Ancient Monuments Laboratory
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A THIN SECTION EXAMINATION OF MIDDLE SAXON IPSWICH WARE POTTERY

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Summary

A programme of thin section analysis was undertaken on a large group of middle Saxon Ipswich ware pottery from Ipswich and several other sites. The majority of sherds fell into three broad fabric groupings, two of which included "waster" material from known Ipswich kilns. Additionally, it is also clear that "Ipswich Ware" contains a fairly wide range of dark grey sandy fabrics that may, or may not, have been made in Ipswich.

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A THIN SECTION EXAMINATION OF MIDDLE SAXON IPSWICH WARE POTTERY

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INTRODUCTION

A small programme of petrological analysis was undertaken on sherds of Middle Saxon Ipswich ware as part of an HBMC research project organized by the Northamptonshire Archaeology Unit. Forty-nine sample sherds from a variety of sites were submitted for examination by Paul Blinkhorn, together with a sample of clay from Ipswich. Seven typical Ipswich ware sherds were selected from a number of different locations in Ipswich itself, where a series of kilns producing Ipswich ware are known [Hurst and West, 1957; Smedley and Owles, 1963; Blinkhorn, 1989]. These were supplemented by a similar number of samples of Ipswich-type ware from each of the following sites: Barking Abbey, Essex; Brandon, Suffolk; Canterbury, Kent; North Raunds, Northants; Flixborough, Humberside; and Terrington St. Clement, Norfolk.

Upon receipt of the samples, small pieces were detached from each of the sherds, mounted on glass slides and prepared for examination in thin section under the

petrological microscope. This technique allows the determination of the mineral inclusions present in the clay body of the pottery, together with a description of their textures, though due to the small size of the majority of the clay minerals it is usually not possible to comment on the actual mineral composition of the clay itself [for details of the method see Peacock, 1970; Williams, 1990].

In the hand-specimen, the Ipswich ware sample sherds tend to be darkish grey in colour and occur in a hard sandy fabric containing frequent quartz grains, some of which occasionally protrude through the surface of the vessel, giving rise to the term "pimply" Ipswich ware [Hurst, 1959, 14]. Thin sectioning confirms that quartz is overwhelmingly the most common non-plastic inclusion present in the clay. This, however, can present certain problems, for quartz is a common constituent of much Saxon pottery, making it difficult on occasion to tie down sandy fabrics to likely production centres with a degree of confidence. Some initial work on trying to characterize Ipswich ware has already been attempted by the writer some years ago as an HBMC petrology report. Then, twenty-six sherds of Ipswich-type ware were examined in thin section, with a number coming from Ipswich itself, including "wasters" from the kilns in Carr Street and Cox Lane. Three fabric divisions were defined on the basis of the size and quantity of the quartz grains in the sherds. To the best of the writer's knowledge only a small section of this work has ever been

published [Williams, 1976]. In view of this, and because it seems useful to include as wide a range of samples of Ipswich ware as possible, the original body of petrological work has been included in the present project in a slightly modified form.

PETROLOGY

On the basis of the range and texture of the non-plastic inclusions present in the sherds examined under the petrological microscope, the majority of samples fall into three broad fabric groupings. The remaining samples appear to fall outside of these groupings and have been listed individually with fabric descriptions under site headings.

GROUP 1

[1]. Carr Street, Ipswich [IBM 1935-74A]
Waster (complete vessel) from the kilns discovered on the site of the Co-op extension on the south side of Carr Street in 1935 [Hurst, 1957, Fig. 1, no. 5].

[2]. Cox Lane, Ipswich [958-252A]
Bodysherd from a ninth century A.D. pit.

[3]. Cox Lane, Ipswich [958-252B]
Bodysherd from a ninth century A.D. pit.

[4]. Cox Lane, Ipswich [958-252C]

Bodysherd from a ninth century A.D. pit.

[5]. Cox Lane, Ipswich [958-252D]

Rim from a large jar, middle Saxon pit.

[6]. St. Helen's Street, Ipswich [IAS 36010003]

Complete large jar, unstratified.

[7]. Lower Brook Street, Ipswich [IAS 45020001]

Bodysherd, unstratified.

[8]. Ipswich (precise find-spot unknown) [IBM 1920-53-12]

Rim sherd from a large jar.

[9]. Ipswich (precise find-spot unknown) [IBM 1920-53-13]

Rim sherd from a large jar.

[10]. Treasury, Whitehall, London [78-50]

Bodysherd from the floor of a Saxon hall dated *c.* A.D. 800-1000.

[11]. Treasury, Whitehall, London [78-4]

Rim sherd from the floor of a Saxon hall dated *c.* A.D. 800-1000.

[12]. Treasury, Whitehall, London [IX-205]

Bodysherd.

