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PETROLOGICAL EXAMINATION OF SCARBOROUGH WARE AND OTHER MEDIAEVAL POTTERY

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INTRODUCTION

A small group of Mediaeval pottery considered to have been made at Scarborough ('Scarborough ware'), Nottingham and Lincoln was originally submitted to see if it was possible petrologically to separate and characterize the fabrics involved. If this proved successful a larger programme of analysis was envisaged centred on Scarborough ware. The primary object in this case would be to sample a selection of vessels, from widely-spaced find-spots, where there was some doubt as to whether they should be classed as Scarborough ware or not.

Thin sectioning and study under the petrological microscope showed that all of the above samples from Scarborough, Nottingham and Lincoln contain a rather similar range of fairly common non-plastic inclusions, in which quartz grains predominate. Unfortunately none of the main inclusion-types present appear to be exclusive to any one of the three centres under consideration. However, upon closer inspection not only did there appear to be noticeable textural differences between the sherds from each locality but Scarborough ware was itself tentatively divided into two fabrics,

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as previously suggested by hand-specimen study (Farmer, 1979, 28-29).

PETROLOGY

Scarborough ware Phase I

Frequent quartz grains, average size between 0.05-0.30mm, with a few larger grains, together with flecks of mica, iron ore, quartzite, some plagioclase felspar, a little sandstone and with the odd grain of pyroxene.

Scarborough ware Phase II

A similar range of non-plastic inclusions to the Phase I fabric, although additionally small fragments of limestone may occasionally be present. However, there does seem to be a slight textural difference in the size and frequency of quartz grains between the two groups. In the Phase II sherds the groundmass of quartz grains, average size 0.10mm and below, are more numerous than is the case for the Phase I sherds, and in addition there appears to be a scatter of slightly larger grains.

Nottingham

This fabric is very distinctive in thin section, consisting of a scatter of quartz grains, average size between 0.10-0.60mm, with some sandstone, quartzite, siltstone and flecks of mica, all set in an almost isotropic clay matrix.

Lincoln

A fairly fine clay matrix containing frequent quartz grains, average size between 0.10-0.50mm, together with some quartzite, sandstone, flecks of mica, iron ore, metaquartzite, plagioclase felspar and a little limestone.

To test the apparent fabric differences of the above sherds, a more detailed textural examination was made. The aim of this was to provide statistical information on the size sorting of the major inclusions present in the fabric of the sherds. The method employed is taken from Peacock's (1971) study of the frequency distribution properties of quartz inclusions in Romano-British pottery from Fishbourne. This method was itself based on grain size parameters worked out by Folk and Ward (1957) in their survey of the Brazos River Bar, and involves plotting size groups of quartz grains as a cumulative percentage against the frequency ($\emptyset$) displayed on arethmetic probability paper. From these graphs calculations of mean size, sorting, skewness and kurtosis can be made. The advantage of this method is that it provides easy access to a diverse range of numeric parameters which are verbally qualified. For the purpose of this examination the long axes of 160 grains of quartz were measured per thin section slide.

The detailed results of the quartz grain size analysis are presented in Table 1. From this the following comments can be made:

M_z The mean size of the grains from each centre were noticeably different.

σ_I The two samples from Nottingham and one of the Phase II samples from Scarborough were poorly sorted, the remainder were moderately sorted.

SK_I The two Phase I samples from Scarborough have a positive skew (with a 'tail' of fine grains) while the Phase II samples have a negative skew ('tail' of coarse grains). The samples from Nottingham and Lincoln both have a nearly symmetrical skewness.

K_g All four samples from Scarborough were platykurtic (deficiently peaked). One sample from Nottingham was platykurtic and the other was mesokurtic (middle-shaped curve); while both samples from Lincoln were mesokurtic.

