Chapter 4: The material evidence

The first part of the chapter contains specialist reports on the artefacts. The second part contains reports on the environmental evidence and and the final part comprises details of radiocarbon and archaeomagnetic dating.

POTTERY *by Paul Blinkhorn*

Introduction

The report is in two parts; the first dealing with the post-Roman pottery derived from domestic activity from all the sites investigated. The second part deals exclusively with the large quantity of late medieval Reduced ware representing the industrial waste from the two pottery kilns on Sites 6 and 8.

The pottery assemblage comprised 545,553 g with an estimated vessel equivalent (EVE), by summation of surviving rimsherd circumference, of 260.26. It included manufacturing waste from two late medieval kilns, totalling 499,517 g and with an EVE = 224.53. The rest of the assemblage was early Saxon or later, and comprised 4,250 sherds with a total weight of 46,036 g (EVE = 35.73).

The ceramic evidence suggests that there was unbroken occupation at the site possibly from the middle of the 5th century, and certainly from *c* AD 500 until the 12th century. After that, the area appears to have been waste or agricultural land, until the establishment of a late medieval pottery industry at the site, with at least three kilns manufacturing late medieval Reduced ware at the site. After these fall from use, probably some time in the 15th century, the land once again becomes marginal.

Analytical methodology

The pottery – both Post-Roman and Medieval – was initially bulk-sorted and recorded on a computer using DBase IV software. The material from each context was recorded by number and weight of sherds per fabric type, with featureless body sherds of the same fabric counted, weighed and recorded as one database entry. Feature sherds such as rims, bases and lugs were individually recorded, with individual codes used for the various types. Decorated sherds were similarly treated. In the case of the rimsherds, the form, diameter in mm and the percentage remaining of the original complete circumference was all recorded. This figure was summed for each fabric type to obtain the estimated vessel equivalent (EVE).

The terminology used is that defined by the Medieval Pottery Research Group's *Guide to the Classification of Medieval Ceramic Forms* (MPRG 1998) and to the minimum standards laid out in the *Minimum Standards for the Processing, Recording, Analysis and Publication of post-Roman Ceramics* (MPRG 2001). All the statistical analyses were carried out using a Dbase package written by the author, which interrogated the original or subsidiary databases, with some of the final calculations made with an electronic calculator. All statistical analyses were carried out to the minimum standards suggested by Orton (1998-9, 135-7).

Fabrics

The middle Saxon and later pottery was quantified using the chronology and coding system of the Northamptonshire County Ceramic Type-Series (CTS). The CTS does not include Anglo-Saxon hand-built pottery as the variable nature of the material means that each site has to have its own specific fabric series. A total of 1,330 sherds (20,094 g, EVE = 13.19) of Anglo-Saxon pottery was recorded in the following fabrics and quantities:

F1: Quartz and Oolitic limestone. Sparse to moderate sub-rounded quartz up to 1 mm, sparse sub-rounded limestone up to 2 mm, rare ooliths, rare black ironstone up to 2 mm. 219 sherds, 3,433 g, EVE = 2.02.

F2: Sparse quartz up to 1 mm, few other visible inclusions. 347 sherds, 4,964 g, EVE = 4.07.

F3: Granite. Sparse to moderate sub-angular granite lumps up to 2 mm, free quartz grains up to 1 mm, rare rounded red ironstone up to 2 mm. 49 sherds, 582 g, EVE = 0.48.

F4: Chaff-tempered. Moderate to dense chaff voids up to 4 mm, rare quartz grains up to 1 mm. 76 sherds, 864 g, EVE = 1.11.

F5: Quartz tempered. Moderate to dense sub-rounded quartz up to 1 mm, rare red and black ironstone, limestone and organic material up to 2 mm. 508 sherds, 8,201 g, EVE = 3.69.

F6: Limestone. Rare to sparse shelly limestone platelets up to 2 mm, rare quartz up to 1 mm. 5 sherds, 187 g, EVE = 0.11.

F7: Red Ironstone. Sparse to moderate sub-rounded red ironstone up to 2 mm, rare quartz and limestone up to 1 mm. 126 sherds, 2,133 g, EVE = 1.71.

The range of fabric types is typical of sites in the region. Most of the pottery could easily have been made from locally-occurring clays, as most of the inclusions noted can be found in the vicinity of the site. The exception is the granitic wares, which occur in small quantities on most contemporary sites in the county and are likely to have originated in Leicestershire, where outcrops of Mount Sorrel granite are known in the Charnwood forest area (Vince 1995). Clays in that area, with distinctive acid igneous rock inclusions, have been exploited since the Iron Age.

The middle Saxon and later pottery, classified using the CTS, was as follows:

F95: **Ipswich Ware Group 1 fabrics**, AD725-850. 83 sherds, 888 g, EVE = 0.21.
F96: **Ipswich Ware, group 2 fabrics**, AD725-850. 3 sherd, 30 g, EVE = 0.
F97: **Raunds-type Maxey Ware**, c. AD650–850. 148 sherds, 2,584 g, EVE = 0.87.
F100: **T1(1) type St Neots Ware**, AD850-1100. 780 sherds, 5,390 g, EVE = 6.46.
F102: **Thetford-type ware,** AD850-1100. 10 sherds, 338 g, EVE = 0.18.
F200: **T1 (2) type St Neots Ware**, AD1000-1200. 845 sherds, 5,932 g, EVE = 3.85..
F205: **Stamford ware,** AD850-1250. 107 sherds, 778 g, EVE = 1.24.
F207: **Oolitic ware**, AD975–1150. 26 sherds, 611g, EVE = 0.50.
F330: **Shelly Coarseware**, AD1100-1400. 659 sherds, 6,707 g, EVE = 7.13.
F360: **Miscellaneous Sandy Coarsewares**, AD1100-1400. 6 sherds, 86g, EVE = 0.04.
F319: **Lyveden/Stanion 'A' ware**, AD1150-1400. 31 sherds, 569 g, EVE = 1.18.
F320: **Lyveden/Stanion 'B' ware**, AD1225-1400. 15 sherds, 218 g, EVE = 0.12.
F328: **Grimston Ware**, L 12th–15th century. 1 sherd, 4g, EVE = 0.
F329: **Potterspury ware**, AD1250-1600. 61 sherds, 787 g, EVE = 0.04.
F322: **Lyveden/Stanion 'D' ware**, AD1400-?1500. 4 sherd, 70 g, EVE = 0.
F366: **Raunds-type Reduced ware**, ?14th century. 2 sherds, 59g, EVE = 0.06.
F369: **Brill/Boarstall 'Tudor Green' types**, late 15th 17th century. 1 sherd, 1 g, EVE = 0.
F401: **Late Medieval Oxidized ware**, ?AD1450-?1500. 14 sherds, 248g, EVE = 0.18.
F403: **Midland Purple ware**, AD1450-1600. 4 sherds, 346 g, EVE = 0.07.
F404: **Cistercian ware**, AD1470-1550. 6 sherds, 21 g, EVE = 0.15.
F406: **Midland Yellow ware**, 1550–1700. 20 sherds, 212g, EVE = 0.07.
F407: **Red Earthenwares**, AD1400+. 36 sherds, 460 g, EVE = 0.09.
F408: **Rhenish Stonewares**, AD1450+. 3 sherds, 38 g, EVE = 0.10.
F409: **Staffordshire slipware**, AD1680-1750. 3 sherd, 56 g, EVE = 0.
F410: **Tin-glazed Earthenware**, 17th–18th century. 2 sherd2, 7g, EVE = 0.
F411: **Midland Blackware**, AD1550-1700. 1 sherd, 41 g, EVE = 0.
F413: **Manganese Glazed ware**, late 17th–18th century. 2 sherds, 31 g, EVE = 0.
F415: **Creamware**, mid 18th–early 19th century. 1 sherds, 12 g, EVE = 0.
F417: **Nottingham Stoneware**, 18th–19th century. 2 sherds, 26g, EVE = 0.
F426: **Iron-glazed Earthenware**, late 17th–19th century. 9 sherds, 237 g, EVE = 0.
F429: **Staffordshire White Salt-Glazed Stoneware**, 1720-80. 4 sherds, 6 g, EVE = 0.
F1000: Miscellaneous 19th and 20th century wares. 29 sherds, 141 g.

A sherd not covered by the CTS was also noted, as follows:

?**North French Blackware**, 7th–9th century. Fine, grey sandy fabric, darker surfaces with external burnishing and ?rouletting. 1 sherd, 2g, EVE = 0.

Post-Roman Pottery

The Anglo-Saxon pottery assemblage is both one of the earliest and one of the largest from Northamptonshire and the surrounding region. The spatial distribution of the pottery shows that there was a degree of settlement mobility, but that this related to the organization of the site rather than simply being the result of rebuilding of structures as they decayed over time. The middle Saxon assemblage also shows spatial traits which suggest that either the chronology of Maxey ware is in need of reconsideration, or that it had a functional role which was very different to the other contemporary type, Ipswich ware. The late Saxon pottery also shows some spatial traits which offer evidence of the internal organization of the settlement at that time.

Chronology

Early Saxon pottery

The dating of Early Saxon hand-built pottery is almost entirely reliant on the presence of decorated sherds, although there are a few chronologically distinct vessel forms. Sharply carinated vessels, particularly bowls (*Schalenurnen*) tend to date to the 5th century, although later examples are known, while tall, narrow, high-necked vessels tend to be of 7th-century date. The main problem is the identification of groups dating to the 7th century. It seems that the Anglo-Saxons generally used only plain vessels during that time (Myres 1977, 1), but it cannot be said that an assemblage which produced only plain sherds is of 7th-century date. Usually, decorated hand-built pottery only

comprises around 3-4% of domestic assemblages, as was the case at sites such as West Stow, Suffolk (West 1985) and Mucking, Essex (Hamerow 1993), so a lack of decorated sherds could be the result of the vagaries of archaeological sampling rather than chronology.

Here, a total of 52 decorated sherds (501g, EVE = 0.45) were noted, representing 3.9% of the hand-built assemblage, and a wide range of decorative techniques occurred, some of which appear to date to the earliest part of the Early Saxon period, that is to around the middle of the 5th century. For example, a sherd from context 1257 has fragments of impressed fingertip decoration and curved lines (Fig 4.1, 1). Myres (1977, 28-30 and fig. 167) found many continental parallels to vessels with such decoration, which he dated to the later 4th to mid-5th century.

A number of other pieces of a similar date were noted. A small jar with well-defined shoulders and linear decoration (Fig. 4.1, 2) appears likely to date to the early part of the early Anglo-Saxon period. Such decoration again has many continental parallels, and many of the smaller vessels of similar shape and decoration from this country are of 5th-century date (Myres 1977, 45). Although 6th-century examples are known (H. Hamerow pers.comm.), on balance the occurrence of a number of other early sherds on this site suggests that an early date for this vessel is reasonable.

A similar date, for the same reasons, can be postulated for two sherds from context 6058, both of which were incised and carinated (Figs 4.1, 3-4). A similar date can be suggested sherd from context 1300 with a slashed carination (Fig. 4.1, 5); it is possibly from a *Schalenurne*, and is also likely to be early. Further sherds that are likely to be contemporary are a rim from a small jar with horizontal combing (Fig. 4.1, 6), and a vessel with corrugated shoulders from context 1254 (Fig. 4.1, 7). The exact form of the latter is uncertain, but bowls in this style were said by Myres (1977, 17) to be amongst the earliest Anglo-Saxon vessels in England, although later examples are known.

A small group of bossed and incised sherds were also noted, and these are most likely to date to the later part of the 5th century (ibid. 39). Four of the sherds (Figs 4.1, 8-10 and 18) had bosses which were pressed out from the inside, while a fifth (Fig. 4.1, 11) also had fragments of two stamps. This seems most likely to date to the early to mid 6th century (ibid. 42). Other 6th-century material occurred in the form of a group of stamped sherds (Fig. 4.1, 12-16, 19-22), some with linear decoration, which can be amongst the latest decorated early Anglo-Saxon pottery (ibid. 20-2).

The rest of the early Saxon decorated pottery assemblage comprises small fragments of incised sherds of uncertain type, and three with rustication (eg. Fig. 4.1, 17). None was dateable other than to within the broad early Saxon period.

Illustrated sherds

Figure 4.1

1 DES8: Context 1257, Fabric 5. Fingertip and line decoration. Dark grey fabric with smoothed outer surface.
2 DES15: Evaluation trench 10, context 4, F7. Rim and shoulder of small jar with incised decoration. Uniform black fabric.
3 Context 6058, F3. Carinated and incised vessel. Black fabric with dark brown, burnished outer surface.
4 Context 6058, F2. Carinated and incised vessel. Black fabric with burnished surfaces.
5 Context 1300, F5. Bodysherd from vessel with slashed carination. Uniform black fabric.
6 Context 1255, F7. Rimsherd from small jar with horizontal cordons. Uniform black fabric, burnished outer surface.
7 DES4: Context 1254, F5. Sherd from vessel with corrugated shoulders. Black fabric with smoothed outer surface.
8 DES5: Context 1255, F5. Sherd with fragment of incised boss. Hard black fabric with 'wet-hand' finished outer surface.
9 DES6: Context 1269, F2. Sherd with fragment of incised boss Black fabric with highly burnished surfaces.
10 DES7: Context 1255, F5. Bossed and incised sherd. Black fabric with smoothed and lightly burnished surfaces.
11 DES16: Evaluation trench 10, context 4, F5. Bossed, stamped and incised sherd. Uniform black fabric.
12 DES14: Context 1269, F1. Rimsherd from small jar with row of stamps on neck. Dark grey fabric with dark brown, burnished surfaces.
13 DES9: Context 1300, F5. Stamped and incised sherd. Black fabric with smoothed and lightly burnished surfaces.
14 DES14: Context 1269, F1. Stamped and incised sherd. Dark grey fabric with dark brown, burnished surfaces.
15 Context 6058, F2. Stamped sherd. Uniform black fabric with burnished outer surface.
16 Context 6923, F5. Stamped and incised sherd. Dark grey fabric with dark brown, smoothed outer surface.
17 Context 1300, F1. Rusticated bodysherd. Dark grey fabric with smoothed outer surface.
18 Context 8196, F7. Bossed and incised sherd. Light grey fabric with smoothed, darker surfaces.
19 Context 8196, F5. Stamped and incised sherd. Black fabric with light grey-brown outer surface.
20 Context 8196, F5. Rimsherd from small jar with stamped and incised decoration. Uniform black fabric with smoothed surfaces.
21 Context 6023, F5. Stamped and incised sherd. Uniform black fabric, smoothed outer surface.
22 Context 6652, F5. Stamped and incised sherd. Dark grey fabric with orange –brown outer surface.

Middle Saxon and later pottery

Each context-specific assemblage of middle Saxon and later date was given a seriated phase date on the basis of the pottery types present, based on the methodology defined in the Northamptonshire County Ceramic Type-Series (Tables 4.1 and 4.2).

Fig. 4.1 Early Saxon pottery

Table 4.1: RSP Phases and Major Defining Wares for the Post-Roman Ceramics of Northamptonshire c. *450–1100*

RSP Phase	*Defining Wares*	*Chronology*
MS	Ipswich Ware, Maxey-type Wares	*c.* AD650–850
LS1	Early Stamford ware, T1(1) St. Neots Ware	*c.* AD850–900
LS2	Stamford Ware, Northampton Ware	*c.* AD900–975
LS3	Cotswolds-type Oolitic Ware	*c.* AD975–1000
LS4	T1(2) St. Neots Ware	*c.* AD1000–1100

Table 4.2: RSP Phases and Major Defining Wares for the Medieval Ceramics of Northamptonshire

RSP Phase	*Defining Wares*	*Chronology*
Ph0	Shelly Coarsewares, Sandy Coarsewares	*c.* AD1100–1150
Ph1	Lyveden/Stanion 'A' Ware	*c.* AD1150–1225
Ph2/0	Lyveden/Stanion 'B', Brill/Boarstall ware	*c.* AD1225–1250
Ph2/2*	Potterspury Ware	*c.* AD1250–1300
Ph3/2	Raunds-type Reduced Ware	*c.* AD1300–1400
Ph4	Lyveden/Stanion 'D' Ware	*c.* AD1400–1450
Ph5	Late Medieval Oxidized Ware	*c.* AD1450–1500

Pottery occurrence

Table 4.3 shows the pottery occurrence per RSP phase. It shows that there were high levels of pottery deposition at the site through the Anglo-Saxon period and into the early medieval period. Pottery is relatively scarce from phase LS3, but as this is a very short phase (*c* 25 years), this is hardly surprising, and there is no reason to believe that there was an hiatus at that time. By the second half of the 12th century (Ph1), there is a sharp decline in the amount of pottery deposited at the site, with very little from the 13th and 14th century. Once the site is occupied by potters in the 15th century, pottery (kiln waste aside) begins to occur in reasonably significant amounts. After the kilns were abandoned, pottery deposition again decreased, with the general impression gained that from the second half of the 12th century onwards, the Kings Meadow Lane area was very much marginal in terms of its relationship to the town of Higham Ferrers.

