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PETROLOGICAL ANALYSIS OF IRON AGE AND ROMAN WARES FROM WAKERLEY AND WEEKLEY, NORTHAMPTONSHIRE

2083 Report sent to Dennis Jackson.

Samples of Iron Age 'curvilinear decorated' pottery from Wakerley and Weekley were submitted for petrological examination, together with 'wasters' from the Roman kilns at these two sites. In addition, two examples of similarly decorated Iron Age pottery from Hunsbury hill-fort, south-west of Northampton, were analyzed for comparative purposes.

Iron Age

Wakerley BX III 1a. Medium thick, medium hard fabric, reddish-brown on the outside surface, black core and inside surface. Moderately gritted with shell. Tooled curvilinear decoration on the burnished outside surface.

Weekley sample 1. Medium thick, hard fabric, black throughout. Moderately gritted with shell. Sherd from a bowl with a short upright-rim and tooled curvilinear decoration on the burnished outside surface.

Weekley sample 2. Medium thick, hard fabric, dark brown throughout. Heavily gritted with shell. Same type of vessel and decoration as sample 1.

Hunsbury (Fell, 1936, fig. 6, no. D8). Medium thick, fairly hard fabric, buff on the outside surfaces, with a laminated core. Very heavily gritted with shell, some of which show through the surfaces. Part of a bowl with a bead-rim. The outside surface has been roughly burnished and the decoration consists of irregular dots and tooled lines.

Thin sectioning of the four samples shows an optically anisotropic matrix of fired clay containing numerous inclusions of fossiliferous shell and some limestone. Also present are grains of subangular quartz, average size about 0.05-0.15mm.

The presence of fossiliferous shell and limestone in all four samples points to the Jurassic ridge as a likely source for the clay/temper. As all three sites, in fact, are situated on the Jurassic ridge, it is not possible without further analyses to suggest whether these wares were made separately at each site or share a common origin.

Hunsbury (Fell, 1936, Pl. xi B, no. D11 and fig. 6, no. D11). Medium thick, hard fabric, dark grey to buff on the outside surface, dark grey core and inside surface. Round-bottomed bowl with short everted-rim and tooled curvilinear decoration on the highly burnished outside surface.

In thin section the prominent inclusions are made up of iron-rich argillaceous matter set in an optically anisotropic matrix of fired clay. It is difficult to determine the exact composition of many of these inclusions due to the degree of staining, but ferruginous oolite showing traces of concentric structure can be recognized in the section. Also present are a small amount of limestone and a scatter of subangular quartz, average size 0.1mm.

The iron-rich inclusions can be matched in the Northampton Sand Ironstone deposits which cover a large area of Hunsbury (Hollingworth and aylor,1951,34-35), and so it seems likely that the small number of vessels of this type from the site were made locally (see Fell,1936).

The above results have shown that the raw materials could have been obtained at or near the three sites in question, and so the pottery may well be of local origin in each case. This situation appears to be quite different when compared with another form of curvilinear pottery, Glastonbury ware, which was clearly produced at a number of commercial centres and transported over some distance (Peacock,1969). However, only a small number of vessels are included in the present programme, and more samples from other sites in the Northamptonshire area need to be analyzed before a clearer picture emerges of the origins of this particular group of Midland wares.

Roman

Wakerley 2005, kiln 2, third century A.D. Medium thick, very hard fabric, light grey throughout. Moderately gritted with limestone.

Thin sectioning reveals large fragments of limestone and numerous subangular grains of quartz, average size 0.20-0.30mm., set in an optically anisotropic matrix of baked clay.

Weekley kiln 5, early Roman. Thin, brittle fabric, oxidized bright red throughout.

In thin section the inclusions consist of numerous subangular grains of quartz, average size 0.1mm., together with a scatter of small fragments of limestone, set in an anisotropic matrix of fired clay.

Samples of clay and sand from the Weekley kiln were also analyzed to determine if these could have been used in the manufacture of the pottery. The sample of clay was baked and then sectioned for study under the petrological microscope in the same way as the pottery. Thin sectioning shows fragments of limestone and subangular grains of quartz, average size 0.05-0.10mm. The results suggest that the clay used for the pottery was the same as that found in the kiln. The presence of limestone would indicate a local source, possibly the Upper Lias clay which lies closeby to the site.

