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Evaluation of archaeometallurgical
residues from the N18 Oranmore-
Gort, Moyveela 3, Co. Galway (E3907)

Dr Tim Young
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Dr T.P. Young

Abstract

The archaeometallurgical residue assemblage from Moyveela 3 has a total weight of 8.3kg, and mainly comprises examples of small discoidal slag cakes, 60-75mm in diameter and 10-30mm thick. The larger examples are clearly classifiable as fully-formed smithing hearth cakes (SHCs), but at the smaller end of their size range they are barely capable of displaying the characteristic morphology of SHCs. There are also two good examples, together with some fragments, of slightly larger, dense SHCs ranging up to a maximum weight of 388g.

The 15 identified measurable SHCs thus have a range of weight of 44-388g, with a mean of 134g. Such material would be typical of the waste from fairly light blacksmithing, particularly of post-medieval age (though compatible with an earlier age). The lack of tuyère fragments is unusual, although not unknown, for a post-early medieval 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

The archaeometallurgical residue assemblage from Moyveela 3 has a total weight of 8.3kg. It mainly comprises material from smithing hearth cakes (total 4.5kg), in particular discoidal slag cakes, 60-75mm in diameter and 10-30mm thick. The larger examples are clearly classifiable as fully-formed smithing hearth cakes (SHCs), but at the smaller end of their size range they are barely capable of displaying the characteristic morphology of SHCs. There are also two good examples, together with some fragments, of slightly larger, dense SHCs ranging up to a maximum weight of 388g.

The SHCs are typically a small, dense, mass representing a small slag puddle, which in some cases overlies rather more prilly textures from slag penetrating down into the fuel below.

The 15 SHCs for which the original weight can be measured or estimated have a range of weight of 44-388g, with a mean of 134g.

Alongside the SHCs, the assemblage contains a considerable quantity of small slag fragments, with almost 4kg (400 pieces) from [c14]. This material, although technically indeterminate includes material

which is likely to include fragments of broken SHCs as well as small scraps of slag from within the hearth but outside the main SHC. Such fragments might potentially include slag from with the fuel bed, slag from around the blowhole and also lining slags generated from melted ceramic.

The assemblage also includes 11 pieces of iron, but it is not possible to determine whether these are directly associated with the ironworking or are unrelated artefacts.

YOUNG, T.P. 2008b. Archaeometallurgical residues from Coolamurry 7, 04E0323. *GeoArch Report* 2006/10. 46pp.

Interpretation

The general style of SHCs is compatible with their origin during light blacksmithing work. Such work might include light fabrication and repair tasks, but would probably exclude extended periods of forge (fire) welding, which would tend to cause more loss of iron to the hearth. The extremely small size of the SHCs in this assemblage is rare in Irish assemblages, possibly because the iron stock received by forges was in the form of compacted blooms rather than finished bar, iron until well into the post-medieval period (depending on location), when industrially mass-produced bar iron penetrated beyond the industrialised areas.

There are a few small fragments of fired or vitrified ceramic, but none is diagnostic of its origin with the hearth. The lack of certain fragments of tuyère in an assemblage would normally be suggestive of an Iron Age date (Iron age smithing probably employed a blowhole through a clay hearth wall, rather than a true tuyère), but later assemblages without tuyères are known. Such assemblages occur rarely in the medieval period (e.g. Coolamurry, Co. Wexford, Young 2008b), but may be more common in the later post-medieval (e.g. Mucklagh, Young 2008a). It is not currently known why some later (but prior to the introduction of cast iron tuyères) assemblages, lack evidence for ceramic tuyères. It is possible that the light forge work suggested incurred much less damage to the tuyère so they were discarded less often, but it is also possible that some form of metal tuyère was introduced for forges before the substantial cast iron tuyère of modern form appeared.

Evaluation of potential

Further analysis would add little to the understanding of the site and its activities. Later post-medieval smithing slags have been little studied in Ireland, and there is need to see them investigated more thoroughly. However, such detailed analysis would be best conducted on a larger, more complete assemblage recovered from in association with the structural evidence for the smithy.

No further investigation of this material is therefore recommended.

References

YOUNG, T.P. 2008a. Evaluation of metallurgical residues from Mucklagh, Co. Offaly NTB06, A033/E2845. *GeoArch Report* 2008/07. 8pp.

<i>sample</i>	<i>context</i>	<i>weight</i>	<i>number</i>	<i>notes</i>	<i>propn.</i>	<i>orig.</i>
31	1	5	9	fragmented iron artefact - thin		
		148	1	fragment from centre of small (c80mm diameter) dense SHC, bowl 25mm thick - raised bleb of lining slag on one edge, fuel dimples on base		
		2	1	lining slag scrap - just possibly a vitrified face from tuyère		
32	4	322	1	probable SHC with margins missing, spoon shaped, possibly from tuyère - SHC gap? 105x75x45mm, slightly burr-like	90	358
		28	1	iron		
		168	7	indeterminate slag fragments, at least two of which are parts of thin sheets		
27	14	718	33	pieces of minimal SHCs - flat slabs, often of low density, <70mm diameter		
		1485	56	small pieces of more conventional SHCs		
		70	6	rounded lumps of lining slag - or are they vitrified inclusions from fuel		
		72	1	burr c 65mm wide, not attached to much in front, attachment obscured by lime		
		22	3	fired clay fragments		
		12	1	burnt stone chip		
		22	2	iron, one thin one thicker, both seem fresh		
		3590	c400	indeterminate small slag fragments, many lime coated		
		1	1	nail shank? (soil matrix checked for hammerscale and none found)		
		194	1	approx 50% of small dense SHC, probably c75mm diameter and 35mm thick, smooth blown top, finely dimpled base	50	388
		164	3	pieces of dense SHC		
		166	1	(60)x75x25mm, probably 90% of small dense SHC of slightly irregular shape - top smooth puddle, base slightly prilly and dimpled	90	184
		138	1	This and the following 11 specimens are 60-70mm diameter SHCs, smaller ones concavo-convex low density, larger ones variable, puddle-like. The smaller ones are barely classifiable as SHCs	100	138
		148	1	SHC	100	148
		66	1	SHC	100	66
		130	1	SHC	100	130
		68	1	SHC	100	68
		154	1	SHC	100	154
		52	1	SHC?	100	52
		44	1	SHC?	100	44
58	1	SHC?	100	58		
94	1	SHC	100	94		
62	1	SHC?	100	62		
70	1	SHC	100	70		
42	1	rounded lining slag bleb				

			96	2	SHC fragments
15	21		3	1	probable nail head
11	31	soil and slag	280	bulk	unwashed soil sample with pieces of peat, stone and water snails
33	36		106	5	small pieces of corroded iron
			52	2	indeterminate thin slag sheet

Table 1: Summary catalogue by sample and context

GeoArch



geoarchaeological, archaeometallurgical & geophysical investigations

54 Heol y Cadno,
Thornhill,
Cardiff,
CF14 9DY.

Mobile:
Fax:
E-Mail:
Web:

07802 413704
08700 547366
Tim.Young@GeoArch.co.uk
www.GeoArch.co.uk