Table 4.3: Pottery occurrence per ceramic phase, all post-Roman fabrics

Phase	*No sherds*	*Wt sherds (g)*	*EVE*
ES	647	10766	5.96
E/MS	575	8341	6.55
MS	238	3304	0.98
LS1	330	2362	2.83
LS2	335	2721	2.92
LS3	31	662	0.72
LS4	474	2984	1.81
Ph0	999	8225	9.14
Ph1	48	699	1.17
Ph2/0	22	305	0.37
Ph2/2	43	524	0.13
Ph3/2	8	150	0.12
Ph4*	251	2259	1.90
Ph5*	73	892	0.51
Total	4074	44194	35.11

*excludes kiln waste

The data in Tables 4.4, 4.5 and 4.6 shows the occurrence of the main fabric types through time. Generally, in the Anglo-Saxon period, residuality is fairly low, suggesting that most groups are well-stratified, primary deposits. This is true of the early medieval (Ph0 and Ph1) groups, but in the 13th-century (Ph2/0) assemblages, over a third of the meagre 305g of pottery of that date is residual Saxo-Norman material. The later 13th- to14th-century (Ph2/2) groups are only small, but all the pottery appears well-stratified, and the same appears true for the 14th-century (Ph3/2) pottery. The data for Ph4 (early-mid 15th century) suggests very high residuality, but the table does not include the kiln waste. It seems highly likely that the potters would have used their own wares, but there is no way to differentiate between what is waste and what was utilized. It is a fact that there was major ground disturbance at the site with three pottery kilns operating at one time or another, so a greater amount of residual pottery is perhaps to be expected. In Ph 5 (mid 15th to 16th century), there is again much residual pottery, but one or more of the kilns could still have been operating at that time (see below), with the resulting disturbance of earlier

Table 4.4: Pottery Occurrence per middle and late Saxon ceramic phase by weight (in g), major wares only, expressed as a percentage of total weight per phase

Phase	*E/MS*	*Ipswich*	*F97*	*F100*	*F205*	*F102*	*F207*	*F200*	*Total wt*
MS	13.2%	24.8%	62.0%	-	-	-	-	-	3304
LS1	7.0%	0	5.6%	84.7%	1.4%	-	-	-	2362
LS2	4.1%	0	9.8%	76.3%	9.6%	0.2%	-	-	2721
LS3	0	0	0	10.0%	0	0	90%	-	662
LS4	1.3%	2.0%	0.4%	11.5%	3.9%	0.8%	0	80.1%	2984

Table 4.5: Pottery Occurrence per early medieval ceramic phases by weight (in g), major wares only, expressed as a percentage of total weight per phase

Phase	*E/MS*	*MS*	*LS*	*F102*	*F200*	*F205*	*F330*	*F319*	*F320*	*F329*	*Total*
Ph0	0.5%	0.9%	3.6%	2.0%	25.5%	4.0%	61.6%	-	-	-	8225
Ph1	0	0	0	0	2.3%	0	56.2%	41.5%	-	-	699
Ph2/0	0	0	0	34.8%	1.3%	0	27.5%	3.9%	32.5%	-	305
Ph2/2	2.7%	0	0	0	1.7%	0	19.3%	2.5%	0	73.1%	524

Table 4.6: Pottery Occurrence per late medieval ceramic phases by weight (in g), major wares only, expressed as a percentage of total weight per phase

Phase	*E/MS*	*MS*	*LS*	*EMED*	*F330*	*F320*	*F329*	*F366*	*F322*	*F401*	*Total*
Ph3/2	0	0	0	0	4.0%	0	56.7%	39.3%	-	-	150
Ph4	3.7%	1.8%	9.2%	19.1%	39.0%	4.2%	12.0%	0	3.1%	-	2259
Ph5	5.7%	1.7%	20.5%	0.2%	8.5%	1.9%	2.9%	0	0	15.9%	892

strata. Generally, the data shows a pattern of consumption which is typical of medieval sites in this area of Northamptonshire.

Fragmentation Analysis

The data in Tables 4.7 and 4.8 show the mean sherd weight of the major fabrics in each of the ceramic phases. One of the main points of interest in this analysis is the question of the chronology of the hand-built pottery. It seems that in some areas of the country, hand-built pottery was not used in the middle Saxon period, but it is uncertain if this was the case in Northamptonshire. For example, in East Anglia, most middle Saxon sites that produced Ipswich ware produced very little hand-built material (see below), and in some sites in Oxfordshire such as Eynsham Abbey (Blinkhorn 2003a) there is strong evidence that hand-built pottery ceased to be used in the early years of the 8th century, regional imports aside. At Higham Ferrers, only 34 sherds of hand-built pottery were noted in middle Saxon contexts, and one of these was a decorated sherd of 5th century date, and thus redeposited. The remaining sherds had a mean sherd weight of 13.0 g, which is not much less than that for the same material in earlier contexts, and considerably higher than that from late Saxon and later contexts, when the material was definitely residual. It would seem therefore that hand-built pottery continued in used at the site during the middle Saxon period, or at least there is no reason to suspect that it did not. Unfortunately, there are no obvious traits in form, fabric or manufacture which could allow these sherds, if they are middle Saxon, to be differentiated from early material.

To further cloud the issue, it is also a fact that residual pottery is not necessarily more fragmented that reliably stratified material. This is demonstrated by the data in Tables 4.7 and 4.8, where some wares, such as the Ipswich ware, Maxey ware (F97), T1(2) type St Neots ware (F200) and Thetford ware (F102) produced the largest mean sherd weight in phases in which they were residual. This is usually a trait caused by the presence of a small quantity of large sherds, and is the case here; the F200 assemblage in Ph2/2, the highest value for the ware, comprises just one sherd, and the Thetford ware from Ph2/0 comprises two handles from a large storage vessel.

Vessel Consumption: Quantitative and Typological Discussion

The pattern of vessel consumption shown in Table 4.9 is largely one which is generally observed at contemporary sites in Northamptonshire. The

Table 4.7: Mean sherd weight per middle and late Saxon ceramic phase by weight (in g), major wares only

Phase	*E/MS*	*Ipswich*	*F97*	*F100*	*F205*	*F102*	*F207*	*F200*
ES	16.7g	-	-	-	-	-	-	-
E/MS	14.6g	-	-	-	-	-	-	-
MS	12.9g	10.3g	16.5g	-	-	-	-	-
LS1	5.5g	0	26.4g	6.9g	16.5g	-	-	-
LS2	4.8g	0	24.4g	8.0g	6.7g	3.0g	-	-
LS3	0	0	0	8.3g	0	0	25.9g	-
LS4	6.7g	29.5g	12.0g	5.1g	7.7g	11.5g	0	6.3g

Table 4.8: Mean sherd weight per earlier medieval ceramic phases by weight (in g), major wares only

Phase	*F100*	*F102*	*F200*	*F205*	*F330*	*F319*	*F320*	*F329*
Ph0	4.8g	41.8g	5.5g	7.2g	10.6g	-	-	-
Ph1	0	0	8.0g	0	11.6g	24.2g	-	-
Ph2/0	0	106.0g	2.0g	0	6.5g	12.0g	19.8g	-
Ph2/2	0	0	9.0g	0	5.9g	13.0g	0	17.4g

Table 4.9: Vessel occurrence by EVE per type per ceramic phase, expressed as a percentage of the total vessels per phase

Phase	*Jars*	*Bowls*	*Jugs*	*Cylindrical Jars*	*Cups/Mugs*	*Total EVE*
ES	76.2%	23.8%	0	0	0	5.96
E/MS	64.4%	35.6%	0	0	0	6.55
MS	34.7%	43.9%	21.4%	0	0	0.98
LS1	70.3%	29.7%	0	0	0	2.83
LS2	58.9%	36.0%	24.7%	0	0	2.92
LS3	80.6%	0	0	19.4%	0	0.72
LS4	79.0%	12.7%	0	8.3%	0	1.81
Ph0	66.5%	13.5%	10.3%	9.7%	0	9.14
Ph1	81.2%	8.5%	10.3%	0	0	1.17
Ph2/0	67.6%	0	32.4%	0	0	0.37
Ph2/2	100%	0	0	0	0	0.13
Ph3/2	0	100%	0	0	0	0.12
Ph4	73.2%	18.9%	6.3%	0	1.6%	1.90
Ph5	45.1%	11.8%	0	0	23.5%	0.51

Anglo-Saxon assemblage comprises almost entirely jars and bowls, with small quantities of pitchers appearing during the middle Saxon period and towards the end of the late Saxon phase. In the earlier medieval period, jars dominate, supplemented by smaller quantities of bowls and pitchers, with cylindrical jars, specialist cooking vessels which were in use in the region around the time of the Norman conquest, being represented from phase LS3 – Ph0, their usual period of use (Blinkhorn 1999c). It is the later medieval assemblages that are untypical. Usually, jugs become more common through the medieval period, but this is only true of Ph2/0 groups. The later ones, presumably due to the very small assemblage sizes, do not show the usual pattern, until Ph4, which is once again more typical. The presence of relatively high quantities of cup and mug sherds in the latest medieval phases is worthy of comment. It has been noted before that these sorts of vessels tend to occur in greater numbers at industrial sites, presumably due to the fact that hard physical work was often involved (Blinkhorn 2000, 21). Admittedly, the cup/mug data from Ph5 is actually only from two vessels, and so while the pattern could be a result of the vagaries of archaeological sampling, it may also be significant.

Early Saxon Pottery

In the main, the early/middle Saxon hand-built pottery was in good condition, with a higher than normal mean sherd weight (15.1g), but no vessels were reconstructable to a full profile. This is not unusual for sites of this period in the region. There

is little doubt that most early-middle Saxon pottery assemblages from domestic sites of the period are the products of secondary deposition. In particular, SFB hollows appear to have been used as dumps after the structures were abandoned, with the source of the refuse presumably domestic middens of some description. It is highly unlikely to be the pottery which was used in the structures, otherwise, completely reconstructable vessels would be common finds.

The data in Figs 4.2 and 4.3 shows the frequency distribution of hand-built jar and bowl rim diameters respectively. In both cases, there appear to be three favoured sizes, which could be crudely classified as small, medium and large. In the case of the jars, form could be a factor, and there is no certainty that the rim diameter reflects the vessel size, but it is a trait which is worthy of mention as it suggests that vessel functionality could be related to size.

Very little information regarding trends in vessel form was recorded because of the fragmentary nature of much of the Anglo-Saxon assemblage, but it appears that most were simple globular vessels with rounded or flat bases and upright, slightly everted rims, although two foot-ring bases and one pedestal type were also noted (eg. Fig. 4.4, 34-35). The group of pottery from context 6058 (Figs. 4.4, 23-33) is typical; it comprised a group of large rim and base sherds, along with a large number of small rim fragments and bodysherds, some of which appear likely to be parts of the illustrated vessels, but could not be joined.

There were very few early Saxon feature sherds other than rims or bases. Fragments of six lugs were noted, three of which were upright, rim-mounted examples and the others longitudinal types mounted on the shoulder of the vessel.

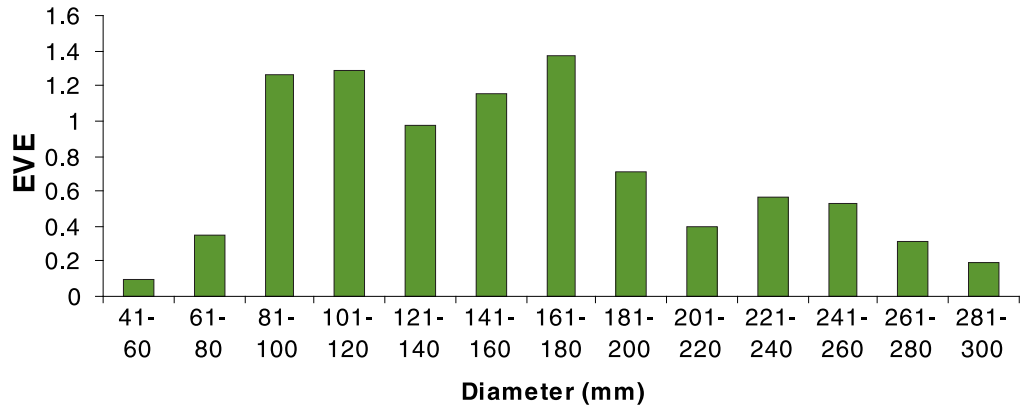


Fig. 4.2 Rim diameter distribution, early/middle Saxon hand-built jars

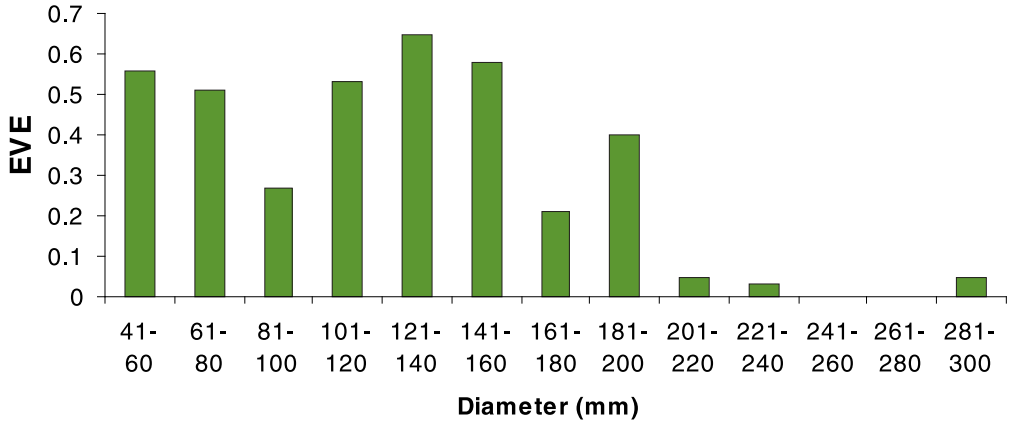


Fig. 4.3 Rim diameter distribution, early/middle Saxon hand-built bowls

Illustrations

Figure 4.4

23 Context 6058, F2. Jar rim. Uniform black fabric with burnished outer surface.
24 Context 6058, F1. Jar rim. Black fabric with burnished dark brown outer surface.
25 Context 6058, F5. Jar rim. Uniform black fabric with burnished outer surface.
26 Context 6058, F1. Jar rim. Uniform black fabric with brown, unfinished outer surface.
27 Context 6058, F5. Jar rim. Uniform black fabric with burnished outer surface.
28 Context 6058, F1. Jar rim. Uniform black fabric with unfinished outer surface
29 Context 6058, F2. Jar rim. Uniform grey fabric with burnished outer surface.
30 Context 6058, F4. Jar rim. Uniform black fabric with orange-brown, unfinished outer surface
31 Context 6058, F1. Bowl rim. Uniform black fabric with burnished outer surface.
32 Context 6058, F1. Bowl rim. Uniform black fabric with smoothed outer surface.
33 Context 6058, F1. Flat base from ?jar. Uniform black fabric with burnished outer surface.
34 Context 6527, F3. Foot-ring base sherd. Harsh black fabric with smooth and burnished outer surface.
35 EMS6: Context 1269, F2. Pedestal base. Black fabric with orange-brown outer surface.

