

## **The Pottery from the Big Pit, Roy's Orchard, Pipe Aston, Herefordshire**

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### Introduction

The Pipe Aston project, supported by the Heritage Lottery Fund, has as its aim the study of the clay tobacco pipe industry in North Herefordshire, and in particular in the village of Pipe Aston, where between the early 17<sup>th</sup> century (c.1620-40) and the mid 18<sup>th</sup> century clay pipe production was carried out on several sites, many of which appear to have been short-lived and geographically isolated.

Several of these sites are now known through fieldwalking, geophysical survey and excavation and the purpose of this paper is to present some of the preliminary results of this fieldwork for the history of pottery production and use in north Herefordshire. It uses data collected from two excavations, Upper Aston Field and Roy's Orchard.

### Stratigraphy

The Upper Aston Field site has produced clay pipe production waste indicating that it operated in the early to mid 17<sup>th</sup> century. Clay pipe typology suggests a date between c.1620 and 1640 whilst the pottery assemblage suggests a short period of use and hints that the production took place earlier than later within this bracket based mainly on the presence of a waisted tin-glazed albarello, typical of the late 16<sup>th</sup>/early 17<sup>th</sup> century products of the Dukes Place pottery in the City of London which was in operation between c.1570 and c.1621 (Edwards 1999). By the 1640s in London these waisted albarello forms had been replaced by vessels with cylindrical bodies. Since the site appears to have been short-lived the entire pottery collection is treated here as a single assemblage.

The Roy's Orchard site was occupied for a longer period of time. However, after a period of occupation in the later 13<sup>th</sup> and 14<sup>th</sup> centuries (Phase I) the site was abandoned until the mid 17<sup>th</sup> century, when a scatter of pipes and pottery (Phase II) testifies to limited activity (at least in the excavated part of the site). The first major post-medieval activity on the site consists of the digging of a large pit, Phase III, cut through the natural yellow (red-firing) clay and the construction of a pipe kiln. This pit was completely filled and then recut (Phase IV), leaving a small part of its original fill of ash and domestic refuse.

The fill of the Phase III pit consists of a layer of ash at the base of the pit (Phase IIIa) and material from top of the fill, sealed by a layer of cobbles through which the Phase IV recut was dug. The Phase IV pit was filled with four successive ash deposits (IVa to IVd). A layer of yellow clay was present in the fourth filling (IVd) but deposition seems to have continued

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later, although the latest deposits were very close to the modern ground surfaced and are probably contaminated. Finds from those latest deposits have been left out of consideration here.

## The Pottery

### **The wares**

#### Medieval wares

A few sherds of medieval pottery were present in the Roy's Orchard Phase III and IV pit fills, indicating that there is some residual material in the fills. These sherds are coded MEDLOC in the various tables below.

#### Hereford A7d

Two distinct products have been classed here as Hereford Fabric A7d (Vince 1985; Vince 2002). The first is a low-fired glazed red earthenware and the second is a high fired, often vitrified, black-glazed ware. Although the glaze colour is different, it is likely that this is due to the adsorption of iron from the body of the higher-fired blackwares rather than the addition of iron to the glaze. However, several of the glazed red earthenware vessels were coated with a brown or red slip before firing, and on some the glaze appears to have been mixed with brown slip, giving rise to a brown margin around the edges of some glazed areas. This use of red slip has not been noted elsewhere in the county and may indicate the influence of Staffordshire coarseware products.

#### Staffordshire Wares

A variety of Staffordshire products was present on both sites. Almost all of these were produced from Coal Measure red-firing or white-firing clays, or in the case of the coarsewares a poorly-mixed combination of the two. It should be noted that these clays fired to a range of colours but for simplicity these are referred to as red and white firing clays. The wares were assigned to the following codes (in approximate order of introduction):

Midlands Yellow Ware (MY): A whiteware with a thick glossy yellow glaze (sometimes olive green on reduced vessels). The glaze is often crazed and has a bad fit to the body. Vessels of this type were produced at several centres including Ticknall 2005 and Wrenthorpe (Moorhouse and Roberts 1992) and it is by no means certain that these are Staffordshire products. Brown slip trailing, usual in the form of a band of vertical dashes, is sometimes present but most vessels were undecorated.