Table I shows the results of heavy mineral analysis (Peacock, 1967), in terms of percentages of non-opaque minerals on a 'waster' and a sample of sand from the kiln.

TABLE I

	Zircon	Staurolite	Tourmaline	Rutile	Garnet	Kyanite	Anatase	No. grains counted
Sand, Weekley kiln	75.2	10.6	5.2	4.1	2.3	1.4	1.2	767
'Waster', Weekley kiln	84.4	6.8	3.7	2.7	1.6	.8	-	315

The minerals have the following properties:

ZIRCON	Small well rounded grains and elongated bipyramidal varieties.
STAUROLITE	Large reddish-brown rounded grains.
TOURMALINE	Occurs chiefly as brownish-green grains, quite well rounded.
RUTILE	Small anhedral fractured grains, foxy-red in colour.
GARNET	Irregular colourless grains, usually small in size.
KYANITE	Short stumpy colourless grains.
ANATASE	A few stumpy grains, very clear.

The quantitive heavy mineral results for both samples display a close degree of correspondence, and this is also borne out by the similarity of the mineral characteristics. There can be little doubt that the same type of sand as that found in the kiln was used as a filler for the pottery.

The characteristic feature of the assemblage is the relatively high tenor of staurolite, easily exceeding that of tourmaline. Staurolite has been recorded as being plentiful in the Northampton Sand Ironstone (Skerl, 1927, 381-382), deposits of which occur closeby to the site.

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Fell, C.I.	(1936)	'The Hunsbury hill-fort, Northants: a new survey of the material', *Arch. Journ.* 93(1936),57-100.
Hollingworth, S.E. and Taylor, J.H.	(1951)	*The Northampton Sand Ironstone: Stratigraphy. Structure And Reserves* (London,1951).
Peacock, D.P.S.	(1967)	'The heavy mineral analysis of pottery: a preliminary report', *Archaeometry*, 10 (1967),97-100.
Peacock, D.P.S,	(1969)	'A contribution to the study of Glastonbur ware from south-western Britain', *Antiq. Journ.*,49(1969),41-61.
Skerl, J.G.A.	(1927)	'Notes on the petrography of the Northampton Ironstone', *Proc. Geol. Assoc.* 38(1927),375-394.

[illegible]

SITE [illegible] COUNTY [illegible] DATE [illegible] SHEET NO.

[illegible] DATE SENT [illegible]

[illegible] appropriate [illegible], below:

IRON   COPPER ALLOY   OTHER METAL ....   [✓ POTTERY]   CERAMICS

GLASS   LIME   [illegible] ....   BURNT/SLAG (incidental)

On any one sheet, please distinguish where possible between kinds of material, viz.,

Raw material (ore, clay, sand, coal)	Structures & vessels (furnace, kiln, crucible, alembic)
Crude products (bloom, ingot, pig, glass bun, [illegible] cake)	Waste (slag, dross, ash)
Building material (brick, tile, mortar, plaster, burnt [illegible] and floor)	

Please send these lists to Room 522, 23 Savile Row, London W1X 2AA under separate cover. Parcels should be labelled On HMS [illegible] with site name and contents, and contain identification label. Tel No 734 6010.

Site Number (Separate entry for each item)	AM Laboratory Number	Description and full archaeological and stratigraphic context. Relation to any other finds not listed here. Any special problem to be investigated. (Please use BLACK ink and send sketch plan and section, photographs and colour slides)
Weekley, Sample 1		3 sherds of Iron Age decorated pottery for comparison with each other, and sherds sent from other sites at an earlier date.
" Sample 2		
Weekley, S XIII (16)		
Wakerley, Kiln 2		Typical sherd from 3rd century pottery kiln
Weekley, Kiln 5		(1) Sherd of pottery from early R.B. kiln.
		(2) Samples of clay and sand found in the kiln for comparison i.e. were these ~~the~~ raw materials used in making the pot