarify the nature of this piece.

The residues are of relatively low importance for preservation within the site archive, unless the archaeological context of the material means that either the identification of the material as deriving from iron-working (blacksmithing), or the age implications of that identification (for instance the contexts had been interpreted as earlier prehistoric) is unexpected.

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