Staffordshire Coarseware (STCOAR). Vessels in an earthenware body, often with very obvious mixture of different coloured clays, with a black glaze, often over a red slip visible at x20 magnification in a broken edge.

Midlands Purple/Staffordshire Butterpot ware (STBU). Vessels made from over-fired redware in which the fabric has fired to a purple or grey colour. These can be unglazed or have a thick black glaze. Again, a Ticknall source is possible although waste of similar type is known from the Staffordshire potteries.

Black-glazed redware (STRE). Vessels with a dark red body and thick black glaze. At x20 magnification it is usually possible to distinguish these from the local blackwares because of the coarser texture and the occasional presence of lenses of white-firing clay. The glaze often has a sparkle caused by the presence of cubic crystals of an iron-rich mineral. In thin section these are seen to concentrate at the glaze/body boundary and the iron is clearly either derived from the body of the pot or an iron-rich slip. Consequently, where these vessels have white slip decoration the glaze overlying the slip has a yellow colour.

Red-slipped slipware (STRES). Vessels with a range of body colours, from white to pink or red, coated internally with a red slip and decorated with white slip trailing. Vessels with a white internal slip and sometimes polychrome slip trailing (as on the Toft-style dishes) are also included in this category but the difference in decorative treatment is noted in the record.

Yellow-glazed slipware (STSL) Vessels of similar character to Midlands Yellow ware but thinner-potted and with a better-fitting glaze. These are the classic Staffordshire slipware vessels decorated in a variety of ways, such as brown slip trailing, jewellery, bands of combed slip, an overall black slip with white slip-trailed over the top.

Mottled ware (STMO). Vessels made from a light-firing clay with a mottled brown/yellow glaze. The colour in the glaze in this case clearly comes from iron impurities added to the glaze rather than to an underlying slip. Plott apparently described the production of this ware in the Staffordshire potteries, although he attributed the colour to manganese (1686).

Embossed press-moulded slipware (STEM). Vessels made from light firing clays and press-moulded on decorated moulds, producing a relief-decorated product. The vessels usually have a layer of slip applied before moulding and can also have slip trailing applied afterwards. A vessel of this type was published by Barton from the St Nicholas' almshouse assemblage of the 1650s from Bristol (Barton 1964) but no examples were found at Gloucester until c.1680-90.

There are also a few types which are usually found in assemblages of late 17<sup>th</sup> to mid 18<sup>th</sup> century Staffordshire wares which are absent from the groups under consideration here:

Combed press-moulded slipware (STCO). Nine sherds of combed slip decorated press-moulded dishes were recovered from Roy's Orchard. Such vessels are found in early 18<sup>th</sup>-century and later deposits in Gloucester (including one dating to the first decade of the 18<sup>th</sup> century at the East Gate Highway 1983).

Brown stoneware (STBRS). Seven sherds of brown Staffordshire stoneware, produced from light-firing Coal Measures clays, were present at Roy's Orchard in deposits. Vessels of this form too were present by c.1710 at Gloucester (Vince 1983, 135-6).

White slipped stoneware (SWSG SLIPPED). Five sherds of slipped stoneware were recovered from Roy's Orchard. Unlike the refined whiteware vessels these were never turned and the thick white slip is clearly visible in broken edges.

Refined white stoneware (SWSG). Nine sherds of refined white salt-glazed stoneware were recovered from the Roy's Orchard site. Only one of these definitely came from a tankard, typical of the earliest refined white stoneware vessels (i.e. probably 1720s) and the rest are probably cups, including one vessel with scratch blue decoration, for which a date in the 1740s-60s is likely.

#### Tin-glazed ware

Tin glazed wares are uncommon in these 17<sup>th</sup>-century Pipe Aston assemblages but include the waisted albarello noted above and sherds from more than one small, probably undecorated ointment pots.