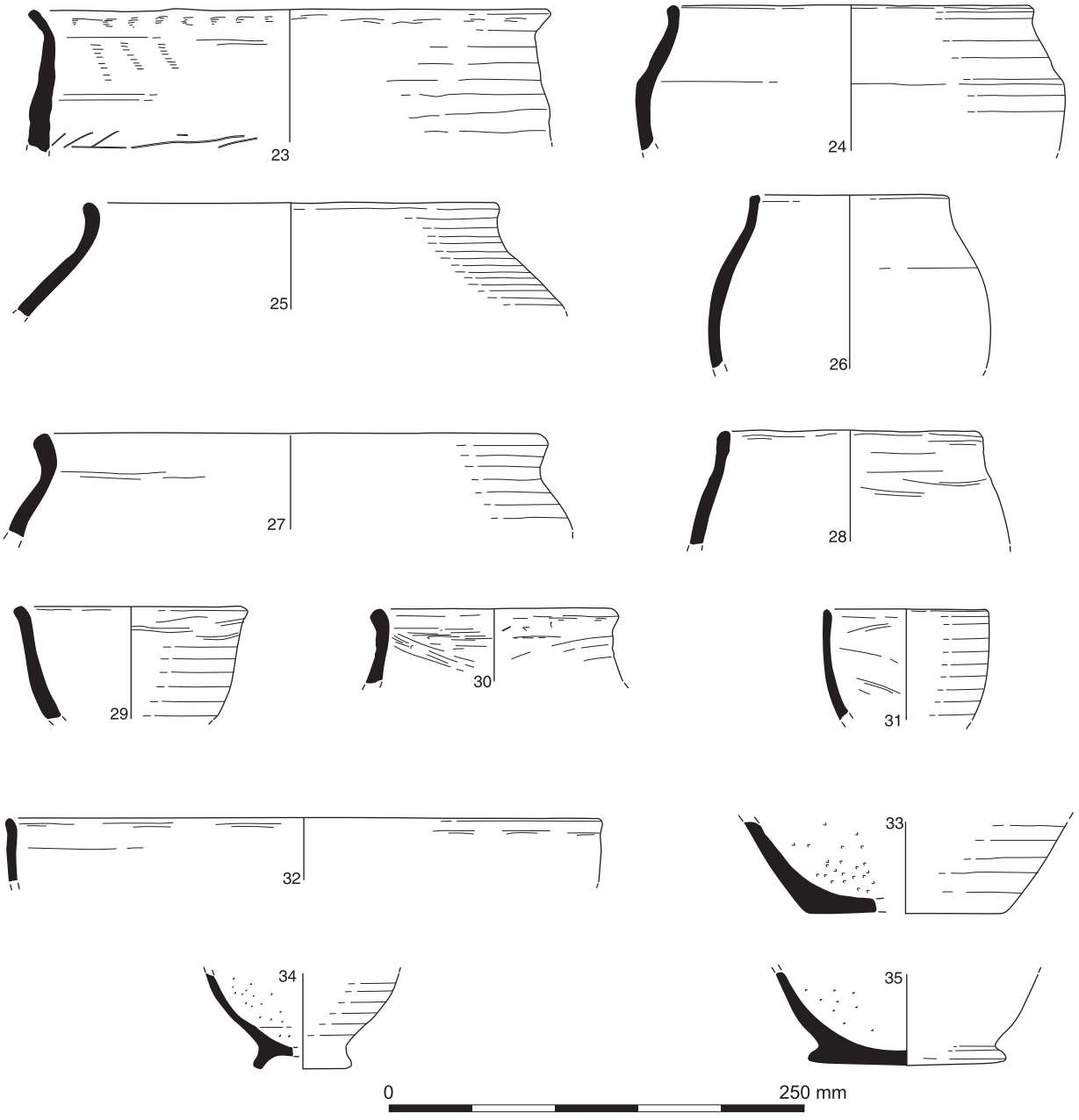


Fig. 4.4 Early/Middle Saxon pottery

Middle Saxon

The Ipswich ware assemblage, as noted above, is one of the largest known from the inland areas of the south-east Midlands. It is also typical of assemblages found at sites outside the East Anglian kingdom in that pitchers and large jars are far more frequent than at sites inside the kingdom, where small jars usually represent 95% or more of an assemblage (Blinkhorn in prep.) It seems likely that pitchers were desirable as vessels – the Ipswich ware potters were the only English makers of such vessels – but that large jars travelled as containers for traded goods.

Only one rimsherd – from a stamped pitcher – was recorded (Fig. 4.5, 36) but a stamped sherd from another vessel was also noted (Fig. 4.5, 37). Stamping was only used on pitchers and large jars (Blinkhorn in prep). The only other feature sherds were fragments of the bases of two vessels, one large, one small. Many of the bodysherds appear to be from larger vessels on the basis of their curvature and thickness.

The Maxey ware assemblage appears to comprise in the main bar-lug vessels (eg. Fig. 4.5, 38), which is typical of the tradition in Northamptonshire. Some rim sherds do not have these features, but they could easily be from such vessels, as the rim forms are generally the same.

The sherd of possible North French Blackware (Fig. 4.5, 39) is likely to be from a jug, although the sherd is too small to be certain of this. It is one of the very few finds of such material in the region, and its significance is discussed below.

Late Saxon and Medieval

The late Saxon pottery assemblage offers evidence that there was continuous occupation on the site from the middle to late Saxon periods. A small assemblage of red-painted Stamford ware was present (eg. Fig. 4.5, 40), and also small jars in coarse fabrics with simple rimforms, some with rouletted decoration (eg. Figs. 4.5, 41). Such pottery is amongst the earliest products of the industry, and was made at the Castle Site kiln in the town. This kiln produced radiocarbon dates suggesting that it was last fired *c* AD 850 (Kilmurry 1980, 134-42).

The rest of the late Saxon assemblage has a range of forms in various fabrics which indicates continuous activity throughout the period. St Neots ware, the most common late Saxon fabric type, shows typical typological traits. Generally, jars in earlier St Neots ware assemblages are smaller than those in the later groups. Here, the LS1/LS2 jars have a mean diameter of 161.4 mm, while those from LS4 groups have a mean of 180.0 mm, and those in the latest group, from the early medieval Ph0, have a mean of 198.1 mm, which is much as would be expected. In terms of form, the whole assemblage is typical of contemporary groups in the region, comprising jars with simple everted forms and bowls with inturned rims (eg. Fig. 4.5, 43). A single spouted bowl was also noted (Fig. 4.5, 44). While these are a well-known part of the St Neots ware tradition, this example had an unusually large and elaborate spout. The vessel was smoke-blackened on the outer surface, as the spouted bowls often are, suggesting that it was used in cookery. The same comments apply to many of the cylindrical jars (eg. Fig. 4.5, 45).

The Oolitic ware (F207) is mainly represented by a single 'barrel' jar (Fig. 4.5, 42). Such vessels appear to be earliest forms in this tradition, and the illustrated jar is dated to LS3, ie the later 10th century, the time when such pottery first appears in this area of Northamptonshire. The Thetford ware (F102) also shows traits noted at other sites in the region. Despite being first made in the 10th century at the eponymous Norfolk centre (Rogerson and Dallas 1984), it does not appear in Northamptonshire in any sort of quantity until around the time of the Norman Conquest. At Kings Meadow Lane, the whole assemblage apart from two very small sherds, is dated to phase LS4 or later. The majority of the sherds are from large storage vessels (eg. Fig. 4.5, 46), which again is typical of assemblages from this area of the county, and implies that the contents rather than the pots were the reason for the desirability of the ware.

The early medieval shelly ware assemblage is fairly fragmented, but again appears typical of sites in the region. It is dominated by jars, although some bowls and jugs also occur. Shelly ware jugs (eg. Fig. 4.5, 47) appear to have largely fallen from use once glazed examples began to be made in the 13th century, and that appears to be the case here. Certainly, all the stratified shelly ware jug rims date to Ph0 or Ph1, although the paucity of pottery from the later medieval phases may be a factor.

The rest of the medieval assemblage, the kilns aside, is sparse and fragmented, and apart from those noted it all appears typical of the range of material found at other contemporary sites in the region, and therefore merits no further consideration.

Illustrations

Figure 4.5

36 MSS3: Contexts 2331 and 2332, F95. Rim and upper body of stamped pitcher. Brick red fabric with grey surfaces.

37 MSS4: Context 2624, F95. Stamped bodysherd. Uniform grey fabric.

38 MSS2: Context 451, F97. Rim and body of bar-lug vessel. Grey fabric with pink surfaces, outer extensively smoke-blackened.

39 Context 1271, ?North French Blackware. Bodysherd. Grey fabric with darker surfaces. Outer surface burnished with incised (?rouletted) decoration

40 Context 15132, F205. Bodysherd from storage jar. White fabric with buff surfaces, geometric design in thin red paint on outer surface.

41 Context 15011, F205. Rimsherd from small jar. Uniform grey slightly sandy fabric, diamond-notched rouletting on the outer rim-bead.

42 LSS1. Context 555, F207. Full profile of jar. Light grey fabric with dark, grey-brown surfaces.

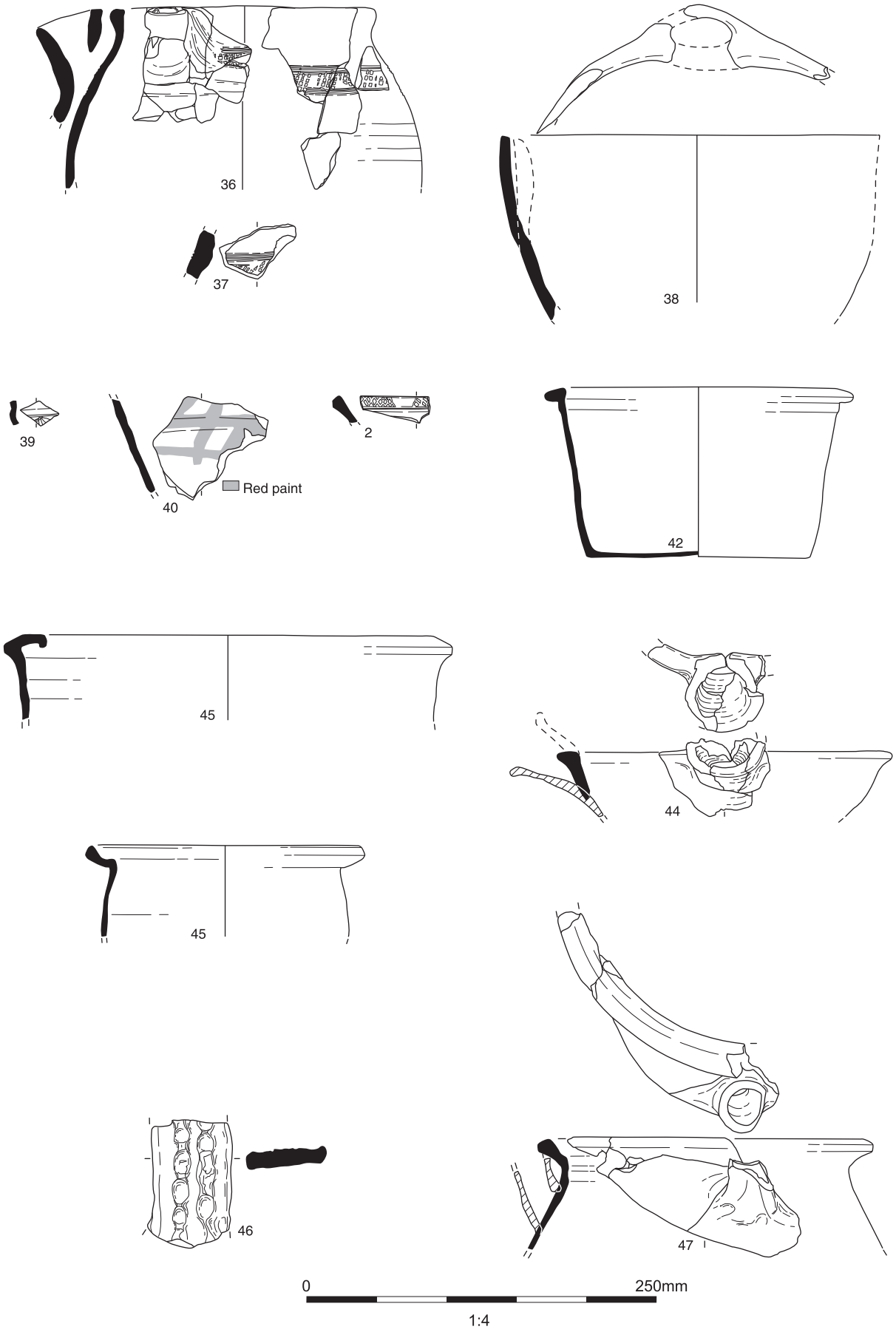


Fig. 4.5 Middle and Late Saxon pottery

43 LSS2: Context 2335, F200. Inturned rim bowl. Dark grey fabric with pae orange-brown surfaces.
44 Context 6620, F200. Rim and spout from bowl. Grey fabric with light brown surfaces, outer surface smoke-blackened.
45 Context 6241, F200. Rim from cylindrical jar. Grey fabric with brown surfaces, outer surface evenly smoke-blackened.
46 Context 15511, F102. Handle from large storage jar. Light grey fabric with browner surfaces.
47 Context 15310, F330. Rim and spout from pitcher. Grey fabric with orange surfaces.

Spatial distribution

Early Saxon

The distribution of the decorated pottery suggests that the early Saxon settlement was substantial, and also that there was not a great degree of mobility in the occupation *foci* over time, other than that caused by expansion. The earliest decorated sherds are almost exclusively from the areas to the north-west (Site 1) (Fig. 4.1, 1, 5-7) and to the south-west of the enclosure (within Site 4) (Fig. 4.1, 3-4). It is possible therefore that the whole area to the west of the enclosure was settled during the 5th century, although the lack of features at the western end of Site 4 means that two separate foci may have co-existed. An early sherd (Fig. 4.1, 2) was also noted in Site 3 to the east of the enclosure, although this area may have been an outlier to the main settlement. The bossed and incised pottery, probably dating to the later 5th – early 6th century, occurred mainly in features in Site 1 (Fig 4.1, 8-10), but a single sherd was noted to the west in Site 9 (Fig. 4.1, 18) and another (Fig. 4.1, 11) to the east of the enclosure. The stamped pottery indicative of a 6th-century date occurred in Site 1 (Fig. 4.1, 12-14), Site 4 (Fig. 4.1, 15-16, 21-22) and Site 9 (Fig. 4.1, 19-20).

This distribution pattern suggests that the earliest Anglo-Saxon settlement at the site was mainly in the area directly to the west of the enclosure, with perhaps a less dense occupation area to the east, and that it started around the middle of the 5th century. By the later 5th century, the settlement had expanded westwards, or another separate focus had appeared, and all these areas continued to be used through the rest of the early Saxon period.

Middle Saxon

Very little consideration has been given to the spatial distribution of middle Saxon pottery types at settlement sites in the past, although some analysis of spatial distribution was attempted with the material from the site at Cottenham in Cambridgeshire. The site produced nearly 49 sherds of Ipswich ware, along with 'a little' Maxey ware (Hall 2000, 22), although it seems likely that some of the material was misidentified. Two sherds described as 'St Neots ware' (ibid. figs 28.20 and 28.22) are almost certainly Maxey type, with one of them clearly a bar-lug, and not 'a looped handle' as described in the text, (ibid. 24). It is unfortunate that these errors were made, because, had the pottery types had been properly identified, the analysis of the spatial distribution of the middle Saxon pottery could have been extremely helpful in understanding the site.

At Kings Meadow Lane, the distribution of the Ipswich ware shows that the majority of it was deposited in Site 2, in or near the buildings at the entrance to the enclosure, and in the enclosure ditch itself. A further seven sherds came from Site 4, directly to the south of Site 2, with just four sherds coming from features away from this area of the site. Six sherds were noted in features in Site 6, which could easily be a peripheral area of the focus in Sites 2 and 4, together with three sherds from Site 7 and a single sherd from Site 8. A single sherd was noted at Site 1, but otherwise, the Ipswich ware was entirely limited to an area to the south of the enclosure.

The distribution of the Maxey ware shows considerable differences from that of the Ipswich ware. The largest group by far came from context 451, an evaluation trench *c* 20 m to the north of Site 3. The context is a re-cut of the eastern arm of the enclosure ditch, and produced 108 sherds of Maxey ware (1,741 g), over two-thirds (by weight) of the site assemblage. Five sherds (64 g) were noted in the eastern half of the east-west ditch that (in Phase 2c) closed off the mouth of the enclosure, and a further 14 sherds (338 g) came from Site 3 itself, and five (185 g) from Site 8. This means that just over 90% of the Maxey ware from the site came from the area in and around the eastern side of the enclosure ditch. The rest of the Maxey ware assemblage was thinly scattered across the areas to the south of the enclosure entrance, apart from three sherds (53 g) which occurred at Site 9. This means that less than 8% of the Maxey ware from the site occurred in the area where nearly all the Ipswich ware occurred.