[13]. Treasury, Whitehall, London [205.5]

Base sherd.

[14]. Althorpe Grove, Battersea, London [AG77-TRE53]

Stamped bodysherd.

[15]. Greyfriars' Road, Ipswich [IP 5]

Base sherd from a small jar, backfill of late Mediaeval pit.

[16]. Foundation Street, Ipswich [IP 6]

Sherd from the shoulder of a lugged pitcher, backfill of middle Saxon pit.

[17]. Buttermarket, Ipswich [IP 7]

Bodysherd, backfill of late Mediaeval pit.

[18]. Barking Abbey, Essex [Ba 3]

Shoulder sherd from a fairly large vessel, context 79.

[19]. Barking Abbey, Essex [Ba 5]

Bodysherd from a fairly large vessel, unstratified.

[20]. Brandon, Suffolk [Br 2]

Sherd from lower body of a fairly large vessel, middle Saxon context.

[21]. Brandon, Suffolk [Br 5]

Bodysherd from a stamped storage vessel, middle Saxon context.

[22]. Brandon, Suffolk [Br 6]

Rim sherd from a small jar, middle Saxon context.

[23]. Canterbury, Kent [CY 3]

Base sherd from a very large vessel.

[24]. Canterbury, Kent [CY 4]

Bodysherd from a large vessel.

[25]. Flixborough, Humberside [Fx 6]

Bodysherd with handle scar from a pitcher, unstratified.

[26]. Flixborough, Humberside [FX 7]

Base sherd from a small to medium-sized vessel, unstratified.

[27]. North Raunds, Northamptonshire [NR 5]

Bodysherd from a fairly large vessel.

Frequent and fairly well-sorted angular to subangular grains of quartz, generally measuring below 0.30mm in size, with a few slightly larger grains, some of them polycrystalline. Also present are flecks of mica [mostly muscovite], moderately frequent small pieces of flint/chert in the same size-range as the quartz, flecks of mica, a little quartzite, sparse small discrete grains of plagioclase felspar, very occasional fragments of ironstone and some black and red iron oxide.

GROUP 2

[1]. Cox Lane, Ipswich [IBM 961-5-D]

Large bodysherd waster.

[2]. Vernon Street, Ipswich [IAS 74020090]

Bodysherd from middle Saxon ditch.

[3]. Vernon Street, Ipswich [IAS 74020090]

Bodysherd from middle Saxon ditch.

[4]. Treasury, Whitehall, London [78-1]

Rim sherd from the floor of a Saxon hall dated *c.* A.D. 800-1000.

[5]. Castor, Cambridgeshire [73-L-101]

Bodysherd.

[6]. Castor, Cambridgeshire [71-XLV-9]

Bodysherd.

[7]. Castor, Cambridgeshire [73-L-21]

Bodysherd.

[8]. Rickinghall, Suffolk [1946-213A]

Bodysherd.

[9]. Rickinghall, Suffolk [1946-213B]

Bodysherd.

[10]. Foundation Street, Ipswich [IP 3]

Shoulder sherd from a large jar, backfill of middle Saxon pit.

[11]. Foundation Street, Ipswich [IP 4]

Bodysherd from a large jar, possibly from same vessel as no. [10], backfill of middle Saxon pit.

[12]. Barking Abbey, Essex [Ba 2]

Sherd from shoulder of a medium-sized vessel, context 79.

[13]. Barking Abbey, Essex [Ba 7]

Sherd from shoulder of a small jar, unstratified.

[14]. Brandon, Suffolk [Br 3]

Bodysherd from a fairly large vessel, middle Saxon context.

[15]. Brandon, Suffolk [Br 4]

Bodysherd from a fairly large vessel, middle Saxon context.

[16]. Brandon, Suffolk [Br 7]

Rim sherd from a small jar, middle Saxon context.

[18]. Flixborough, Humberside [Fx 1]

Bodysherd from a large vessel, unstratified.

[19]. Flixborough, Humberside [FX 2]

Bodysherd from a large vessel, unstratified.

[20]. Flixborough, Humberside [FX 3]

Bodysherd from a large vessel, unstratified.

[21]. Flixborough, Humberside [FX 4]

Bodysherd from a small to medium-sized vessel, unstratified.

[22]. Flixborough, Humberside [FX 5]

Bodysherd from a large vessel with exterior burnish.

[23]. North Raunds, Northamptonshire [NR 2]

Bodysherd from a large vessel.

[24]. North Raunds, Northamptonshire [NR 7]

Bodysherd from a medium-sized vessel, unstratified.

[25]. Terrington St. Clement, Norfolk [Te 2]

Bodysherd from a medium-sized vessel, unstratified.