#### Non-local Post-medieval Earthenware

A single sherd of a black-glazed red earthenware of non-local and non-Staffordshire origin was present.

#### Frechen Stoneware

Sherds of Frechen stoneware were recovered from all three 17<sup>th</sup>-century deposits. They include the base of a "belarmine" bottle with no footring and the base of a drinking jug with a footring. Both forms were being copied in London by Dwight in c.1672 (1999) but by c.1685 the Fulham pottery was producing a distinctively different range of forms. It seems likely that by that date Frechen stoneware had ceased to be used in London and, most probably, throughout the British Isles.

#### Martincamp ware

Two sherds from a single Martincamp flask were recovered from Roy's Orchard (Phase III). Three further sherds were present in the excavations. Martincamp flasks were produced in the Beavaisis, perhaps at the village of Martincamp, near Neufchatel-en-Bray (Hurst, Neal, and van Beuningen 1986, 102-4). These vessels appear to be a type fossil for mid 17<sup>th</sup>-century occupation in Herefordshire, as elsewhere.

### **Phase IIIa**

Fifteen pottery vessels were represented in the initial fill of the pit (Table 1).

**Table 1**

Cname	Sum of Nosh	Sum of Weight
HERA7D	5	160
STCOAR	3	29
STRE	3	59
MART	2	19
STRES	2	9
Grand Total	15	276

By both weight and sherd count, the most common type is Hereford Fabric A7d, followed by a group of Staffordshire wares and two sherds of Martincamp flask.

The Hereford A7d vessels include the everted rim of a jar with pronounced wear on the inner lip, indicating the presence of a lid; the rim of a hammer-headed bowl or pancheon (Fig 00) and a body sherd from a deep bowl.

The Staffordshire wares includes sherds of deep bowls or jars in coarseware with black slip and glaze; a black-glazed redware jar base (Fig 00) and a sherd of a wheelthrown red-slipped bowl with white slip-trailing.

One sherd of Staffordshire coarseware had been coated with white slip during use and then overfired.

The Martincamp ware consists of two sherds from the same flask made of light brown earthenware.

### **Phase IIIb**

The upper fill of the first pit, including all material sealed below the cobble capping, consists of 34 sherds from no more than 24 vessels (Table 2).

**Table 2**

cname	Sum of Nosh	Sum of NoV	Sum of Weight
HERA7D	7	1	181
MEDLOC	5	4	56
MY	2	2	3
STCOAR	2	2	18
STMO	1	1	1
STRE	9	6	24
TGW	2	2	22
STRES	6	6	31
Grand Total	34	24	336

The Hereford Fabric A7d sherds including the rim of a deep bowl which had been burnt (Fig 00).

The Staffordshire sherds include the rim of a wheelthrown bowl with internal brown slip and white wavy slip-trailing (Fig.00) and a body sherd from a black-glazed redware vessel with a cylindrical body and tall wavy slip-trailed decoration (Fig 00). A single small sherd of mottled ware tankard was present.

The two sherds of tin-glazed ware include the base of a plain globular bodied vessel (Fig 00).

**Phase IVa**

The primary fill of the recut pit produced 26 sherds of pottery (Table 1). Staffordshire wares now take over as the most common type followed by Hereford Fabric A7d, a single sherd of tin-glazed ware and a black-glazed oval-sectioned handle from an unknown red earthenware.

*Table 3*

cname	Sum of Nosh	Sum of NoV	Sum of Weight
HERA7D	3	3	40
HERC1	1	1	13
MEDLOC	1	1	17
PMX	1	1	8
STCOAR	2	2	7
STMO	1	1	1
STRE	4	4	31
STSL	1	1	1
TGW	1	1	1
STRES	11	11	173
Grand Total	26	26	292

The Staffordshire wares include several red-slipped wheelthrown dishes with white slip trailed decoration. All have a wavy line on the rim flange. A single small body sherd from a yellow-glazed cup or posset pot with external combed slip decoration was present (possibly the same vessel as found in the later fills of the pit). Also present was a body sherd of mottled ware from a vessel with a sharp angular shoulder and waisted body, perhaps an albarello (Fig 00).

