

GeoArch

Report 2009/40

Evaluation of archaeometallurgical
residues from the N18 Oranmore-
Gort, Owenbristy, Co. Galway (E3770)

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17th October 2009

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Abstract

Owenbristy produced a small assemblage (5.1kg) of blacksmithing slags dominated by smithing hearth cakes. The eight measurable cakes had a mean weight of 269g. The largest measurable SHC was 506g and there were no fragments suggestive of larger SHCs. In addition to the SHCs there were several fragments of tuyères, as well as fragments of slags associated with tuyères such as tongues and sub-tuyère flows.

The assemblage is very restricted but is compatible with the residues from end-use smithing of early medieval to medieval age. The fragmentary evidence from the tuyères tentatively suggests an earlier age within this period, for at least part of the assemblage.

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Methods

All materials were examined visually with a low powered binocular microscope. Macroscopic slag pieces were individually weighed, described and recorded to a database. The summary catalogue is given in Table 1.

The conclusions reached in this report are therefore limited by the nature of the evaluation inspection. No chemical analysis or high-powered microscope work is attempted during an evaluation.

Results

This site yielded a total residue assemblage of 5.1kg, mostly material from smithing hearth cakes.

The SHCs are mostly rather small, with those for which the weight can be measured or estimated having weights of 88, 140, 198, 206, 214, 280, 446 and 506g, together within another of >336g. The mean weight was 269g. The small size of the assemblage precludes detailed comparison with weight-frequency distributions from other sites, but the site clearly sits with other assemblages from sites interpreted to be from blacksmithing (the end use of iron for making or repairing artefacts). Such assemblages tend, in early medieval to medieval Ireland, to comprise SHCs with weights below about 500g.

The assemblage also includes examples of dense slags, forming lobate flows with a concave top. Such flows are believed to have originated in the fluid slags generated close to the tuyère, but which, instead of becoming incorporated into the SHC have flown away from the hearth into a gap below the tuyère (which moulds the concave upper surface of the slag).

Tuyères are represented in the assemblage by various small fragments and by material attached to the SHCs. One specimen shows an apparent attachment scar suggesting a tuyère with a diameter of about 90mm. Such evidence must be used with care because the tip of the tuyère may be deformed, but it suggests the

presence of fairly small tuyères. Tuyères as small as 90mm diameter would appear to be a mainly early medieval feature (e.g. Clonmacnoise, Young 2005).

There are several fragments of poorly-preserved iron in the collection. It is not known whether this represent fragments of artefacts or fragments of the smiths stock iron.

Interpretation

The assemblage, as described above, is indicative of end use blacksmithing, and the evidence of a tuyère from [c43] of apparently rather small size would probably suggest an early medieval age. The remainder of the material could be early medieval or slightly later, but later medieval and early post-medieval assemblages tend to be rich in the debris of very large tuyères (e.g. Ballykilmore, Young 2009).

The relative significance of the smithing as an activity within the cashel is difficult to assess. Several ringfort sites (e.g. Rochefort Demesne, Young 2008) have shown that disposal of slag might be generally external to the enclosure and that slag levels within the enclosure might not be a good guide to

The occurrence of blacksmithing is attested at many recent excavations of early medieval enclosures, many of which contained cemeteries

Evaluation of potential

There would little potential for extracting further information from this assemblage. The isolation of the material from metallurgical structures and the lack of precise dating of individual pieces reduce the ability of the assemblage to deliver further technical details.

References

- YOUNG, T.P. 2005. Metallurgical Residues from Clonmacnoise, Part 1: Evaluation of material from the waste water treatment works (02E1407). *GeoArch Report 2005/08*. 29pp.
- YOUNG, T.P. 2008. Evaluation of archaeometallurgical residues from the N52 realignment, Sites 1&2 and 3. *GeoArch Report 2008/04*. 6pp.
- YOUNG, T.P. 2009. Archaeometallurgical residues from Ballykilmore, Co. Westmeath, E2798, *GeoArch Report 2009/16*, 81 pp.