[26]. Terrington St. Clement, Norfolk [Te 3]

Bodysherd, unstratified.

[27]. Terrington St. Clement, Norfolk [Te 6]

Bodysherd, unstratified.

A groundmass of frequent small angular to subangular quartz grains, the majority below 0.10mm in size, with a sparse scatter of fairly well-rounded larger grains of various sizes up to 1.30mm across, some of them cracked and polycrystalline in appearance. Also present are moderately frequent flecks of mica [mostly muscovite], small pieces of flint/chert, some quartzite, a little ironstone, black iron oxide and small grains of

plagioclase felspar. Sample no. 26 also contains a fragment of limestone. The noticeable disparity between the different size-grades of quartz suggests that the larger grains may well have been added to the clay as a form of temper.

GROUP 3

[1]. Waltham Abbey, Essex [B-28-16]
Bodysherd from a foundation wall deposit dated *c.* A.D. 800-1000.

[2]. Blythburgh, Suffolk [1965-28-TM-451756]
Bodysherd.

[3]. Tattingstone, Suffolk [1970-26-TM-146377]
Bodysherd.

[5]. Barking Abbey, Essex [Ba 4]
Bodysherd from a fairly large vessel, unstratified.

[6]. Canterbury, Kent [CY 5]
Bodysherd from a large vessel.

[7]. North Raunds, Northamptonshire [NR 1]
Bodysherd from a large vessel.

Like the other two fabric groups above, quartz is once again the dominant inclusion type. However, the average grain size at about 0.10-0.15mm tends to be larger than those in Group 2, excluding the sparse larger grains, while at the same time slightly smaller than those in

Group 1, indicating a finer-grained texture. Also present are moderately frequent flecks of mica [mostly muscovite], with a little flint/chert, quartzite, clay pellets, plagioclase felspar and iron oxide.

INDIVIDUAL SHERDS FALLING OUTSIDE THE THREE MAIN FABRIC GROUPINGS

IPSWICH, SUFFOLK

IP 1 [Buttermarket] Shoulder sherd of a Buttermarket-type bottle, backfill of middle Saxon pottery kiln.

A relatively fine-textured fabric containing a moderate number of quartz grains, generaly under 0.30mm in size, and flecks of mica, together with the odd small grain of felspar, quartzite, some small pieces of flint/chert and a little black and red iron oxide.

IP 2 [Foundation Street] Bodysherd from ?Buttermarket-type bottle, backfill of early ninth century A.D. pit.

A fairly clean clay matrix containing moderately frequent ill-sorted quartz grains ranging up to 1.20mm across,

together with sparse flecks of mica, a large piece of flint/chert, a few small fragments of limestone, an oolith and some black iron oxides.

Unfired clay sample from Crown Street, Ipswich

Frequent well-sorted quartz grains generally below 0.20mm in size, together with sparse mica, some green and brown glauconite, a little small flint/chert and black iron oxide.

BARKING ABBEY, ESSEX

Ba 1 Base sherd from a large vessel, unstratified.

Groundmass of silt-sized quartz grains with a moderately frequent scatter of larger grains up to 0.40mm across, together with flecks of mica, a little flint/chert and black iron oxide.

Ba 6 Sherd from the shoulder of a small jar, unstratified.

A fairly clean clay matrix containing moderately frequent ill-sorted quartz grains ranging up to over 1mm in size, together with sparse flecks of mica and a fragment of

quartz sandstone. Similar in the hand-specimen to Group 2 but somewhat finer groundmass.

BRANDON, SUFFOLK

Br 1 Bodysherd from Buttermarket-type bottle, unstratified.

Frequent subangular grains of quartz ranging up to 0.60mm in size, with flecks of mica, a little flint/chert and some iron oxide.

CANTERBURY, KENT

CY 1 Bodysherd from a large vessel.
Cy 6 Sherd from lower body and base of small vessel.

A fairly clean clay matrix containing frequent quartz grains ranging up to 0.60mm across, small pieces of flint/chert, moderately sparse mica, a few large fragments of ironstone and some dark brown pellets of glauconite.

CY 2 Bodysherd from an extremely large jar.

This may possibly belong to Group 1, but contains somewhat fewer quartz grains than the sherds in that group.

CY 7 Shoulder sherd from a medium-sized vessel.

This fabric is somewhat similar to Group 2, but the groundmass is a little finer than the samples in that group.

NORTH RAUNDS, NORTHAMPTONSHIRE

NR 3 Bodysherd from a large vessel.

This is reminicsent of Group 1, but with slightly less quartz grains present.

NR 4 Bodysherd from a medium-sized vessel.

NR 6 Bodysherd from a medium-sized vessel.

Both sherds may possibly belong to Group 2 since they have a similar groundmass, but they lack the larger quartz grains.