The tin-glazed ware consists of a body sherd of an undecorated straight-walled footringed drug jar.

The unknown red earthenware has a fabric containing abundant fine sand, with grains c.0.1-0.2mm across.

**Phase IVb**

The second fill of the recut pit, also filled with ash, produced 86 sherds, 14 of which are residual medieval sherds (Table 4). Staffordshire wares dominated (63 sherds) followed by Hereford A7d and sherds of Frechen stoneware.

*Table 4*

cname	Sum of Nosh	Sum of NoV	Sum of Weight
FREC	2	2	253
HERA7D	6	6	114
MEDLOC	14	14	94
MY	1	1	5
PMTIL	1	1	5

STBU	1	1	7
STCOAR	5	5	19
STMO	2	2	10
STRE	5	5	43
STSL	9	2	62
STRES	40	26	341
Grand Total	86	65	953

The Staffordshire wares consist most of sherds of wheelthrown dishes with internal red slip and white slip trailing. Also present was the base of a bowl with external red slip and internal white slip under a pale yellow glaze (Fig 00). There is no sign that this vessel was slip trailed. Two sherds of large dishes with white slip and polychrome trailing and jewellery were also present. Sherds making up the complete profile of a black-glazed redware cup with a flaring rim were present (Fig 00) and the base of a second example, with scars from three round lumps of white-firing clay on the base. A further sherd of mottled ware, from the base of a closed vessel, was present.

The Frechen stoneware sherd comes from the plain base of a bottle, probably of Belarmine form and the base of a drinking jug with a footring.

### Phase IVc

The third fill of the recut pit produced 76 sherds, representing no more than 65 vessels. All of the sherds are Staffordshire products apart from four sherds of Hereford A7d, two sherds of tin-glazed ware and a residual medieval sherd.

*Table 5*

cname	Sum of Nosh	Sum of NoV	Sum of Weight
HERA7D	4	3	28
MEDLOC	1	1	17
STBU	1	1	57
STCOAR	16	14	157
STEM	3	1	29
STMO	5	4	10
STRE	14	13	46
STRES	22	20	334
STSL	7	5	12
SWSGSL	1	1	1
TGW	2	2	20
Grand Total	76	65	711

The Staffordshire wares include fragments of red-slipped bowls with white slip trailed decoration, most of which are heavily burnt; two sherds from redware vessels, one with white slip trailing and the other with external combed slip; two sherds from a red-slipped jar with internal glaze (Fig 00) and several more sherds of yellow-glazed cup with external combed slip decoration, perhaps from the same vessel as in Phases IVa and IVb-c. A single small sherd of a white salt-glazed stoneware tankard was present. Under x20 magnification, this

sherd is seen to have a relatively coarse refined body, rather than the thick white slip coating found on most early 18<sup>th</sup>-century Staffordshire white salt-glazed tankards. Three sherds of press-moulded embossed slipwares come from a small dish with a brown slip, a dark brown band overlain by white slip-trailed dashes (Fig 00).

The tin-glazed sherds come from the base of a plain drug jar.

### Phase IVd

The final fill of the recut pit produced 75 sherds of pottery, representing no more than 68 vessels. The sherds are much more fragmentary than in the lower pit fills and consist mostly of the same types as were present in that fill. New types, however, consist of two handles from mottled ware tankards; one sherd of press-moulded slip ware, the rim of a large dish with scallop-edging. This vessel might have been embossed or it might have had combed slip decoration. A single sherd from close to the base of a Westerwald stoneware drinking jug, similar to one in the Van Beuningen collection (Hurst, Neal, and van Beuningen 1986, colour plate XII) was present.