The descriptive parameters derived from the particle size analysis go some way in confirming the differences in fabric noted visually in a thin section examination. As a possible further aid to characterization a heavy mineral separation was undertaken on one sherd from each of the three locations. This method of analysis of sandy pottery is described by Peacock (1967) and Williams (1977). The Phase II sherd (no. 4) from Scarborough produced a suite of heavy minerals of which the main constituents are garnet and clinopyroxene with lesser amounts of zircon. Both garnet and clinopyroxene have been recorded from Boulder Clays in Yorkshire (Raistrick, 1929), and this would seem to tie in with the suggested use of Boulder Clay for Scarborough ware Phase II products (Farmer, 1979, 28). In contrast, the assemblage from the Lincoln sherd (no. 7) contained predominantly zircon with lesser amounts of garnet and epidote. The sample from Nottingham (no. 6) produced very few grains. These results are encouraging but unfortunately the fairly large sample of sherd required for this method (17-25gms weight) meant that there would be obvious drawbacks in its extensive use in a large programme of analysis on Scarborough ware, where due to the uniqueness of some vessels only very small samples might be available for petrological examination.

In view of the fairly distinct textural differences between the samples from Scarborough, Nottingham and Lincoln, and also between Phases I and II at Scarborough, it was decided to embark on a larger thin section programme centred on Scarborough ware as outlined in the introduction. Further samples of pottery associated

with the Scarborough ware kilns were also included, as a check on the original sherds analyzed, together with comparative material of other origins. The samples assigned to a particular kiln are generally few in number, therefore it should not be automatically assumed that the sherds below which are unallocated cannot have come from one of the named centres, only that the fabrics sampled have not matched up to those sherds submitted as typical kiln products. All the samples of pottery in the programme were chosen and submitted by P.G. Farmer.

RESULTS

Scarborough ware Phase I

Five samples were submitted from known locations in Scarborough as representative of Phase I fabrics:

(I) Scarborough Castle: knight jug.

(2) Balmoral Development: trench II, 73(5).

(3) Balmoral Development: trench III, I93(4).

(4) I48, Castle Road: (a).

(5) I48, Castle Road: (b).

These agreed with the previous thin section details for Phase I products (see above).

Samples similar to Scarborough ware Phase I fabric:

(6) Hull: MG76 I524(I).

(7) Hull: (3).

(8) Norwich: WN72(327).

(9) Faversham: aquamanile.

(I0) Raversijde, Belgium: CM/CII/I579; base of jug.

(II) Raversijde, Belgium: CM/CII/I584; fish dish.

(I2) Raversijde, Belgium: CM/CII/25I0; jug handle.

(I3) Stonar: 70 7A L2(3) 9.

(I4) Aberdeen: AE EGC(2) 2035.

(I5) Great Yarmouth: phallic aquamanile.

(I6) I48, Castle Road, Scarborough: brick/floor tile? Used in kiln construction.

Scarborough ware Phase II

Five samples were submitted from known locations in Scarborough as representative of Phase II fabrics, together with a sample of clay thought to be from a Phase II clay pit.

(I7) Tollergate kiln site: TAI(3)(6).

(I8) Tollergate kiln flue: TBI I68.

(I9) St. Peter's Church kiln site: TRL(7).

(20) St. Peter's Church kiln site: SKS TRI I66(3).

(2I) St. Mary's Street: D3 I968.

(22) Clay sample from I48, Castle Road.

These agreed with the previous thin section details for Phase II products (see above). The sample of clay from I48, Castle Road compared quite well to the Phase II sherds sherds, though large, fairly coarse, clay pellets were also present which were not seen in the pottery thin sections.

Samples similar to Scarborough ware Phase II fabric:

(23) Castle Road, Scarborough: shallow oval spouted dish.

(24) I48, Castle Road, Scarborough: sherd with applied and stamped decoration.

(25) Longwestgate, Scarborough: LWG 75(I).

(26) Joymount, Carrickfergus, Ireland: CF III 3852.

(27) Kings Lynn: ASA XI 3A; horse aquamanile.

(28) Probably from Castle Road, Scarborough: 3 39 2; aquamanile.

(29) Cook's Row, Scarborough: 66 53; aquamanile.

(30) Stonar: STON 70 I0 2A L6(3)6.

(3I) Aberdeen: AA unstratified I976.

(32) Aberdeen: AB unstratified I976.