TERRINGTON ST. CLEMENT, NORFOLK

Te 1 Rim sherd from a lugged Buttermarket-type jar, unstratified.

Te 2 Bodysherd, possibly from a Buttermarket-type vessel, unstratified.

Both sherds have a fairly clean clay matrix containing a moderate amount of ill-sorted quartz grains, one of which reaches 2.5mm in size. Also present are flecks of mica, a few pieces of flint/chert, small discrete grains of felspar, a little quartzite and black iron oxide.

Te 4 Bodysherd from a small jar, unstratified.

A groundmass of silt-sized quartz grains with a moderately frequent scatter of larger grains up to about 0.40mm across. Also present are some flecks of mica, flint/chert and a little limestone.

Te 5 Bodysherd from a very large vessel, unstratified.

This may possibly belong to Group 2 since it has a similar groundmass, but it lacks the larger quartz grains.

COMMENTS

It is interesting to find that the majority of the new samples included in the above listings appear to fall within the three petrological fabric grouping previously worked out. However, there are a number of sherds submitted under the new project which cannot easily be accommodated within these three groupings, and these have been listed separately. Due to the common nature of the range of inclusions found in Ipswich ware as a whole, it is not clear at present whether these sherds represent production outside of Ipswich or whether the number of sample sherds from Ipswich itself is still too small to take account of all the nuances of quartz size and distribution noted here. In this context, it may be worth while pointing out that the Research Design for the Ipwswich Ware Project mentions a wide "fabric spectrum" noted in the hand-specimen for Ipswich ware from Ipswich [15/11/93 - 1.4.1]. It is possible, of course, that the sherds which lie outside the three main groups still fall within the outer boundaries of this "fabric spectrum".

"Waster" samples have been examined from the Ipswich ware kiln sites at Carr Street [Hurst and West, 1957], Cox Lane [Smedley and Owles, 1963] and Buttermarket [Blinkhorn, 1989]. Thetford-type pottery seems also to have been produced at the Cox Lane kilns [ibid.]. Group 1 contains sherds from both the Carr Street and Cox Lane kilns, while additionally there are similarities in thin section to samples of Thetford-type ware from the Cox Lane kilns. Neutron activation analysis of a similar

range of material from Ipswich also confirms the similarity in fabric between Ipswich ware and Thetford-type ware [Hawkin, 1978]. It seems likely, therefore, that the same or very similar raw materials were used at both sites for Ipswich ware and at Cox Lane for Thetford-type ware.

Significantly, Group 2 appears to be made up of those Ipswich ware sherds that can be described in the hand-specimen as having a "pimply" fabric. In this case the petrological division seems merely to be reflecting the visual differences in the size-grades of quartz sand present in this material. This group also includes a "waster" from the Cox Lane kilns, but it is not clear if "pimply" Ipswich ware was also made in the Carr Street kilns [Hurst and West, 1957]. It is worth noting here that a limited programme of neutron activation analysis also produced a division of Ipswich ware material from Ipswich into two groupings [Hawkin, 1979; Hunter, forthcoming].

Although Group 3 does not include any vessel from Ipswich, it is not possible at this stage to rule out an origin there given the common nature of the inclusions involved, particularly as comparatively little kiln material has been sampled from Ipswich to test the potential range of fabrics present. It may be possible, for example, that this fabric lies on the borders of the range of Group 1.

The Buttermarket-type bottle sample [IP 1] associated with the kiln of that name, stood out as being somewhat

different in fabric to the three main groupings. It is also texturally different to the other four Buttermarket-type bottles examined: one each from Foundation Street, Ipswich [IP 2] and Brandon [Br 1] and two from Terrington St. Clement [Te 1 and 7]. These five samples do not appear to form a textural group as a whole, though there are certain similarities between the sherd from Foundation Street and the two from Terrington St. Clement.

The presence of glauconite in the clay sample from Crown Street is interesting, for this mineral seems to be absent from all of the Ipswich ware samples from Ipswich itself [and the majority of Ipswich-type ware from the other sites examined]. This suggests that this was possibly not the type of clay used in Ipswich for Ipswich ware pottery. Ipswich is situated on Gravel and Sand, Alluvium and patches of Tertiary clay [Reading Beds Thanet Beds and London Clay], with Boulder Clay just to the north of the city [Geological Survey 1" Map of England Sheet no. 207]. The local Reading and Thanet Beds both contain glauconite, with lesser amounts also present in the London Clay [Boswell, 1927]. The sample of clay collected probably came from one of these formations. The angularity of some of the quartz grains in the three main Ipswich ware fabric groupings, together with the small amount of felspar present, might suggest that the clay or the sand used in the pottery could have derived in some way from the local glacial deposits [*ibid.*].

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