This distribution pattern is undoubtedly significant, but identifying its meaning highlights one of the major problems of middle Saxon pottery studies in the region. The most obvious reasons for the difference in the distribution of the two middle Saxon pottery types at this site appear to be either chronological or functional. If chronological, it would suggest that the area to the east of the enclosure was a focus which fell from use early in the middle Saxon period.

A date range of AD 650-850 for Maxey Ware has gained general acceptance. However, while there is little doubt that it is a middle Saxon ware, the exact limits of the chronology have not been rigorously tested. Recent work (Blinkhorn in prep.) has shown that Ipswich ware has a chronology of *c* AD725–850, based on a number of numismatic associations and scientifically-obtained dates. No such examination of the dating evidence for Maxey ware from the south-east midlands has been carried out. The original definition of Maxey ware came from the type-site, and the pottery was dated to the middle

Saxon period on the basis of associated artefacts, but no absolute dating was obtained (Addyman 1964, 49). In addition, the Maxey group did not produce any bar-lug vessels which are typical of the tradition in Northamptonshire, but did have vessels with upright triangular lugs (Addyman 1964, fig. 14), which are typical of the Lincolnshire tradition, so it seems likely that the pottery from Maxey is of the Lincolnshire type, and thus different from the material from Kings Meadow Lane.

Since then, several large groups of the material have been excavated, but a firm absolute chronology is still lacking. Two sherds from the assemblage at Chicheley in Buckinghamshire produced thermoluminescence dates of AD780 and AD830, both +/- 15% (Farley 1980, 97), indicating that some Maxey ware from that site may have been contemporary with Ipswich ware. Chalk Lane in Northampton produced a range of radiocarbon dates from phase 2B, with the latest being AD660 +/- 75, although all the stratified Maxey ware came from the preceding phase (Gryspeerdt 1981, 110 and table 2). If the dating is reliable, this would suggest that Maxey ware fell from use by AD735 at the latest. The site at Green Street, Northampton (Chapman 1999, 42) did not produce any absolute dating in association with the Maxey ware. The St Peter's Street site did produce a number of coins, amongst which were a sceatta dated to *c* AD 735 and a penny of Behrtwulf of Mercia, dated to *c* AD 843-8 (Archibald *et al*. 1979, 243-44). Unfortunately, both came from a building which on the ceramic evidence seems to date to the first half of the 10th century, although there appears to be a considerable amount of both residuality and intrusion in the structure (McCarthy 1979, table 11). Maxey ware was present, but the association appears unreliable.

A middle Saxon sceatta dated to *c* AD750 was also noted at St Peter's Gardens,Northampton (Archibald and Metcalf 1985). It occurred in a context from Phase 2 of the site, a period of activity which although did not produce any Maxey ware, did not produce any pottery later than the middle Saxon period except for a single early late Saxon sherd, which could easily have been intrusive. Maxey ware did however occur in the soil horizon through which the phase 2 features were cut, and was the latest pottery type from that phase, suggesting that its deposition pre-dated AD750. The rest of the Maxey ware from the site was redeposited in late Saxon features, so again this would suggest that Maxey ware had fallen from use by the middle of the 8th century.

As noted above, there are a number of sites which have produced both Ipswich and Maxey ware, but the stratification of the two suggests that there may be chronological differences; features tend to produce large quantities of one pottery type with little or none of the other. This was certainly the case at North Raunds (Blinkhorn forthcoming b). Maxey itself produced just nine sherds of Ipswich ware, but 92 of Maxey-type. At Castor, the bulk of the Ipswich ware (156 sherds) occurred in a single pit, but the feature produced only four sherds of Maxey ware, with the rest of the assemblage of that pottery type being unstratified (Green *et al* 1987, 135-6). The site at Warmington, which produced 17 sherds of Ipswich ware did not produce any Maxey ware despite being located in an area where such pottery is well known. Wollaston produced 45 sherds of Maxey ware but just three of Ipswich ware, and very little, if any Ipswich ware is known from Northampton, despite Maxey wares being fairly common. At West Fen Road, Ely, only one sherd of Maxey ware was noted, while there were over 400 sherds of Ipswich ware, but there were also only three sherds of hand-made pottery, suggesting that there was little or no activity before the 8th century. At Tempsford, although much of the middle Saxon pottery was redeposited, contexts of middle Saxon date tended to produce either Ipswich ware or Maxey ware, but rarely both.

All this evidence would suggest that a case can be made for Ipswich ware and Maxey ware having different chronologies, although the thermoluminescence dates from Chicheley would suggest otherwise. However, the date range given for the Chicheley sherds, AD 780 and AD 830, both +/- 15% (Farley 1980, 97), means that they could easily date to around AD 700, and thus would match the chronology suggested by the numismatic and radiocarbon dates from Northampton. On this basis, a case can be made for the bar-lug vessels in the Northamptonshire Maxey ware tradition having a chronology of *c* AD650–750.

If this chronology is correct, then it would suggest that the activity around the eastern side of the enclosure at this site pre-dates the middle Saxon settlement to the south, and that in the period AD650-750, the area which was extensively occupied in the early Saxon period to the west of the enclosure was largely abandoned. This cannot be postulated with total confidence however; there are still too many uncertainties surrounding the dating of Maxey ware to allow it, but there seem to be good grounds for investigating the possibility further, as a clearer understanding of the pottery can only lead to a clearer understanding of the middle Saxon archaeology of the region.

Further uncertainty about the significance of the Maxey ware distribution comes from the question of vessel function. As noted above, much of the Ipswich ware from the site comprised either pitchers or large storage vessels. The Maxey bar-lug vessels, which were designed to be suspended, and therefore were ideal for cookery, may have had a different function from that of Ipswich ware. The different distribution of the two wares may simply be a reflection of areas of different activity at the site. Certainly, many of the Maxey ware sherds were externally smoke-blackened, suggesting they had been used in cooking. The Ipswich ware vessels were not blackened, and it could be surmised that the area in which Ipswich ware mainly occurred

was an area where storage and social activities such as drinking and eating took place, and that the area to the east, where the Maxey ware mainly occurred, was a preparation area, and perhaps where cookery took place. This would certainly be of practical value. If, as seems likely, the site had a fairly large seasonal population, then cookery would have had to have taken place on a fairly large scale, and it would have made sense to locate kitchens well away from the main concentration of timber buildings with inflammable thatched roofs. This separation of cooking from domestic structure was common practice in the medieval period. The Maxey ware spread is also in an area which would generally have been down-wind of the main middle Saxon settlement area represented by Ipswich Ware. This would have served to further lessen the risk of fire to the main settlement.

Late Saxon – Early Medieval

The presence of red-painted Stamford ware at this site is an extremely useful indicator because it represents the earliest products of that industry, and can dated to the mid-9th to mid-10th century (Kilmurry 1980, 142). In addition, a few small jars in relatively coarse sandy fabric were noted; these have a similar chronology to the red-painted sherds. These early Stamford ware vessels were almost all from Sites 6 and 8.

The Saxo-Norman cylindrical jars, which were a product of the St Neots ware industry, and which appear to have been a specialist cooking vessels (Blinkhorn 1999c), show a distribution which is almost entirely limited to the eastern side of the site, despite the fact that St Neots ware is found in most areas of the site. In total, sherds from 18 different vessels were noted, of which 11 came from Site 8, two from Site 3 and five from Site 4. As noted above in the discussion of the Maxey ware, the eastern side of the settlement would have been down-wind from all the timber buildings on the site and locating kitchens there would have considerably reduced the chances of fire.

By the medieval period most of the pottery, the kiln waste aside, comes from the eastern side of the site suggesting that by that time a street-frontage ribbon settlement typical of the period had developed.

Assemblage in its local and regional context

The above data shows that the Anglo-Saxon and early medieval assemblage from this site is in the main large and well stratified. It demonstrates that there was significant and prolonged activity during that time, and is by far the largest assemblage ever excavated in Higham Ferrers, although groups of contemporary pottery have been noted recently in other smaller excavations in the town, suggesting that the Kings Meadow Lane area was not occupied in isolation. Either there were other contemporary settlements nearby, or perhaps the sites are parts of the same large, dispersed Anglo-Saxon settlement. At the early to middle Saxon site at Mucking in Essex, the pottery indicated that the concentration of 5th-century settlement was located some 500 m away from focus of 6th-century settlement, although there were 6th-century outliers in the area of the 5th-century core, and vice versa (Hamerow 1993, fig. 3).

At Higham Ferrers, a group of 12 sherds of early to middle Saxon hand-built pottery was noted at Wharf Road (Blinkhorn 2003b). They included a single small fragment with combed decoration, indicating an early Saxon date. The only other pottery from the site was a single small medieval sherd and some post-medieval material. Early and middle Saxon pottery was also noted at excavations at College Street. Two sherds of Maxey ware were noted at site HFC203 (Blinkhorn 2003c, 132), along with over 100 sherds of late Saxon and medieval wares. The assemblage was otherwise largely Saxo-Norman and early medieval in date, although there also appears to have been a 'peak' in pottery deposition during the later 13th-14th century (CTS Ph2/2). Excavations at another site in College Street (CSHF02) (Blinkhorn 2002a) produced two small sherds of early/middle Saxon hand-built wares, but also around 150 sherds of Saxo-Norman and medieval pottery. The main period of ceramic deposition was the 12th-13th centuries, with very little material deposited between phases Ph2/2 and Ph5.

When the Kings Meadow Lane assemblage is considered in a wider regional context, the late Saxon and medieval material, in terms of the range of fabrics, is generally typical of sites in the northern half of Northamptonshire, but the early and middle Saxon assemblages are worthy of some discussion.

The early/middle Saxon hand-built pottery assemblage of 1,330 sherds is one of the largest in the county, and also in the region. It is on a par with that from Chalk Lane, Northampton (Gryspeerdt 1981, 108) which yielded 1,265 sherds. The latter included fragments of 14 decorated vessels, most of which were stamped and thus likely to be of 6th-century date. The Raunds excavations produced around 7,000 sherds of hand-built pottery, but only a handful was decorated, suggesting that most of the assemblage was of 7th-century date. The site at Dando Close, Wollaston, produced 1,016 sherds, with the decorated vessels mainly stamped, like Chalk Lane, , suggesting that there was little Anglo-Saxon activity before the 6th century. An assemblage of 857 sherds of hand-built pottery was found at St John's Square, Daventry (Blinkhorn 1997, 71), but again the decorated wares were primarily stamped and so of 6th-century date.

Excavations at Brixworth yielded an assemblage of 237 sherds of hand-built pottery (Timby 1995, 90), although only two were decorated. Both the sherds had bosses, and one was incised, so a date of the late 5th to 6th century seems the most likely. At this site, a wide range of decorative techniques was noted,

with some sherds (see below) possibly of 5th-century date. Fifth-century Anglo-Saxon pottery is very rare in Northamptonshire; the largest assemblage of that date comes from a single SFB at Stoke Doyle near Oundle, which produced a carinated *Schalenurne,* which is likely to date to the 5th century (Pearson 1994, 102-104).

The identification of middle Saxon (*c* AD650-850) pottery groups in Northamptonshire is generally reliant on the presence of Ipswich and Maxey wares. The local hand-built types may have continued in use during that period, but as yet it has not been possible to confirm this, nor to identify any distinctive wares dating to the period (see above).

Perhaps the most notable middle Saxon sherd from the Kings Meadow Lane site is the possible fragment of North French Blackware (Fig. 4.5, 39). It must be stressed that the small size of the sherd means that the provenance of the piece is not totally secure, especially as there is Roman pottery from the site, but it has been shown to a number of authorities, with the general consensus is that it seems more likely to be a middle Saxon import than a Romano-British sherd. Continental imported pottery is well-attested in the wics of middle Saxon England, such as Southampton, Ipswich, London and York (eg Brown 1997), but it does not seem to have penetrated very far inland, other than at sites in the hinterland of the ports of entry (eg Blinkhorn 2002b), and most of these appear to have been places of some wealth and significance. A good example is perhaps the episcopal complex at North Elmham in Norfolk, thought to be the seat of the Anglo-Saxon Bishop of Norfolk (Wade-Martins 1980). The site produced over half the known continental imports for the whole of rural Norfolk, despite the fact that it produced less than 5% of the total middle Saxon pottery from the same sample set.

In the south-east Midlands middle Saxon imported pottery is particularly scarce, and where it has been identified, the sites appear to have been places of relative wealth and/or power. They are inevitably found at sites that have also produced Ipswich ware. At Castor, the probable site of a nunnery, sherds from at least two imported Blackware vessels were noted (Green *et al* 1987, 142), and at Bedford, a sherd of late 8th- to 9th-century Tating ware occurred in the Midland Road area of the town (Slowikowski 1991). Tating ware is a rare find in England and western Europe generally, and mainly occurs on high-status royal, ecclesiastical or trading sites, such as North Elmham. The nature of middle Saxon Bedford is far from clear, but the Midland Road area has produced an assemblage of Ipswich ware (Baker and Hassall 1979, 154), and its location at a fordable point of a major river suggests that it could have been of some significance in the middle Saxon period. Small quantities of Ipswich ware have been found at a number of sites around the town and in the Ouse Valley generally, suggesting extensive trade in the area in the middle Saxon period and Bedford is an obvious focal point for that trade. At Chalk Lane, Northampton, Richard Hodges identified sherds which may have been Frankish Blackware, although an English source could not be ruled out (Gryspeerdt 1981, 118). Otherwise, finds of such pottery are extremely rare in the region; the presence of such a sherd at Kings Meadow Lane, if the identification is correct, is a strong indication that it had a status which was considerably above the ordinary.

Ipswich ware has been noted in small quantities at a growing number of sites in the county, particularly in the Nene Valley, but groups of more than a handful of sherds are rare (Blinkhorn in prep). At present the only known assemblages with 10 or more sherds are the group of 17 sherds from Warmington (Blinkhorn forthcoming a) and the 73 sherds from two sites excavated at North Raunds (Blinkhorn forthcoming b). The Kings Meadow Lane assemblage of 86 sherds, representing 16 vessels, is the largest yet excavated in the county.

The Maxey ware assemblage of 148 sherds from Kings Meadow Lane is the largest from the county, and one of the largest from the region. Its Jurassic petrology suggests that it is most likely to have a local source. Maxey Ware is often found without Ipswich ware in association, possibly suggesting different in chronologies for Ipswich Ware and Maxey Ware (as discussed above) or suggesting sites of different status. The sites with Ipswich ware were indulging in long-distance trade, whereas those with Maxey ware were not. In Northamptonshire, sites which produced fairly large groups of both Ipswich and Maxey wares are North Raunds (37 sherds of Maxey), Warmington (12 sherds of Maxey, although all Lincolnshire types) and Dando Close, Wollaston (45 sherds of Maxey and 3 of Ipswich; Blinkhorn forthcoming e). Northampton has produced a number of groups of Maxey ware, although only one probable sherd of Ipswich ware has so far been noted, at Chalk Lane, Northampton (Gryspeerdt 1981, 110). The latter site did however produce 77 sherds of Maxey ware, and excavations at Green Street, Northampton produced 15 sherds of the same material (Blinkhorn 1999a, 56) although all but one sherd was from a single vessel. At St Peter's Street, Northampton (McCarthy 1979, tables 10-17), at least 75 Maxey ware sherds were present, although a full catalogue was not published and the actual total may be higher. Ten sherds were found at St Peter's Gardens (Denham 1985, table 2), along with four sherds which are similar to Ipswich ware, but probably not of that type.