*Table 6*

cname	Sum of Nosh	Sum of NoV	Sum of Weight
HERA7D	6	6	39
MEDLOC	3	3	12
STCOAR	18	18	142
STEM	1	1	1
STMO	7	5	27
STRE	5	4	7
STRES	27	23	157
STSL	6	6	6
WEST	2	2	3
Grand Total	75	68	394

## Discussion

### Taphonomy

The stratigraphy on the Roy's Orchard site is in the main quite shallow and in most deposits the pottery, and clay pipes, form a mixed assemblage spanning the period between c.1670 and c.1730. the Phase III and IV pits, however, are exceptional. In the case of the Phase III pit, it is clear that it is one of the earliest post-medieval features on the site and consequently there is little opportunity for mixture of its contents with earlier material.

The latest pottery types from the Phase III pit come from deposits at the top of the fill which were sealed by a hard layer of cobbling. Probably, they indicate that there was a period of time between the filling of the pit and the over-lying cobbling although the possibility of contamination from the fill of Phase IV pit cannot be entirely ruled out (e.g. by mole or other



animal burrowing horizontally between the two fills). None of the late sherds is too large to have been carried along a mole burrow.

By the time the Phase IV pit was dug and backfilled, intensive industrial activity had taken place on the site for anything up to two decades (although the time gap might have been much less). It would therefore be theoretically possible for material used and discarded during that period to have been present in the Phase IV pit fill. However, a study of the identifiable bowls suggests that there was minimal contamination with earlier material, since no bowls stamped by IB were present at all. The same appears to have been true for the various phases of pit filling. Pipes stamped GB occur throughout the fill but those stamped CM occur only in Phase IVa and those stamped PH occur only in phase IVc. Only the very latest fill, IVd, appears to differ, in that the fragmentation of the pot sherds present is might greater than in the lower fills. The pipes, however, are still mostly stamped GB and this latest fill therefore either consists of material discarded immediately after that in IVc or of material discarded during the use of the recut pit. Being unsealed and close to the modern ground surface, this latest fill in any case could easily contain material of later date.

Essentially, therefore, we have two distinct assemblages associated with successive users of the site, IB and GB. That from Phase III can contain little residual post-medieval material since the site appears to have been little used before the digging of this pit and that from Phase IV might contain some finds contemporary with Phase III, although the lack of residual IB pipes suggests that no such contamination occurred. Therefore, as far as the pottery assemblages are concerned, the two phases can be considered to contain solely vessels which were in contemporary use.

### **Dating**

Coins, tokens or other finds which would provide an absolute chronology are lacking from the Phase III and IV pits and neither of the two main pipemakers whose products are represented in the fills has yet been identified, despite an intensive study of local records, both for Pipe Aston and the surrounding region. One therefore has to resort to external evidence for the use of similar pottery types and clay pipe typology.



Maker IB employed over 20 stamps, all on pipe bowls of Broseley type 2, which had a large circular heel and tall graceful bowl shapes. This type is dated by Atkinson to the period c.1670 to c.1690.



Maker GB used two styles of pipe. The first was stamped with a crowned rose and initials or a circular heel and the second was a stamped on a tailed heel of Broseley type. This tailed heel type is dated by Atkinson to c.1680-1710. A series of makers at Broseley actually incorporated dates into their stamps used on tailed heel pipes and these range from 1687 to 1696. However, these stamps include the full name of the maker and at Roy's Orchard no such full name stamps occur in the filling of either pit. Subsequently, a number of makers

using full name stamps on tailed heels were working on the site. Stamps marked with the following maker's names have been found, although it may be that not all were working on the site: John Barns, Iohn Hvmmvns, Thomas Evens, Stephens Watkins, Gorg Brown, Thomas Hopkins, Clemen Melard, Richard Haman and Morris Shaw. One of these stamps was recovered from phase IVd.

It therefore seems that there were four different styles of mark in use in the late 17<sup>th</sup> century in Pipe Aston: (i) simple initials on a Broseley 2 circular heel; (ii) initials either side of a crowned rose on a Broseley 2 circular heel; (iii) simple initials on a tailed heel and (iv) full names on a tailed heel.