| <i>sample</i> | <i>context</i> | <i>label</i> | <i>weight</i> | <i>number</i> | <i>notes</i> | <i>prop.</i> | <i>orig.</i> |
|---------------|----------------|----------------|---------------|---------------|--|--------------|--------------|
| 309 | 2 | ws between 4&5 | 198 | 1 | 70x95x30mm probably most of small plano-convex SHC, somewhat dimpled top | 100 | 198 |
| 395 | 2 | | 336 | 1 | 90x80x40mm, rather granular dense SHC, possibly deformed, proportion not identifiable | | |
| | | | 24 | 1 | fragment of a thin slag crust | | |
| 399 | 39/40/41 | | 48 | 5 | dense slag with small charcoal moulds | | |
| 190 | 43 | wall slot 11 | 214 | 1 | 80x75x30mm, small dense SHC, looks residual so may be incomplete but close to 100% | 100 | 214 |
| 190 | 43 | wall slot 11 | 280 | 3 | cake and two fragments, cake appears to be small SHC, possibly complete. Very dense and contains a lot of iron metal, 60x70x50mm (of which bowl 25) | 100 | 280 |
| 211 | 43 | | 164 | 11 | sherds of tuyère attached to dense slag | | |
| | | | 72 | 4 | probably associated dense slag fragmented | | |
| | | | 66 | 10 | indeterminate small slag fragments | | |
| 262 | 43 | | 140 | 1 | broken SHC with planar rusty top and slightly oblique prilly base, 75x60x30mm | | |
| 362 | 43 | | 14 | 5 | rather weathered rounded slag pieces, largest is slightly sheet like | | |
| 363 | 43 | | 110 | 4 | rounded lumps of slag with slightly dimpled surfaces | | |
| | | | 96 | 1 | iron, irregularly shaped lump | | |
| 374 | 43 | | 56 | 1 | SHC fragment | | |
| 377 | 43 | | 206 | 1 | 60x80x40mm (20mm bowl) semicircular dense cake attached to tuyère front, tuyère possibly 90mm diameter? | 100 | 206 |
| | | | 46 | 6 | small sherds of slagged tuyère | | |
| | | | 12 | 1 | folded iron sheet | | |
| | | | 44 | 1 | irregular corroding iron lump | | |
| | | | 36 | 1 | 50x40x25mm miniature tongue with bright blue glass top | | |
| | | | 140 | 1 | 75x60x30mm small transverse dense plano-convex SHC | 100 | 140 |
| | | | 60 | 1 | dense dimpled slag nub with trace of tuyère contact | | |
| | | | 88 | 1 | tiny dense SHC (50)x60x25mm, plano-convex | 100 | 88 |
| | | | 106 | 2 | 2 parts of a very dense slag "flow", with central cavity and probably impression of tuyère on top | | |
| | | | 572 | 22 | slag fragments, all probably from SHCs | | |
| 379 | 43 | | 236 | 5 | fragments of dimpled slag sheet. Smaller bits rather weathered. Larger piece is possible folded. All show dimpled and lobate bases, probably from SHCs | | |

| <i>sample</i> | <i>context</i> | <i>label</i> | <i>weight</i> | <i>number</i> | <i>notes</i> | <i>prop.</i> | <i>orig.</i> |
|---------------|----------------|------------------|---------------|---------------|---|--------------|--------------|
| 415 | 43 | | 40 | 1 | dense granular slag with lobate lining slag on one end - probably a tongue fragment | | |
| 424 | 43 | fill 364 | 22 | 1 | vitrified ceramic | | |
| 213 | 73 | | 2 | 1 | slightly lobate slag fragment | | |
| 268 | 73 | | 24 | 1 | fragment probably from a very small SHC dimpled base | | |
| 146 | 79 | slb16 | 62 | 1 | granular dense slag | | |
| 152 | 117 | slb#4 | 430 | 1 | (70)x105x60mm (of which bowl 40mm) neat dense SHC with slightly concentrically ringed top, dense bowl crust 25mm, rest piled up, fairly conventional, proportion difficult but probably 85% | 85 | 506 |
| 318 | 162 | | 8 | 1 | small rounded slag nub | | |
| 151 | 176 | s of slb#5 | 56 | 1 | small rounded fragment of open-textured slag with small survival of slightly lobate surface | | |
| 143 | 222 | on top of slb#10 | 446 | 5 | fragmented SHC, 120x110x30mm, deepest at proximal end, top dished, slightly dimpled, filled at proximal end, base microprilly | 100 | 446 |
| 366 | 295 | | 186 | 4 | fragments of small SHC-like cakes - probably originally <70mm | | |
| | | | 38 | 4 | slag flown between small charcoal moulds | | |
| | | | 42 | 3 | slag with flat surface and some flow structures below - could be top of a flow/SHC or a sub-tuyère flow | | |
| | | | 1 | 1 | vitrified ceramic | | |
| | | | 318 | c100 | indeterminate small slag fragments | | |
| 238 | 336 | ws#10 | 24 | 1 | dense slag fragment, probably from an SHC | | |
| 451 | 397 | | 26 | 1 | indeterminate slag lump | | |
| 532 | 502 | | 1 | 1 | indeterminate slag fragment | | |

Table 1: Summary catalogue by sample and context

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