(33) Aberdeen: AC EGC(I63) 343.

(34) Aberdeen: AD B(38) 2558 E6.

(35) I48, Castle Road, Scarborough: fragment of tile used for stacking pots in the kiln.

(36) Moot Hall, Nottingham: knight jug.

(37) I48, Castle Road, Scarborough: thumbed pedestal base.

(38) Sleaford: aquamanile.

(39) Bruges, Belgium: knight jug.

(40) Rushy Platt, Swindon: aquamanile.

(4I) I48, Castle Road, Scarborough: CR 79 I2(20)(A); glazed dish fragment.

(42) Bergen, Norway: I667.

(43) Bergen, Norway: 2702.

(44) Bergen, Norway: 3578.

Fabrics different to Scarborough ware Phases I and II described above:

Nottingham

(45) Glasshouse Street, Nottingham: NGL 70/I NB.

(46) Glasshouse Street, Nottingham: NGL 70/I ND.

(47) Glasshouse Street, Nottingham: NGL 70/I NE.

(48) Glasshouse Street, Nottingham: NGL 70/I NA.

(49) Glasshouse Street, Nottingham: NGL 70/I NL.

Sample 45 was submitted as a 'clear waster'. Sherds nos' 45-47 are identical in texture to that of the Nottingham sherds originally examined (see above). The other two sherds, nos' 48 and 49, are slightly coarser than the rest of the group.

(50) Nottingham: ? Aquamanile. This sherd is very similar in texture to nos' 45-47 from Glass_house Street, Nottingham.

Marchants Farm, Streat, nr Plumpton

(5I) Marchants Farm kiln.

Thin sectioning shows a fairly clean clay matrix containing some quartz grains, 0.05mm in size, and flecks of mica, with a scatter of larger grains up to I.20mm across.

Beverley

(52) Possibly a product from a suspected kiln at Beverley.

Thin sectioning reveals frequent quartz grains, average size 0.05-.30mm, with a few larger grains, flecks of mica and some plagioclase felspar.

Laverstock

(53) Laverstock kiln 2: aquamanile.

Thin sectioning shows a groundmass of quartz grains 0.I0mm and under, with a scatter of larger grains, 0.20-.30mm in size, together with flecks of mica.

Unallocated

The following samples all appear to be texturally different to the various groups of designated sherds described above. Thin section details are given in the form of brief notes comparing individual sherds to those centres thought on typological and on visual fabric grounds to be likely places of origin (for many of the samples see Farmer, I979).

(54) Exeter: EB 75 CNG phase 96; tubular spout.

Slightly finer-textured than Scarborough Phases I and II fabrics above.

(55) Irish Quarter, Carrickfergus, Ireland: CFV 3208.

More finer-textured and micaceous than Scarborough Phases I and II fabrics above.

(56) Carrickfergus, Ireland: CF VI I90I; anthropomorphic tubular spout.

More coarse-textured than Scarborough Phases I and II fabrics above.

(57) Irish Quarter, Carrickfergus, Ireland: CR V 5496.

More finer-textured than Scarborough Phases I and II fabrics above.

(58) John Street, Drogheda, Co. Louth, Ireland: I977 2067.
(59) John Street, Drogheda, Co. Louth, Ireland: I976 5I8.

There are certain similarities between these sherds and Scarborough ware, but the Irish samples on the whole tend to be slightly-finer textured.

(60) Cambridge: knight jar.

The groundmass is more finer-textured than Scarborough Phase II fabric above.

(6I) Castle Hill Chapel, Scarborough: I503 39; decorated floor tile.
(62) Castle Hill Chapel, Scarborough: I507 39; decorated floor tile.

Similarities with Scarborough Phase II fabric above.

(63) Eastborough/West Sandgate, Scarborough (sealed context pre-

A.D. II35): 576; green glazed with scales.

A quite different fabric to Scarborough Phases I and II above, consisting of frequent well-sorted quartz grains average size 0.I0-.30mm.

(64) Eastborough/West Sandgate, Scarborough (sealed context pre-A.D. II35); 57; brown glazed.