The Kings Meadow Lane assemblage also stands comparison with those from sites from further afield in the region. At Castor in Cambridgeshire the excavation of a probable middle Saxon nunnery produced 191 sherds of Ipswich ware and at least 46 of Maxey ware (Green *et al* 1987, 138; full total of Maxey ware not published), along with seven sherds from an imported continental blackware vessel. Cambridgeshire has recently produced a

number of large assemblages of Ipswich ware (eg Blinkhorn forthcoming c), particularly in and around Ely, and it seems that most of the county was within the hinterland of Ipswich. In Norfolk and Suffolk hand-built pottery is rarely found in association with Ipswich ware, suggesting that the latter was manufactured and traded to the extent that it served as the 'local' domestic pottery for the entire kingdom. The recent finds from Cambridgeshire suggest that this was also true for much of that county, although, as noted, large groups of Maxey ware are also known, but as with the Northamptonshire material, the two are rarely found together in quantity. For example, the Ely West Fen Road site (Blinkhorn forthcoming c) produced 414 sherds of Ipswich ware but just one of Maxey-type, whereas at the 'type-site' of Maxey (Addyman 1964, 47-58), 92 sherds of Maxey ware were present, but just nine of Ipswich ware. (The latter were not noted in the original analysis of the assemblage, but were seen by this author at a later date.)

Elsewhere in the region, large groups of Maxey and/or Ipswich ware are rare. In Buckinghamshire, all the known groups of Ipswich ware comprise less than ten sherds, although a site at Chicheley near Newport Pagnell, (Farley 1980, 97) produced 77 sherds of Maxey ware. In Bedfordshire, the site at Tempsford (Blinkhorn forthcoming d) produced 155 sherds of Maxey ware and 56 sherds of Ipswich ware, but most sites produced just a few sherds of each or either type.

It can be seen therefore that the middle Saxon pottery assemblage from Kings Meadow Lane is exceptional for the region, with perhaps only the sites at Tempsford, Castor, and, to a lesser extent, Raunds being comparable. As noted above, the site at Castor is thought to have been a nunnery, and both middle Saxon sculpted stone and a silver sceatta, both rare finds in this area of the country, are known from the site. The exact nature of the site at Tempsford is unknown, as most of the middle Saxon pottery was redeposited due to extensive later activity, a comment that also applies to North Raunds.

This all suggests that the Kings Meadow Lane site was a place of some wealth and importance during the middle Saxon period. Ipswich ware is the most widely-distributed English pottery type of the middle Saxon period, and is found along the east coast of England from Yorkshire to Kent, and as far west as Gloucestershire. The reason for this seems to have been, in the most part, trade passing through the wic of Ipswich rather than the desirability of the pottery other than the pitchers (Blinkhorn 1999b, p 5). It is not a totally reliable indicator of site status, but it seems that the further from Ipswich an assemblage is found, the greater the likelihood that the find-spot is a place of some importance. The size of the assemblage from this site shows that traded goods were arriving at the site on a scale that is virtually unparalleled in the south-east Midlands region, although most was either not consumed here, or was of a type which left no physical trace.

Late Medieval pottery kilns *by Paul Blinkhorn*

Introduction

The first evidence for the production of pottery at Higham Ferrers came from the Hundredal Court Rolls. An entry for 1436 noted that one William Potter *took a croft where there is a kiln for making pots*, and there is a later reference to repairs being made to a kiln in 1467 (Serjeantson, 1916). The first archaeological evidence came from salvage excavations at Kings Meadow Lane in 1965 (Hall 1974) which produced large quantities of waste pottery and evidence of a structure that was interpreted at the time as a kiln. The more recent excavations, covered by this report, produced the remains of two kilns, both producing Late Medieval Reduced Ware (Northants CTS fabric F365), a common pottery type in the south-east midlands in the later 14th-15th century. The vessels are all wheel-thrown, often with knife-trimming on the lower walls, and the fabric is inevitably reduced to a grey colour, sometimes with a red core. It is usually moderately to heavily tempered with sub-rounded quartz up to 2 mm, sometimes with rare to moderate rounded calcareous material (?ooliths) up to the same size. The vessels are usually thin-walled (less than 5 mm), and occasional large flint pebbles up to 10 mm are noted in the fabric. These must have been a point of weakness, and most of those that were noted appear to have caused vessels to break during firing.

The ware appears purely functional to the modern eye; the mainstays of the manufactories were large bowls (pancheons), cisterns and jars, along with smaller quantities of specialist cooking vessels such as dripping dishes.

Late Medieval Reduced ware is one of the two main late medieval pottery traditions of the south-east Midlands, particularly Northamptonshire, Buckinghamshire and Bedfordshire, with the other being Late Medieval Oxidized ware (Northants CTS F401) which is, for all intents and purposes, the same in terms of fabric, manufacture and the range of vessel forms, with the only major differences being that the material was fired to an orange-red colour, and some of the vessels are glazed.

Oxidized ware seems to be a slightly later introduction, and, although the exact chronology is still a little uncertain, it does not seem to have appeared until the 15th century, and perhaps as late as 1450. The difference in colour is purely down to the firing environment. Pots with an iron-rich clay, when fired in an oxygen-rich environment, inevitably have an orange or red colour, while those fired in an oxygen-poor environment are usually grey or black. This is due to the reaction between the iron in the clay and the oxygen in the kiln. There are two oxides of iron; one, which is black, forms in a low-oxygen environ-

ment, while the other, more familiar perhaps as rust, forms in oxygen-rich conditions, and it is these that colour the finished pot.

The reason why some potters produced Reduced wares and others Oxidized wares is unclear, but one explanation may be simply economics. A fully sealed kiln, capable of produced reduced pottery, may have taken longer to stack and unload then one with a partial dome and a temporary roof. The latter would have reached the temperatures required to efficiently fire the pots, but would have allowed for more oxygen into the kiln (see below). In an industry that was probably mainly staffed by those at the lower end of the social scale and whose wares were very cheap, such considerations could have meant the difference between success and failure. Certainly, in medieval Britain, few potters appear to have had sufficient wealth and status to enable them to reach the rank of Freeman, and there was never an earthenware potters' Guild (see McCarthy and Brooks 1988, 77).

The excavation of a near-complete kiln and the discovery of traces of another nearby, means that we now have one of the most important and best-understood late medieval pottery manufactories of the period in the south-east Midlands.

Kilns

The kilns themselves are fully described in Chapter 3, and discussed in Chapter 5.

Pottery

Kiln 1 pottery

The pottery assemblage weighed 443,722 g, with the estimated vessel equivalent (EVE), by summation of surviving rimsherd circumference, being 208.09. All the material from the kiln and its associated features was in the tradition of late medieval Reduced ware, which is classified in the Northamptonshire County Ceramic type Series as F365, and broadly dated to the 15th century.

The range of vessel forms comprised almost entirely pancheons, jars, jugs and cisterns, although fragments of a small number of dripping dishes were also noted. All the sherds were unglazed, and decoration was limited entirely to incised cordons on the shoulders of jars and jugs, and stabbing on jug/cistern handles. A total of 10,450 g of incised bodysherds were noted, as against 304,480 g of plain examples.

The homogeneous and fragmented nature of the assemblage meant that vessel reconstruction was largely impossible, and few profiles were reconstructed apart from some of the pancheons, which are shallow when compared to other vessels. It was not possible to differentiate between jugs and cisterns, as it seems likely that the latter were of the same general form as the former, with the only real difference being the presence of a bunghole near the base. The vessel count, by EVE, was as follows:

Pancheons: 90.86 (45.8%)
Jars: 22.35 (11.3% of the assemblage)
Jugs/Cisterns: 85.22 (42.9%)

In addition, dripping dishes were represented by four handles and two rimsherds. The asymmetrical nature of such vessels makes computation of EVE impossible, but a total of 310 jug handle fragments were noted, which perhaps gives some idea of the relative number of such dripping dishes present in the assemblage, and it should be borne in mind that dripping dishes often had two handles per vessel.

The 429 jug handle fragments were all from single thumb-grooved types, with 46 decorated with stabbing. All spouts (47 examples) were simple pulled lips.

There were 454 fragments from sagging bases, and 169 from flat bases, with one fragment of the latter having thumb-frilling; this was probably from a jug. A total of 26 of the flat bases were attached to vessels with concave lower bodies again probably from jugs.

Bowls/Pancheons- The range of rim forms for bowls and pancheons is shown in Figure 4.6. The numbers (by EVE) and the occurrence of the different the different rim forms are shown in Table 4.10. Figure 4.7 shows the occurrence of bowls of different rim diameters (by EVE) and indicates that the occurrence is broadly unimodal, as is the case with jars

Table 4.10: Pottery Occurrence, Bowl rims, Kiln 1, by type, in EVE

Type	*EVE*	*%*	*Type*	*EVE*	*%*	*Type*	*EVE*	*%*
201	8.21	9.0%	209	0.77	0.8%	217	5.05	5.6%
202	19.88	21.9%	210	1.01	1.1%	218	1.78	2.0%
203	6.24	6.9%	211	5.95	6.5%	219	2.18	2.4%
204	0.50	0.6%	212	0.51	0.6%	220	4.94	5.4%
205	0.11	0.1%	213	0.48	0.5%	221	0.20	0.2%
206	13.66	15.0%	214	4.71	5.2%	222	0.24	0.3%
207	1.14	1.3%	215	1.25	1.4%	223	0.39	0.4%
208	1.25	1.4%	216	9.86	10.9%	224	0.29	0.3%

Fig. 4.6 Pancheon rim forms

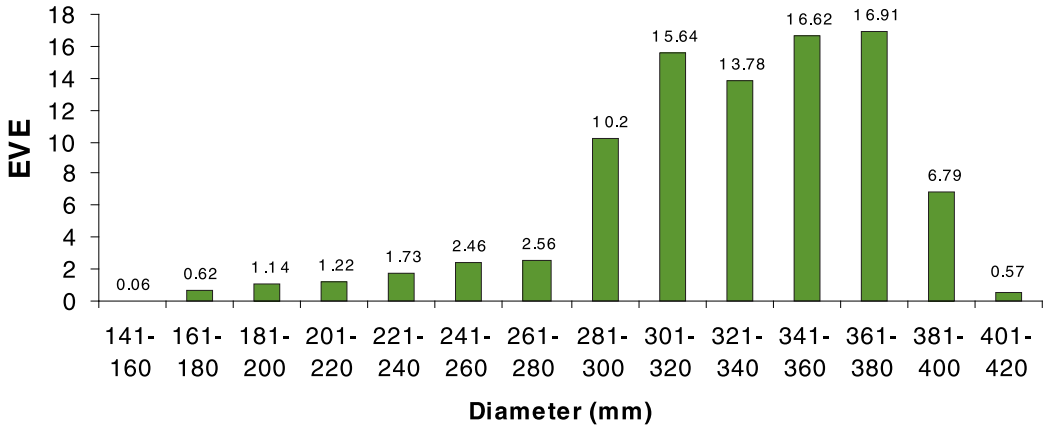


Fig. 4.7 Bowl rim diameter occurrence, Kiln 1, by EVE

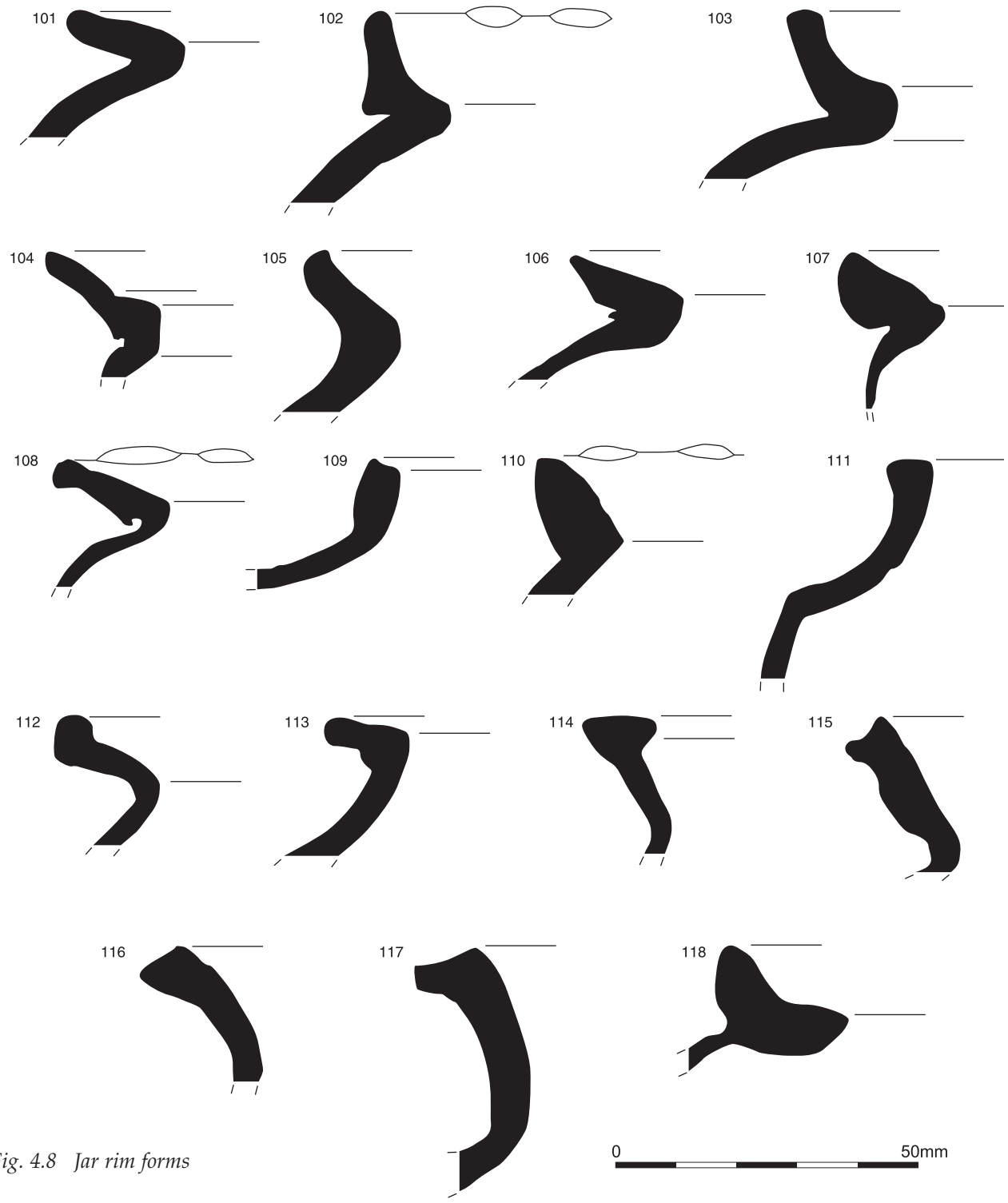


Fig. 4.8 Jar rim forms

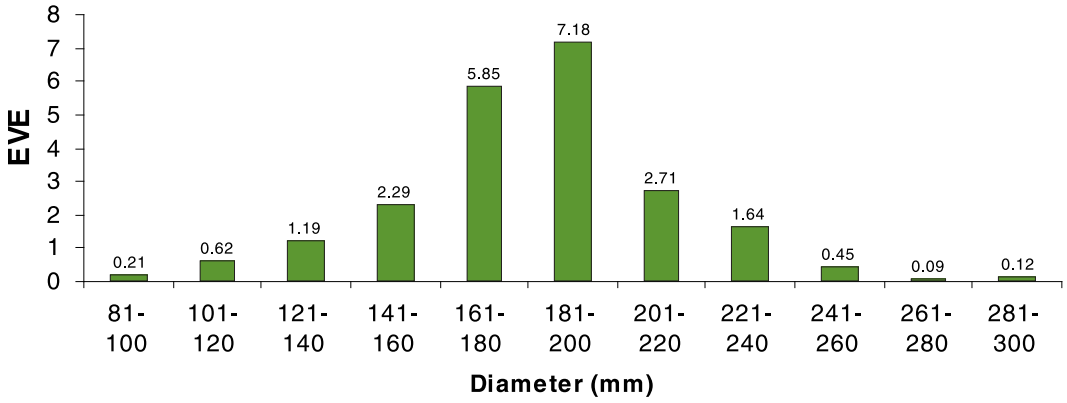


Fig. 4.9 Jar rim diameter occurrence, Kiln 1, by EVE

(see below). The mean rim diameter is 339.7 mm, with a standard deviation of 43.7 mm.

Jars – The range of rim forms for jars is shown in Figure 4.8. The numbers (by EVE) and the occurrence of the different rim forms are shown in Table 4.11. Figure 4.9 shows the occurrence of jars of different rim diameters (by EVE) and indicates that the occurrence is broadly unimodal, as is the case with bowls. It cannot be certain that the rim diameter is an accurate reflection of vessel size, but it has been shown that this was the case with medieval pottery from the nearby hamlet of West Cotton (Blinkhorn 1999c). The data from here shows that the rim diameters of the jars had a unimodal distribution, with almost half the vessels in the 160-200 mm diameter range. The mean rim diameter was 196.1 mm, with a standard deviation of 34.5 mm.