*Table 7*

Phase	(i)	(ii)	(iii)	(iv)
IIIa	Dominant	-	-	-
IIIb	Dominant	1 pipe	1 pipe	-
IVa		Half	Half	-
IVb		Half	Half	-
IVc		Half	Half	-
IVd		Half	Half	1 pipe

Most of the pottery types present are common finds in later 17<sup>th</sup> century deposits in Herefordshire (e.g. Hereford Vince 1985; Vince 2002). However, few are closely datable. The red-slipped white-slip trailed bowls found throughout the two phases were both contemporary with and pre-ceded the more elaborate slipware dishes of the type produced by the Tofts and Ralph Simpson. These were being produced by 1663 (the earliest dated Toft dish) but were still in production in the early 18<sup>th</sup> century (e.g. a dish bearing the name and date William Wright 1709, 1973, 30). Examples of the elaborate type were present in Phase IVb. Mottled ware is mentioned by Dr Plott in his *Natural History of Staffordshire* (1686) although in archaeological contexts in the west midlands it usually occurs first in deposits of the early 18<sup>th</sup> century. The single sherd from Phase IIIb could be considered intrusive but the type is clearly present throughout the fill of the recut pit, albeit in small quantities. The yellow-glazed slipware cups occur with dated inscriptions ranging from 1680 to the early years of the 18<sup>th</sup> century (Hodgkin and Hodgkin 1973, 16-25). A small sherd of this type occurred in Phase IVb but could be from the same vessel as was found in Phase IVc and is perhaps contamination. Nevertheless, the type is clearly present before the final filling of the pit.

A porringer with an embossed moulded handle and an oval-sectioned handle from a cup, decorated with dashed slip lines, both of STSL, were present in a garderobe at Nonesuch Palace, predating the demolition of the palace which took place between 1682 and 1690 (2005, 144-5).

The presence of fresh sherds of Frechen stoneware suggests that activity started on the site before the cessation of importation of Frechen stoneware to Britain. The end of this trade seems to have been caused by the foundation of the London stoneware industry, which began with Dwight's pottery at Fulham in the early 1670s (1999) and accelerated by the rapid increase in the use of glass bottles in the late 1670s/early 1680s. However, stoneware vessels would have been robust, however, and could easily have been still in use a decade or more after purchase. Thus, the vessels found at Roy's Orchard could have been purchased in the 1670s and remained in use thereafter.

The external dating for some of the pottery types present therefore suggests a c.1680-1710 date for the fill of the recut pit, Phase IV, and (ignoring the single sherd of mottled ware tankard) a mid 17<sup>th</sup> century date for the fill of the Phase III pit. The end dates for the use of these two pits can be refined somewhat using the conventional typological dating of the pipes, giving a c.1670 or later date for the start of Phase III and a c.1690 date for the end of the Phase IV filling. This would indicate that Phase III both started and finished c.1670, and suggests that either Frechen stoneware continued to be imported later than currently thought likely or that the Broseley Type 2 bowl form started earlier than c.1670.

### **Pottery Supply in 17<sup>th</sup>-century Pipe Aston**

These two assemblages of pottery provide us with two snapshots of pottery use in Pipe Aston. Comparing the two indicates some general trends.

#### **The decline of the North Herefordshire potteries**

Pottery production is known to have taken place a several sites in Herefordshire and adjacent counties in the later 16<sup>th</sup> and 17<sup>th</sup> centuries. By eye and in thin section there is very little difference between the fabrics used at any of the sites and even at x20 magnification the fabric appears fine-textured, with fine mica visible on the surfaces of lower-fired vessels. The Pipe Aston site was clearly being served by one of a cluster of sites which lie to the west of Pipe Aston, in the parishes of Brampton Bryan, Lingen, and Wigmore, situated either in the Teme valley or the land to the south, which at the time formed the royal forest of Deerfold. Six separate sites are known to Herefordshire Council (Table 8, source: <http://www.smr.herefordshire.gov.uk>). Kilns known at Upton Bishop, Pembridge and Whitney are probably too distant to be considered as potential suppliers of Pipe Aston.