Similarities with Scarborough Phase I fabric above.

(65) Eastborough/West Sandgate, Scarborough: 76; Roman tile.
(66) Eastborough/Westgate, Scarborough: 76(33) 5; splashed glazed.

Both samples are finer-textured than Scarborough Phases I and II fabrics above.

(67) I48, Castle Road, Scarborough: (87); splashed glazed.
(68) Queen Street, Filey: Pit 2 I FQS76.

Both samples have similarities to Scarborough Phase II fabric above.

(69) Lewes: aquamanile.

Similarities to the sample from Marchants Farm kiln, no. 5I.

(70) Harwich: horse/rider aquamanile.

Similarities to Scarborough Phase II fabric above, contains a fair amount of limestone.

(7I) Hull: MG 76 I524(2).

Similarities to Scarborough Phase I fabric above.

(72) Lincoln: B77 67, 3-20, 4I; flask or bottle.

(73) Lincoln: B78 67, 3-20, 42; flask or bottle.

Both sherds contain frequent inclusions of quartz grains with some felspar, limestone, quartzite and sandstone. Different texture to Scarborough Phases I and II fabrics above.

(74) Fragment of horse aquamanile in York white ware (?) from York; PS72-5-(3I)-I962.

(75) Bodysherd of York white ware; 76.I5.373(A).

(76) Bodysherd of York white ware; 76.I5.373(B).

(77) Bodysherd of York white ware; 76.I5.373(C).

All four sherds contain a groundmass of quartz grains, average size 0.I5mm and below, with a scatter of larger grains, flecks of mica, quartzite and a little limestone. Texturally there are similarities between these sherds and Scarborough ware Phase II. It is too early in the programme of analysis to do more than draw attention to the apparent similarities in fabric of the two wares, and more work needs to be done before firm conclusions can be reached.

(78) Harborough: HAAE.

More micaceous than Scarborough Phases I and II fabrics above.

(79) Barton-on-Humber: BNBK.

Similarities with Scarborough Phase I fabric above.

(80) Grimsby.

(8I) Kettleby Thorpe: KTAB d.

(82) East Halton: EH AB.

(83) Thornholm Priory: TP 76 (723).

TABLE I: detailed parameters for textural analysis

	M_z	σ_I	SK_I	K_g
Scarborough				
1 (Phase I)	3.05	.996	.137	.814
2 (Phase I)	3.10	.972	.125	.802
3 (Phase II)	3.13	1.141	-.345	.783
4 (Phase II)	3.30	.929	-.171	.785
Nottingham				
5	2.76	1.05	-.046	.984
6	2.76	1.03	-.037	.838
Lincoln				
7	2.21	.834	.019	1.006
8	2.43	.719	-.074	.931

M_z Mean size

σ_I Sorting. A measure of the 'spread' of the grains over the different size classes (standard deviation)

SK_I Skewness. A measure of the degree of symmetry of the distribution

K_g Kurtosis. Measure of the 'peakedness' of the distribution curve

These sherds are slightly different in texture to Scarborough Phase I fabric above.

REFERENCES

Farmer, P.G. (1979) An Introduction to Scarborough Ware and a Re-assessment of Knight Jugs (Hove, 1979).

Folk, F.L. and Ward, W.C. (1957) 'Brazos River Bar: a study in the significanc of grain size parameters', J. Sed. Petr., 27(1957), 3-26.

Peacock, D.P.S. (1967) 'The heavy mineral analysis of pottery: a preliminary report', Archaeometry, 10(1967), 97-100.

Peacock, D.P.S. (1971) 'Petrography of certain coarse pottery', in B. Cunliffe, Excavations at Fishbourne 1961-1969, Vol. II, Soc. Ant. of London, 27(Londo 1971), 255-259.

Raistrick, A. (1929) 'The petrology of some Yorkshire Boulder Clays', Geol. Mag., (1929), 337-344.

Williams, D.F. (1977) 'The Romano-British black-burnished industry: an essay on characterization by heavy minera analysis', in D.P.S. Peacock (ed.), Pottery and Early Commerce (London, 1977), 163-220.