Jugs/Cisterns – The range of jug/cistern rimforms is shown in Figure 4.10. The numbers (by EVE) and the occurrence of the different rim forms are shown in Table 4.12. Figure 4.11 shows the occurrence of jugs/cisterns of different rim diameters (by EVE). As with the jars, the occurrence is broadly unimodal, apart from two sherds at the largest end of the distribution scale. The mean rim diameter is 120.4 mm, with a standard deviation of 24.1 mm.

Handles – A total of 310 handle fragments were recorded. They were all variants of thumb-grooved straps (Fig. 4.12), with a number of examples having stabbed decoration. The number of fragments by type is shown in Table 4.13. Four horizontal handles from dripping dishes/skillets were noted. Two were of type 5 and the others of type 6. None were decorated. They are not included in the data in Table 4.13.

Table 4.11: Pottery Occurrence, Jar rims, Kiln 1, by type, in EVE

Type	*EVE*	*%*	*Type*	*EVE*	*%*	*Type*	*EVE*	*%*
101	11.36	50.8%	107	0.08	0.4%	113	0.61	2.7%
102	0.92	4.1%	108	0.65	2.9%	114	0.41	1.8%
103	2.34	10.5%	109	0.41	1.8%	115	0	0
104	1.43	6.4%	110	0.16	0.7%	116	0	0
105	0.86	3.8%	111	1.11	5.0%	117	0	0
106	2.08	9.3%	112	0.10	0.4%	118	0	0

Table 4.12: Pottery occurrence, Jug/Cistern rims, Kiln 1, by type, in EVE

Type	*EVE*	*%*	*Type*	*EVE*	*%*	*Type*	*EVE*	*%*
301	9.13	10.7%	307	6.09	7.1%	313	1.67	2.0%
302	3.80	4.5%	308	33.46	39.2%	314	0.48	0.6%
303	1.53	1.8%	309	0.51	0.65	315	0.83	1.0%
304	3.83	4.5%	310	1.36	1.6%	316	3.59	4.2%
305	8.49	9.9%	311	3.24	3.8%	317	0.67	0.7%
306	3.28	3.8%	312	2.17	2.5%	318	0.95	1.1%

Table 4.13: Jug/Cistern handle occurrence, Kiln 1, no. of examples.

Type	*No Plain*	*%*	*No. Stabbed*	*%*	*Total*	*%*
1	32	10.3%	0	0	32	10.3%
2	2	0.6%	0	0	2	0.6%
3	8	2.6%	3	1.0%	11	3.6%
4	7	2.3%	3	1.0%	10	3.3%
5	143	46.1%	17	5.5%	160	51.6%
6	76	24.5%	17	5.5%	93	30.0%
7	2	0.6%	0	0	2	0.6%
Total	270		40		310	

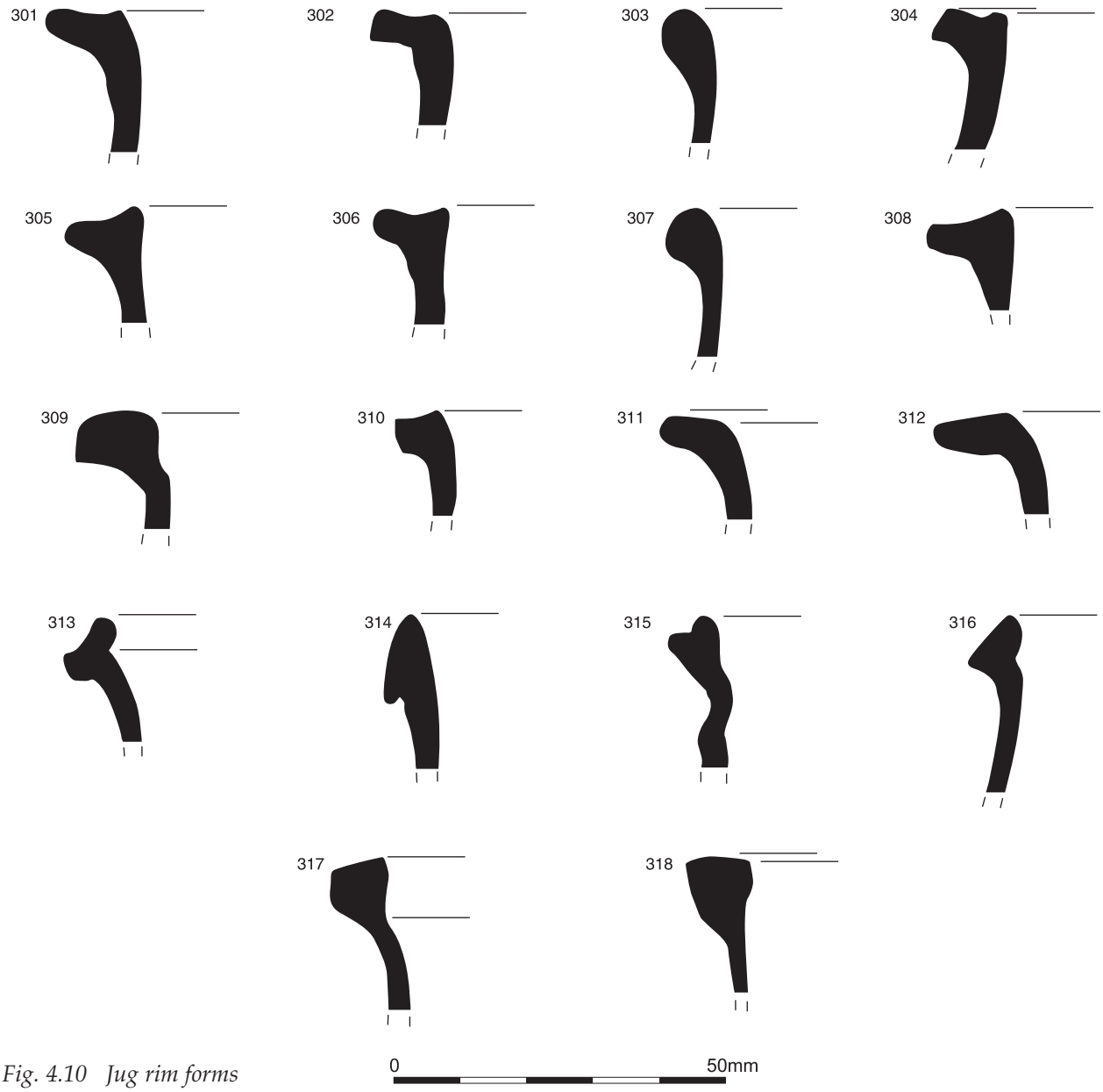


Fig. 4.10 Jug rim forms

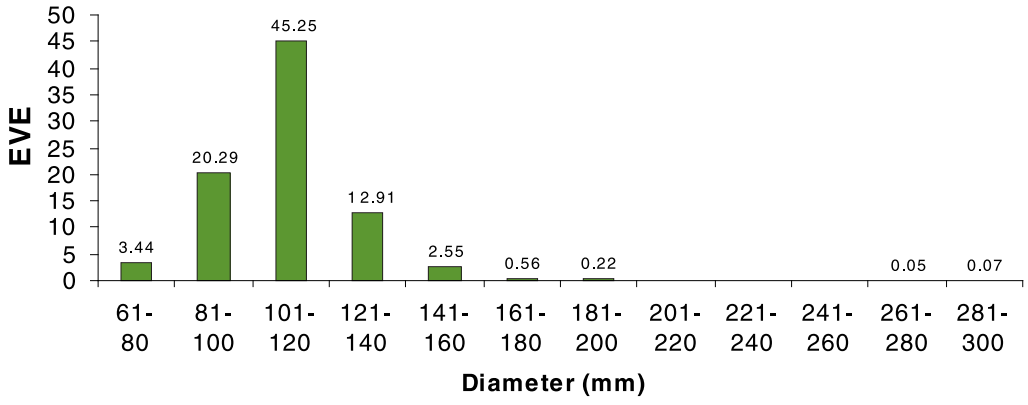


Fig. 4.11 Jug/cistern rim diameter occurrence, Kiln 1, by EVE

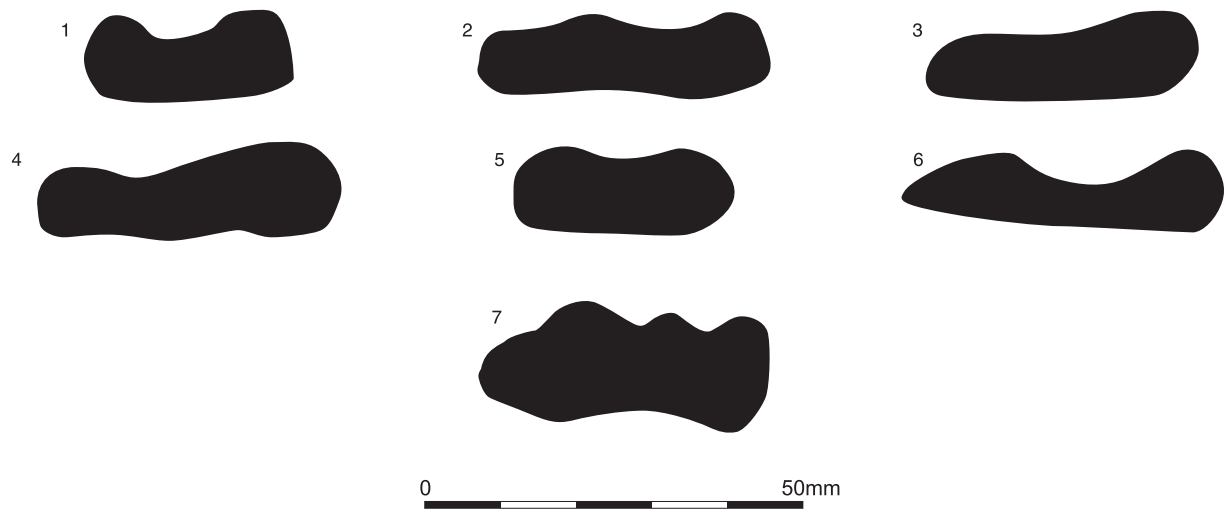


Fig. 4.12 Handle cross-sections

Bungholes – A total of 27 fragments or complete bungholes were noted, giving a minimum number of cisterns. All had an applied, thumb-impressed, roundel surrounding the orifice, with between four and nine thumb impressions. The hole diameter, where it was complete enough to measure, was fairly consistent, ranging from 19-24 mm, with most being 20-21 mm in diameter. The occurrence is shown in Table 4.14.

Spouts – The only type of spout noted was a simple pulled lip, of which 45 examples were noted, all from jugs/cisterns.

Bases – Figure 4.13 shows the distribution of the bases by diameter. Both sagging and flat examples have been combined, and there does not appear to be any differentiation between base form and vessel type. Furthermore, some of the sherds are distorted, and thus their original form cannot be determined with certainty.

The base diameters have a trimodal distribution, with peaks in the ranges 141-160 mm, 181-200 mm and 281-300 mm. It is assumed that these represent jars, jugs/cisterns and pancheons respectively. The lack of full profiles of vessels means that this assumption cannot be confirmed, and there is bound to be overlap between the vessel types. However, of the 16 bowls that were reconstructed to a full profile, all but

Table 4.14: Bunghole Occurrence by orifice diameter, Kiln 1, no. of examples

Diameter	*No. Examples*
19mm	2
20mm	5
21mm	11
22mm	2
23mm	1
24mm	1

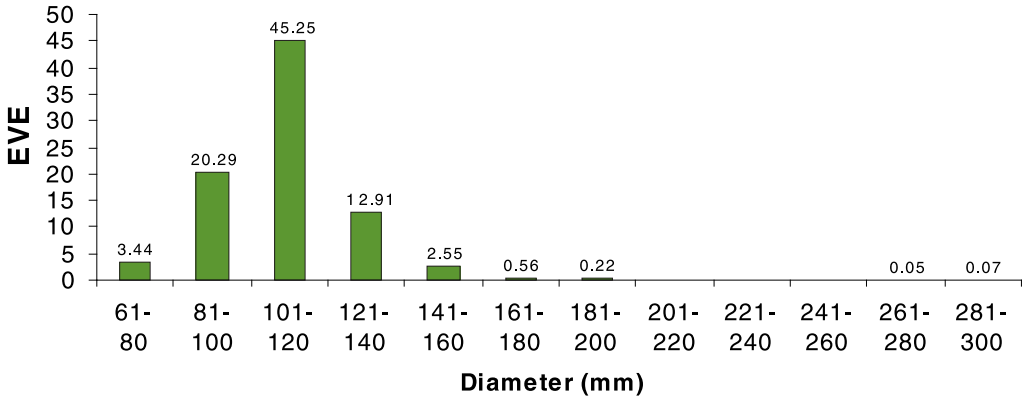


Fig. 4.13 Base diameter occurrence, by number of examples

two had base diameters greater than 260 mm, with the two smaller examples having diameters of 180 mm. Similarly, of the seven bases with cistern bungholes still attached, all but two were in the size-range 160-240 mm, with one larger (300 mm) and one smaller (130 mm), although both may be distorted.

Dripping Dishes – Fragments of the rims of three vessels of this type were noted. All were of a simple upright form.

Kiln 2 pottery

The assemblage of Reduced ware from this kiln and associated features had a total weight of 54,998 g (EVE = 16.35). The reason why so much less pottery was recovered from this kiln is likely to be due to the fact that it did not have any structure below ground level. Most of the pottery from Kiln 1 was recovered from the kiln chamber and stoke-pits.

The range of vessel forms was the same as that from Kiln 1, and the fabrics did not show any great discernible variation. The vessel occurrence (in EVE) was as follows:

Bowls/Pancheons = 5.90 (36.1%)
Jars = 1.04 (6.4%)
Jugs/Cisterns = 9.41 (57.6%)

Bowls/Pancheons – The range of bowl rim forms is shown in Figure 4.6. The occurrence (by EVE) of the different rim forms is shown in Table 4.15.

Figure 4.14 shows occurrence (by EVE) of bowl rim diameters. It shows that, as with the material from Kiln 1, the occurrence is broadly unimodal. The mean rim diameter is 299.4 mm, with a standard deviation of 34.1 mm. This is a smaller mean than for the vessels from Kiln 1, and the size distribution is more restricted, as evidenced by the smaller standard deviation.

Jars – The range of jar rim forms is shown in Figure 4.8. The occurrence (by EVE) of the different rim forms is shown in Table 4.16.

The distribution of rim diameters is not tabulated, because the relatively small assemblage size means that the data has no real pattern. However, the mean jar rim diameter is 212.3 mm, with a standard deviation of 39.6 mm. This does not greatly differ to the same data from Kiln 1 (see above).