*Table 8*

SMR No.	Description	Location	Grid Reference
<a href="#">1641</a>	Pottery kiln	'nr Boresford', Brampton Bryan	SO 3400 6900
<a href="#">1681</a>	Pottery waster heap	Ridges Wood, Birtley Lingen	SO 3500 6900
<a href="#">2529</a>	Pottery kiln	Dickendale, Wigmore	SO 3959 6769

<a href="#">2530</a>	Pottery kiln	Deerfold Farm, Wigmore	SO 3700 6800
<a href="#">2531</a>	Pottery Kiln	Shirley Farm, nr 'the Camp', Wigmore	SO 3870 6630
<a href="#">2532</a>	Pottery kiln	Crookmullen, Wigmore	SO 3920 6810

Excavations in Hereford have found numerous late 16<sup>th</sup> century pottery assemblages which do not contain this fabric and the potteries therefore cannot have started much before c.1600. The forest of Deerfold was leased to ironmasters operating the forge at Bringewood in 1591 in order to supply charcoal and it may be that potters became established in the area at that time (REF).

The end of the industry is said to have been a consequence of the expulsion of potters from the forest by royal decree (Marshall 1946, 00). This expulsion was said to have been necessary because timber supplies suitable for the royal navy were dwindling. However, such prohibitions seem to have been made elsewhere with little or no effect. The archaeological evidence for the end of the industry consists of two post-medieval pottery assemblages, stratified one on the other, from Wigmore Abbey farm (excavated by Eric Smith). The lowest of these contained North Herefordshire products in large quantities whilst the higher one contained Staffordshire coarsewares in their stead. Both were associated with late 17<sup>th</sup>-century Staffordshire slipwares (Vince 1984). This general late 17<sup>th</sup>-century date is consistent with the evidence from Hereford, where late 17<sup>th</sup> and 18<sup>th</sup>-century assemblages contain a mixture of Staffordshire black-glazed coarsewares and locally-produced slipwares of types known from the production sites of Newent Glasshouse and Whitney on Wye which can be dated to the late 17<sup>th</sup> to mid 18<sup>th</sup> centuries (Vince 1977; Vince 1985, HERA7E).

Excavations at Upper Aston Field in 2000 and 2006 have produced a small assemblage of pottery associated with pipe production waste of c.1620-1640. This pottery includes both North Herefordshire and Staffordshire coarsewares as well as a range of Staffordshire slipwares, a tin-glazed ware albarello of waisted, late 16<sup>th</sup> to early 17<sup>th</sup>-century type and a sherd of Frechen stoneware (Table 9).

*Table 9*

Cname	Sum of NoV	Sum of Nosh	Sum of Weight
FREC	1	1	3
HERA7D	50	57	499.5
MY	18	26	72.5
STBU	1	1	24
STCOAR	6	12	219
STRES	1	3	6
TGW	5	28	48
Grand Total	82	128	872

A comparison of the three assemblages (Table 10) indicates that the established pattern is probably correct but that we can now examine the later years of the North Herefordshire potteries in more detail. The North Herefordshire potters had two main products, plain lead-glazed red earthenware vessel, used for a variety of purposes, but mainly storage and food preparation and cooking. The frequency of these types by sherd count are given in table 10. There is actually no difference in frequency from the early to mid 17<sup>th</sup> century to the 1670s and then a sharp decline in the 1680s. The frequency of Staffordshire coarsewares, however, does not really rise correspondingly. This is probably because the overall range of pottery in use was actually increasing during this period, so that coarsewares from whatever source then appear to decline. The frequency of North Herefordshire to Staffordshire coarsewares is also given in table 10 and shows that Staffordshire and local coarsewares were competing at a similar rate in the two earlier periods rather than their being a steady increase in the non-local ware. When the frequency of north Herefordshire sherds in Phase IV is examined fill by fill then it is seen that the decline took place between IVb and IVc. The earlier fills have frequencies of 60% and 70% whilst the later two have frequencies of 18% and 25%. It seems, then that the North Herefordshire glazed red earthenware industry ceased either during the 1680s or immediately before (allowing some time for vessels in use to be broken).