Jugs/Cisterns – The range of jug/cistern rim forms is illustrated in Figure 4.10. The occurrence (by EVE) of the different rim forms is shown in Table 4.17

Figure 4.15 shows the jug/cistern rim diameter occurrence (by EVE). It shows that, as with the jars,

Table 4.15: Pottery occurrence, Bowl rims, Kiln 2, by type, in EVE

Type	*EVE*	*%*	*Type*	*EVE*	*%*	*Type*	*EVE*	*%*
201	1.30	22.0%	209	0	0	217	0	0
202	0.12	2.0%	210	0.19	3.2%	218	0.14	2.4%
203	0.17	2.9%	211	0.39	6.6%	219	0	0
204	0.05	0.8%	212	0.06	1.0%	220	0.68	11.5%
205	0	0	213	0.11	1.9%	221	0	0
206	1.64	27.8%	214	0.19	3.2%	222	0.14	2.4%
207	0	0	215	0.06	1.0%	223	0	0
208	0	0	216	0.40	6.8%	224	0.06	1.0%
	3.28			1.4			1.02	

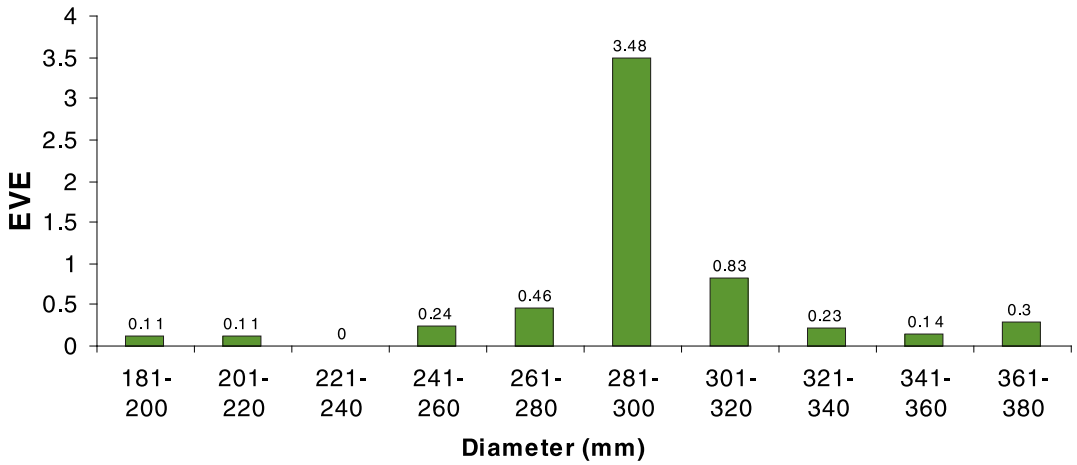


Fig. 4.14 Bowl Rim diameter occurence, Kiln 2 by EVE

Table 4.16: Pottery occurrence, Jar rims, Kiln 2, by type, in EVE

Type	*EVE*	*%*	*Type*	*EVE*	*%*	*Type*	*EVE*	*%*
101	0.36	34.6%	107	0	0	113	0	0
102	0	0	108	0	0	114	0	0
103	0	0	109	0	0	115	0.12	11.5%
104	0	0	110	0	0	116	0.35	33.7%
105	0	0	111	0	0	117	0.05	4.8%
106	0	0	112	0	0	118	0.06	5.8%

Table 4.17: Pottery occurrence, Jug/Cistern rims, Kiln 2, by type, in EVE

Type	*EVE*	*%*	*Type*	*EVE*	*%*	*Type*	*EVE*	*%*
301	0.63	6.7%	307	0	0	313	0	0
302	0.08	0.9%	308	0.57	6.1%	314	0	0
303	0	0	309	0	0	315	0.14	1.5%
304	0.12	1.3%	310	0.07	0.7%	316	0.08	0.9%
305	1.52	16.2%	311	0.81	8.6%	317	0.40	4.3%
306	0	0	312	0.10	1.1%	318	4.89	52.0%

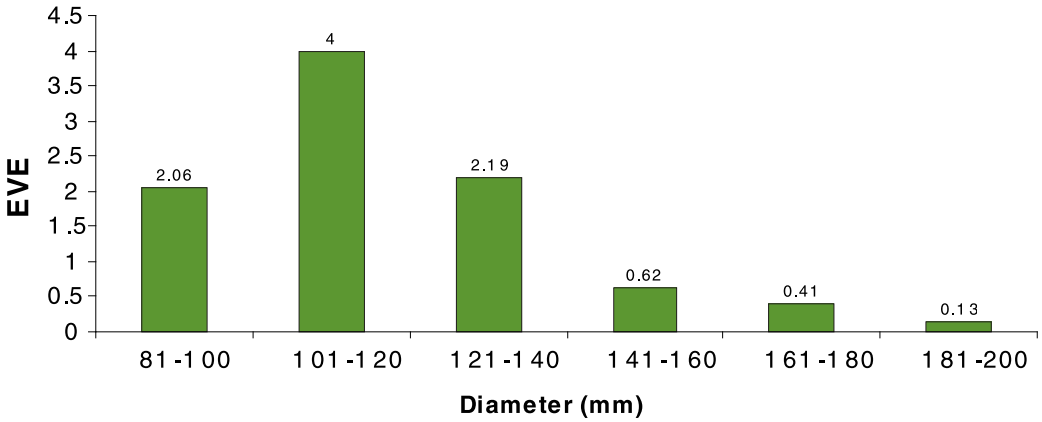


Fig. 4.15 Jug/Cistern rim diameter occurrence by EVE

the occurrence is broadly unimodal. The mean rim diameter is 130.2 mm, with a standard deviation of 23.5 mm.

Handles – A total of 58 handle fragments were noted, all of them undecorated. All were variants of thumb-grooved straps (Fig. 4.12). In addition, two horizontal handles from dripping dishes/skillets were noted, both of type 5. Another unusual variant was an upright loop handle. All the other 55 handle fragments were of type 6.

Bungholes – Fragments of just two bungholes were noted, with both of a similar type to those from Kiln 1, and both had an orifice diameter of 20 mm.

Spouts – The only type of spout noted was a simple pulled lip, of which three examples were noted, all from jugs/cisterns.

Bases – Only seven base sherds were noted. They were all sagging bases, and within the 120–220 mm size range.

Regional Context

The late medieval Reduced ware industry of the south-east Midlands, one of the most important pottery types of the later 14th-15th century, was first formally defined by Moorhouse (1974). Its products are found throughout the region, along with the slightly later (?mid 15th-16th-century) Late Medieval Oxidized Ware industry.

Two Reduced ware manufactories, at Everton (Hassall 1976) and Flitwick (Mynard *et al* 1983), are known from Bedfordshire. In both cases, little or no trace of a kiln was found, but large amounts of waste pottery were noted, and it is all very similar in terms of form and fabric to the material from Higham Ferrers. At Flitwick, 54 % of the rimsherds were from bowls, 32.9 % from jugs/cisterns, 11.4 % from jars and 1.2 % from dripping dishes (Mynard *et al* 1983, 76), although it should be noted that these figures were obtained by rimsherd count rather than EVE. One notable difference from Flitwick is that a small proportion of the pots were glazed (0.9% by weight). No dating evidence was obtained from the Flitwick excavation, but an individual named Henry Potter is known to have lived nearby during the mid-15th century, and there are documentary records indicating that there were clay-pits in the adjoining parish of Ampthill at around the same time (ibid, 75 and 83).

Higham Ferrers has produced the only Reduced ware kilns in Northamptonshire, but a number of Oxidized Ware manufactories are known. Excavations at Glapthorn, near Oundle (Johnston *et al* 1997) examined two late medieval pottery and tile manufactories and their associated out buildings, and also showed that the kilns were also used for lime-burning. The first of these, the 'Leacroft' kiln (Johnston *et al* 1997, 15-24), although built of stone, was otherwise very similar to Kiln 1 at Kings Meadow Lane, being of Musty's type 2c with a central pedestal and opposed stoke-holes, and sunk into the ground (Musty 1974, 44 and fig. 1). The kiln also had an associated building, containing a stone bench, drains and a probable drying oven. The east side of the structure produced a large number of smashed whole pots, which had either been thrown into the structure before demolition, or had fallen from a shelf (Johnston *et al* 1997, 22). Curiously, all these pots were 'seconds', that is, warped or damaged during firing, but still usable. Much of the floor of the building was covered with underfired pottery sherds, seemingly laid down deliberately. Also of note were two large animal ribs which were probably used as throwing formers, and a notched knuckle bone which may have served as a makeshift handle for a 'cheese-wire' used for cutting pots off the wheel after throwing (ibid, 20, fig. 6a). These all came from the demolition rubble over the building.

The dating for the workshop comes from sherds of Cistercian ware and 'Tudor Green' pottery in the upper layers of the workshop floor, suggesting that the pottery was in operation in the second half of the 15th century.

The second Glapthorn kiln, at Gypsy Lane (Johnston *et al* 1997, 24-29), was similar to the first, a type 2c with opposed stoke-pits and a central pedestal, again made of stone, and the whole sunk into the ground. Associated buildings were also identified, but some had been badly plough-damaged, and the rest were largely unexcavated, but interpreted as a brewing complex that pre-dated the kiln. No precise dating evidence was forthcoming, although one of the pre-kiln structures produced a buckle plate (ibid, 29) which is likely to date to the mid 14th-15th century, suggesting that the Gypsy Lane kiln was operating broadly at the same time as that at Leacroft.

Leacroft produced *c* 1,282 kg of pottery, with the fabric containing abundant, well-sorted sub-rounded white quartz 0.25–0.5 mm in diameter, with occasional red ironstone fragments. The fired fabric was mainly orange, often with a dark grey core, and all the pots were wheel-thrown with knife-trimmed, flat bases. This is absolutely typical of the products of the industry in the region. The majority of the rims (75%) were jar forms, although many, if not most, could have been cisterns. The rest of the assemblage comprised bowls and pancheons (14%) and skillets (2%), along with some ridge tiles. Twenty fragments of fire-bars were noted; none were complete, but they were consistently of a flat profile and 210 mm wide and 40 mm thick.

It was estimated that around 30% of the pottery from the fill of the kiln comprised large sherds which had been fired more than once, and had actually been used for covering the pottery during firing, suggesting that the kiln had an open-topped dome (ibid, 29-31). Musty (1974, 54-5) cited replica firing experiments that showed that this was a feasible way to fire pottery to a serviceable temperature. To produce a reduced firing, the top of the kiln would have had to have been sealed with clay and sods. Therefore, it may be that the major difference between Oxidized and Reduced ware is simply the nature of the kilns.

The Gypsy Lane assemblage was even larger, with 2,032 kg of pot recovered. The fabric was identical to that from Leacroft, and the range of vessels similar, although the proportions differed somewhat. Bowls/pancheons were the most common (66%), followed by jars/cisterns (18%) and skillets and jugs. Four fragments of sgraffito-decorated wall-tile wasters were also recovered. These are the only examples that can be linked to this industry, although examples of a different type of sgraffito wall-tiles are known from Tring (Johnston *et al* 1997, 33). No kiln furniture was noted other than a possible spacer-ring.

The medieval potteries at Lyveden which, like Higham Ferrers and Glapthorne, were located in the north-east of Northamptonshire, were extensively excavated in the 1960s and 1970s. Area D1 at the site (Bryant and Steane 1969, 8 and fig. 2) contained a kiln and associated structure, which was dated to the 14th century on the basis of associated artefacts. The kiln, with a single stoke-pit and double flue is quite different from that at Higham Ferrers, and classified by Musty (1974, 47 and fig. 1) as type 4a (ii) (Lyveden type). At the time, it was the only kiln of the type known. The remains of a rectangular building, interpreted as a potter's workshop, were located next to the kiln, as

were two yards surfaced with stone and sherds in a clay matrix. A large dump of waste pottery, a stone slab pavement and an area of cobbles were located just to the east of the kiln. A probable clay-puddling pit was located in the workshop (Bryant and Steane 1969, pl. 5), as were a small collection of potter's tools, including knives, whetstones and fragments of antler and bone which are likely to have been used for forming and decorating pottery (ibid, pl. 7). The products of the kiln, in a limestone fabric typical of the industry, are quite different from those from Higham Ferrers, comprising mainly jars and bowls, and only a single cistern bung-hole.

Excavation of Area J at Lyveden produced a tile kiln and associated workshop (Steane and Bryant 1975, 33-38, figs 12-13 and pls 19-22) dating to the late 15th century on the basis of the presence of Cistercian ware and Tudor Green pottery and two coins dating to the 1460s and 1470s. This makes it broadly contemporary with the Glapthorn potteries. Large quantities of Oxidized ware occurred at the site, but the fabric is slightly different from that from Glapthorn, as small quantities of limestone ooliths were present in the clay, making it highly probable that it was made somewhere in or near Lyveden, as the dominant geology of the area is oolitic limestone. Otherwise, the range of vessels is the same.

The village of Stanion, also in Northants, and near Lyveden, is a well-known medieval potting village. However, most finds have been made at best under rescue conditions, and few of them have been fully published. The two kilns published by Bellamy (1983) are an exception. One kiln was identical to that from area D at Lyveden and probably of the same date (Bellamy 1983, 154-56). It produced pottery of 13th- and 14th-century date (ibid. 156-59). Excavation on the second kiln, although it was limited to part of the stoke-hole and flue, nonetheless showed that it was producing late medieval Oxidized wares (ibid. 159-61), with a fabric very similar to the pottery noted at the tile-yard at Lyveden. The range of vessel types was jars, cisterns, bowls and jugs which are again typical of the tradition.

A kiln at Wood Newton in Northamptonshire was excavated under rescue conditions in 1973 (Mynard 1980). It was badly damaged, but appears to have been a rectangular variant on Musty's type 4, with a single stoke-pit and a central ridge. The bulk of the pottery was Oxidized ware, with the vessel types including cisterns, jars, bowls, and skillets, along with a few odd fragments of costrels, chafing dishes, lids and cups, the latter group in the 'Tudor Green' style, although it is unclear from the report whether these were wasters or merely associated vessels. The excavators dated the kiln to the early 16th century.

The village of Potterspury in west Northamptonshire was making pottery during most of the medieval and post-medieval periods, and although, like Stanion, most of the identified kilns were excavated under rescue conditions, a few have been fully analysed and published. A kiln dated to the 14th–early 15th century was excavated there in 1949 (Jope and Ivens 1995). It was a single flue type, with a raised 'stoking place' and an internal platform with radial fire-bars. The pottery was mainly jugs and bowls of typical 'high medieval' type, and bears little resemblance to Reduced or Oxidized ware.

Other, unpublished, kilns of late medieval date are known from the county. At Yardley Gobion, near Potterspury, two probable 15th century kilns were investigated. The only publication is a note (Moore 1974), but they appear to have been single-flue examples fed from a common stoke-hole. The pottery is typical of the 15th century, comprising mainly jugs/cisterns and large bowls, although there was a large variation in colour, and both the kiln and its products are more typical of the Potterspury industry rather than the Oxidized and Reduced ware traditions.

A number of Reduced and Oxidized Ware manufactories are also known from the broader region, although some are merely finds of wasters, with no kiln structure recovered. In Buckinghamshire, a series of finds of small groups of probable wasters have been made at Great Brickhill. For example, Jack Ironcap's Lane (Beamish 1990) produced a range of vessels types typical of the late medieval industries of the region. Bowls and jugs/cisterns were dominant. Great Brickhill appears to have been the source of both Oxidized and Reduced wares, as wasters of both types have been found (ibid, 88-92; Mynard and Zeepvat 1992, 275).

A contemporary pottery, along with a tile-kiln, is known from Latimer in Buckinghamshire (Farley and Lawson 1990). The products are broadly part of the late medieval Oxidized/Reduced ware industry, having a hard sandy fabric and the typical range of vessel forms, although vessels more typical of the 'Tudor Green' and Cistercian ware industries were also present. Both grey and red sherds were noted. The main products of the kiln were jugs and jars, although cauldrons, bowls and skillets were also present, along with a few cisterns, chafing dishes, dripping dishes, costrels, mugs and a bird whistle, and also some of the earliest saggers known from the region. The kiln itself was built within the ruins of an earlier tile-kiln, and utilized part of its structure. It sub-rectangular in plan, with a central spine with radiating kiln bars, and similar to the broadly contemporary example from Wood Newton in Northamptonshire (above). The Latimer kiln has produced an archaeomagnetic date of AD1460-1510 at the 68% confidence level (Farley and Lawson 1990, 53).

Evidence for late medieval potting has also been obtained from Tyler's Green, near Penn in Buckinghamshire, a place best-known for its production of highly decorated medieval tiles. Various pieces of evidence for pottery production

were made during field-walking, but no evidence of a kiln has been recovered. However, Oxidized ware wasters were present in the usual form of fragments of jars, jugs and large bowls, some of which were glazed (Hutchings and Farley 1989, 107). The assemblage is given a similar late date to the Latimer kiln, although it could conceivably be earlier on the evidence from elsewhere. There is also likely to be earlier pottery production, since wasters of an earlier, perhaps 14th-century industry with many of the characteristics of the later tradition were also noted (Cauvain *et al* 1989, 115-118), and the Rolls of the Court of Common Pleas have a reference to one John le Pottere, who joined the Vicar of Penn in poaching rabbits in 1350 (ibid, 118).

A number of broadly contemporary potting sites are known to the east of Higham Ferrers. At Colne in Cambridgeshire, test-pitting produced evidence of a kiln and manufactory which produced both reduced and oxidized pottery (Healey *et al*, 1998, 52-58). Both grey and orange sherds were noted, with the range of vessels comprising mainly jars, jugs, bowls and cisterns, along with a few skillets. The assemblage is dated to the late 15th-16th century. Other than at Ely, pottery production in Cambridgeshire otherwise is very under-attested. Cistercian wares kilns and wasters and others of medieval date have been excavated, but the medieval tradition appears to lasted virtually unchanged until the 16th century (Hall 2001, 2), and there is no evidence for the production of vessels which could be regarded as Oxidized or Reduced wares.