The other main product of the north Herefordshire potteries was blackware. Here too the local industry was competing with Staffordshire but initially with much more success, in that there were no Staffordshire redware cups, tankards or mugs in the Upper Aston Field assemblage compared with 15% by sherd count of the local vessels. By the 1670s, however, there is only a negligible quantity of local blackware present and all the blackware vessels found were Staffordshire products. In terms of the weight of pottery produced, the loss of the blackware market may not have been significant but it is likely that the blackware vessels were more numerous (the groups are not large enough to compare estimated vessel equivalents) and probably they were also more profitable. It is probably significant that the late 17<sup>th</sup>-century slipware industries which survived, at Whitney and Newent Glasshouse, did not attempt to compete with Staffordshire for the finer end of their market but concentrated on the plain earthenwares and simple two-colour slipwares.

*Table 10*

Date	HERA7D Coarsewares	STCOAR	HERA7D/ HERA7D+ STCOAR	STRE	HERA7D blackware
1620-40	24%	8%	75%	0%	15%
1670-80	24%	10%	71%	24%	0%
1680-90	6%	15%	34%	12%	0%

Relative Chronology of Staffordshire Wares

The three assemblages also offer us a good view of the range of Staffordshire vessels traded to Pipe Aston. Relative frequencies can only provide a coarse estimate of the sequence since in the earliest phase, at Upper Aston Field, the total quantity of Staffordshire ware present is low. However, it is clear that in the earliest phase Midlands Yellow ware was the main Staffordshire product present, followed by coarseware, red-slipped white-sliptrailed ware and overfired coarse earthenware (STBU). By the 1670s, however, the most common ware present, by sherd count, is the black-glazed redware, totally absent in the earlier phase, followed by red-slipped white-slip-trailed ware, and then coarseware. By the 1680s the blackglazed redware was in decline, being replaced by yellow-glazed slipware and, at the very end of the phase, press-moulded embossed ware. The single, dubiously stratified sherd of mottled ware accounts for 4% of the Staffordshire wares in Phase III, an indication of the small size of these assemblages and a warning against over-interpreting these statistics.

*Table 11*

Period	MY	STBU	STCOAR	STEM	STMO	STRE	STRES	STSL	SWSG
1630-40	62%	2%	29%	0%	0%	0%	7%	0%	0%
1670s	7%	0%	18%	0%	4%	43%	29%	0%	0%
1680s	0%	1%	18%	2%	7%	15%	45%	11%	0%

However, the patterns found at Pipe Aston do provide a model which can be tested elsewhere, both on other assemblages from Pipe Aston, and elsewhere in Herefordshire.

### Pottery and the Supply of Raw Materials to Pipe Aston

One of the aims of the Pipe Aston project was to examine the source of clay used for pipemaking. It was mooted that perhaps the reason for the pipe industry arriving in Aston in the first place was the supply of clay and fuel.

Chemical analysis of a sample of the Upper Aston Field products was carried out and compared with samples of early 17<sup>th</sup> century and later pipes from Broseley, pipes found elsewhere but stamped by Broseley makers and samples of clay from the Clee Hills. Previously, samples of wig curlers and a random selection of stamped pipes was analysed, to establish whether or not the wig curlers were likely to have been made on the site or elsewhere.

Statistical analysis of the data from these various datasets was carried out using factor analysis and four major factors were found. A plot of the first against the second factor shows that all the Broseley pipes, and the Clee Hills clay samples have higher F1 scores than the majority of the Pipe Aston pipes (Fig 00). The exceptions, however, are the samples of pipes from Upper Aston Field which have similar F1 and F2 scores to the Broseley pipes, and to a sample of clay from Ironbridge Gorge.





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