To the north of Higham Ferrers, the village of Bourne in south Lincolnshire was also producing large quantities of late medieval pottery, and a 16th-century kiln, complete with potter's workshop, house and clay puddling facility, have been excavated (Moorhouse 1981, fig. 88). The pottery, Bourne 'D' ware, is typical of the late medieval tradition in terms of the range of forms, but the actual pottery, in a smooth mainly pale red fabric with a thin external white slip and glaze is quite different to the more southerly tradition (McCarthy and Brookes 1988, 409).

This brief overview of the known late medieval pottery industries of the south-east Midlands perhaps serves to stress the importance of the excavation of the Higham Ferrers kilns. Very few manufactories of late medieval Reduced ware pottery in the region have produced a kiln as complete as Kiln 1 at this site, and the presence of the other two structures, although incomplete or damaged, helps to show how the industry may have evolved. The late medieval Reduced ware tradition is, at the time of writing, about to be the subject of a major research project funded by English Heritage (Slowikowski forthcoming), and the Higham Ferrers manufactory will be a significant component of that study.

Comparative analyses of the kiln assemblages

There is no way of knowing if the two kilns were definitely contemporary. The archaeomagnetic dates obtained from Kiln 1 suggest that it is a candidate for the old kiln that was present when William Potter took his croft in Higham Ferrers in 1436 (Serjeantson 1916) It is possible that Kiln 2 was the one for which he required clay for repairs in 1467. It is quite possible that both kilns were operating at the same time. We cannot, of course, be certain that William Potter was operating as a potter in the Kings Meadow Lane area, although, at present, there is no evidence for pottery manufacture in Higham Ferrers other than at this site.

The assemblages from Kilns 1 and 2 differ greatly in size. The pottery data suggests that there were some variations within their output, especially with regard to form. It must be remembered that when comparing variations in waster groups from pottery manufactories, the occurrence of the various forms and vessel types is not necessarily a reflection of the output of the site; what is being examined is the pottery that failed to fire successfully, and is not necessarily an accurate representation of the output.

The proportions of the main vessel types do not appear to show much variation, but they were compared using the chi-squared test (eg Drennan 1997, 188-9). The test produced a chi-squared value of 1.41 (2d.f.), which indicates that there is no significance in the difference of the proportions of the three main vessel types observed at the two kilns.

There does appear to be a considerable difference between the ranges of jar rim forms from the two kilns (Tables 4.11 and 4.16). Kiln 1 has a wide range of forms, although there were no rims of types 115-118, whereas these made up the bulk of the forms from Kiln 2. There is, of course, a large difference between the basic quantities of rimsherds from the two kilns, so it is entirely possible that this pattern is simply due to the assemblage sizes and the result due to the vagaries of archaeological sampling. Again the differences can again be examined using the chi-squared test, although the presence of large numbers of rim types with a data value of '0' is problematic, as the chi-squared test cannot confidently be used with data which has a value of 0. To circumvent this, the data from each kiln was amalgamated into two groups, one comprising rim forms 101-109, and the other rim forms 110-118. When these were compared, a chi-squared value of 2.20 (1d.f) was produced. This gives a confidence level of between 80%–90% that there is a significant difference between the two assemblages, although when the strength of the value is tested using Cramer's *V* (for example Drennan 1997, 193), this returns a value of 0.08, which indicates that there is little significant difference, and that the observed pattern is simply due to the large difference is the assemblage sizes.

A similar operation was carried out for bowl rim form occurrence, dividing them into three groups (types 201-208, 209-216 and 217-224) which

produced a chi-squared value of 0.22 (2d.f.). This shows that there is no significant difference in the proportions of the various rim forms, with the assemblage sizes again being the most likely cause of the difference.

Finally, the same operation was carried out for the jug/cistern rims. These appear, at first glance to be greatly different, with the Kiln 2 assemblage greatly favouring type 318, which was not the case with Kiln 1. Again, the rim form data was divided into three groups, 301-306, 307-312 and 313-318. This returned a chi-squared value of 16.80 (2d.f.), which gives a confidence level of greater than 99.9%. Calculation of Cramer's *V* produces a value of 0.42, which suggests that, in this case, the difference has some significance. This would suggest therefore that the products of the two kilns show some differences in the area of jug/cistern rimforms.

If Kiln 2 had produced a larger assemblage but with the same proportions of the different rim forms of the different vessels types, then the differences would have been highly significant. This would have suggested that the two kilns were firing the products of two different potters. It is still uncertain whether the two kilns were contemporary in operation or not.

The differences between the two waste dumps can be further examined by comparing the mean rim diameters of the different vessel types. To establish whether any differences in the mean diameters are significant Student's *t*-test can be used (eg Drennan 1997, 132-3). This could establish whether the vessels from one waste dump were generally of a different size to the same vessel types from the other. For the jars, the result is a *t* value of 0.45, which suggests that there is not any significant difference in the mean sizes of the jar rims, but the same test applied to the bowl/pancheon rim diameter means gives a *t* value of 2.19, which gives a significance level of between 0.05 and 0.02, meaning that the differences in the rim diameters of the bowls is likely to be significant. In the case of the jugs, the calculation of *t* gives a value of -1.25, which has a significance level of between 0.5 and 0.2, meaning that the difference is much more likely to be due to the sample sizes than any significant physical difference in the mean rim diameters.

In summary then, it would appear that the proportion of vessel types in both waster dumps was generally the same. The same basic range of rim forms was noted in both groups, although there were differences in the preferred jug forms between the two kiln waster assemblages. The most likely reason for the observed differences in rim form preference for jars and bowls is the substantial difference in the size of the two assemblages. The difference in the mean rim diameters of the jars and jug/cisterns is again probably due to the assemblage sizes, but the range of bowl/pancheon sizes was significantly different between the two waster groups. This would suggest that Kiln 1 and Kiln 2 were firing the products of two different potters; there seems no logical reason why the observed differences in jug rim forms and bowl size ranges would otherwise occur.

METALWORK AND WORKED BONE AND ANTLER *by Ian Scott*

Introduction

The finds included here are those from sites with Saxon, medieval and later occupation. Table 4.18 shows a summary quantification of the finds assemblage, which comprises 437 metal objects (308 iron, 83 copper alloy and 46 lead), 22 bone objects and two ceramic spindle whorls (Total n = 461). The largest phase assemblage (n = 134) comes from Roman-British contexts, almost all from Site 9. This phase assemblage is omitted from this report, but has been included with the Romano-British Project

Table 4.18: Summary Quantification of metal finds by Phase and Function

	Function										
Phase	*Arms*	*Tools*	*Transport*	*Measure*	*Household*	*Personal*	*Security*	*Door*	*Window*	*Structural*	*Nails*
Preh											1
Rom		1	1	1	2	10				2	78
1		2			1	3				1	8
2a		2				1					
2b		9	1		3	2	1				1
2c						1					
3		2	1		4	1					2
4		2	4	1	1	3				1	10
5		1	5			5		1			11
6	1	2	2		3	14	1			3	18
Mod					1						2
u/s	1	6	12	3	4	22		1	1	2	15
Totals	2	27	26	5	19	62	2	2	1	9	146

Table 4.19: Function Codes used in Tables and Finds database

Function Code	*Description*
Tools	Craft tools, from smithing to textile work.
Transport	Items relating to waggons, carts and also horse gear
Measure	Weights and scales
Household	Household furnishings and equipment including pots and utensils
Personal	Jewellery, items of dress, toilet items and writing materials
Security	Keys, locks and chains
Door	Door fittings including hinges and latches
Window	Window fittings including hinges and grills
Structural	Other structural fittings including holdfasts and staples
Nails	Nails (excluidng hobnails)
Bindings	Bindings and strips with nails or nail holes
Miscellaneous	Bar, rod, strip, sheet and plate fragments, waste products from carft processes including offcuts and melted waste
Query	Objects of uncertain identification
Industrial	Equipment, other than tools, used in industrial processes
Unknown	Objects or fragments, usually small that cannot be identified

material from Site 10 (Scott forthcoming). Small quantities of finds, including residual Romano-British objects, from Anglo-Saxon SFBs were found on Site 10 and these are included in the discussion in this report and selected items (**10, 31-35, 41-42 & 45**) incorporated into the following catalogue.

The catalogue has been ordered partly by chronology – i.e. finds from Anglo-Saxon (Phases 1-3) and Medieval (Phases 4-5) contexts – and within the chronological groups by function. Selected unstratified finds and objects from Phase 6 (16th century to modern) contexts are appended where they can be identified typologically as Romano-British, Saxon or medieval..

The finds assemblage for each chronological block is summarised in table form under broad functional categories, as a means of characterising the composition of each assemblage. (See Table 4.19 for functional categories.)

Bindings	*Misc*	*Query*	*Unk*	*Totals*
				1
3	23	7	6	134
2	5	7	1	30
	1			4
	4	1		22
	5	1		7
	4	5		19
	8	2		32
	10	3		36
1	8	11	1	65
	2	1		6
2	24	12		105
8	95	50	8	461

Finds from Anglo-Saxon Phases 1-3 (Tables 4.20–4.22)

Saxon contexts produced 82 items, including 30 from Phase 1 contexts, 33 from Phase 2 contexts and 19 from Phase 3 contexts.

The Phase 1 finds are mainly from SFB fills. The SFBs on Site 1 (Table 4.20) produced a limited number and range of finds. SFB 1253 produce 5 objects, including a decorative knob or terminal in copper alloy but of uncertain type or date (**51**), a small clamp or dog (**48**), two nails and short strip of iron. SFB 1256 produced a single small corner fragment of copper alloy plate. The most finds (n = 10) came from SFB 1263 and included the tip of a knife blade of uncertain form (**23**), two pieces of copper alloy edge binding (**49-50**), polished slightly dished copper alloy disc (**52**), three small copper alloy fragments of uncertain function (**53-55**), a nail, a length of rod or bar – possibly a nail stem fragment – and small triangular fragment of iron. SFB 1266 contained a single nail. The number and range of finds from the SFBs is limited and most of the objects are incomplete. Other than finds from the SFBs, finds were recovered from two pits (contexts 1305 and 1306) probably of Phase 1. Both produced a single undiagnostic object.

Two SFBs on Site 10 produced also finds (Table 4.21). The finds from SFB 12740 number eight and include fragments of a composite bone comb (**42**) and a copper alloy bracelet fragment (**32**), a piece of an iron binding or collar and piece of strip with a nail hole, two nails, a fragment of copper alloy wire, and a iron strip of uncertain identification. The bracelet is Romano-British in date. Finds from SFB12740 number only five, but include an ivory pinbeater (**10**), a possible iron finger ring (**31**), two Romano-British bow brooches (**33-34**) and a small hemispherical lead object. The latter could be a slightly flattened pistol ball and therefore intrusive.

Table 4.20: Phase 1 contexts (SFBs and pits): Summary Quantification by Context and Function

Site	Feature	Context	Function Tools	Transport	Measure	Household	Personal	Structural	Nails	Bindings
	SFBs									
1	1253	1252						1	1	
		1255							1	
	1256	1257								
		1265								1
	1263	1268				1[1]			1	1
		1271								
	1266	1269							1	
	Pits									
	1305	1304								
	1306	1307							1	
	Totals		*0*	*0*	*0*	*1*	*0*	*1*	*5*	*2*
	SFBs									
4	6057	6058	1[2]				1[3]		2	
	6345	6346					1[4]			
	6356	6357	1[5]				1[6]			
		6366								
	6630	6631							1	
4	*Totals*		*2*	*0*	*0*	*0*	*3*	*0*	*3*	*0*
	Totals		2	0	0	1	3	1	8	2

1. Cat.No. 23 – knife blade fragment
2. Cat.No. 7 – punch
3. Cat.No. 36 – bone comb fragments
4. Cat.No.37 – bone comb fragments
5. Cat.No.8 – bone needle or awl
6. Cat.No.38 – bone comb fragments

The difference between the finds from SFBs on Site 1 and those on Site 10 is marked. The presence of Romano-British objects in Site 10 SFB fills can be explained by the proximity to the Roman settlement. However, both Site 10 SFBs produced bone comb fragments, which were notably absent from Site 1. The presence of the pin beater in Site 10 mirrors other settlement sites (for example at West Stow: West 1985, Vol. 1, 138-140 and table 59). Although the numbers of finds are limited, there

Table 4.21: Site 10: Finds from SFB (Phase 1) contexts: Summary Quantification by Context and Function

SFB	Context	Function Tool	Personal	Nails	Binding	Misc	Query	Total
12740	12732		1[1]					1
	12733				1		1	2
	12737		1[2]	2	1	1		5
Total		*0*	*2*	*2*	*2*	*1*	*1*	*8*
12800	12787	1[3]	1[4]					2
	12793		1[5]					1
	12794		1[6]				1	2
Total		*1*	*3*	*0*	*0*	*0*	*1*	*5*
Total		1	5	2	2	1	2	13

1. Cat.No. 42 – composite bone comb
2. Cat.No. 32 – bracelet fragment
3. Cat.No. 10 – pinbeater
4. Cat.No. 31 – possible finger ring
5. Cat.No. 33 – RB bow brooch
6. Cat.No. 34 – RB bow brooch

Misc	Query	Unk	Totals	SFB Totals
			2	
1	1		3	5
1			1	1
	1	1	3	
	3		6	10
1			1	
			1	1
1			1	
			1	
4	*5*	*1*	*19*	
	1		5	5
			1	1
	1		3	
1			1	4
			1	1
1	*2*	*0*	*11*	
5	*7*	1	30	

does seem to be a difference between the finds from Site 1 SFBs and those from Site 10 SFBs. The problems of relating the finds from SFB pits to possible uses of the buildings are obvious: the finds generally related to the abandonment or demolition of the structures. However in general terms the difference in the finds assemblages between the two sets of SFBs does hint at a difference in the nature of the occupation in the two quite separate areas.

Finds from later Saxon contexts (Phases 2 and 3) are summarised in Table 4.22. Nails and miscellaneous objects are tabulated in more detail in Tables 4.23 and 4.24.

The 32 objects from Phase 2 contexts include one hobnail, almost certainly a residual Roman object, one nail and ten miscellaneous fragments (Table 4.18). The catalogued objects include three probable heckle teeth (**3-5**), a bone needle or awl (**9**), and a group of eight similar bone needles found bundled together (**11-18**). Other finds include a strap junction or distributor (**21**), a tanged knife (**24**) and knife handle plate (**29**), a pendant hook or hanger (**30**), a comb fragment (**39**) and hairpin fragments of bone (**43-44**), the handle and stem of a padlock, or slide, key (**47**) and two objects of uncertain identification (**58-59**).

The presence of heckle teeth from Phase 2 contexts is of interest as they would indicate that the processing of wool had continued in Phase 2. Two came from Site 2 (**3-4**), and one from Site 4 (**5**). Further heckle teeth were found unstratified on Site 4 (**89-92**). Also a pair of shears of Saxon or medieval type was found on Site 2 from a Phase 6 context (**88**). These may well have been used in wool processing or textile production. The presence of a strap distributor indicates the possible presence and use of horses.

The most notable find from a Phase 2 context is the small fragment of decorated metalwork (**46**) from the enclosure ditch fill (context 15119). This is a hint that the site had high status links in phase 2, but generally the finds suggest a limited domestic assemblage.

Finally there are 20 objects from Phase 3 contexts. There were two nails and three miscellaneous fragments (see Table 4.22). The catalogued finds include an awl (**2**), a heckle tooth (**6**), a horseshoe fragment (**22**), four knives or knife fragments (**25-28**), individual broken comb teeth (**40**), and four objects of uncertain function (**61-64**).

These came from Sites, 2, 4 and 8. There are two objects of uncertain identification (**60-61**) from Site 2. Finds from Site 4 include the awl (**2**), a heckle tooth (**6**), a horseshoe fragment (**22**), a Saxon knife (**26**) of a type datable to the 8th- to 11th centuries, and bone handle plates (**63**) and two nails. There is also a clearly intrusive fragment of a knife of post-medieval form (**27**) from context 7236. The awl may have been used in carpentry or leatherworking, the heckle tooth may be residual from Phase 2, or indicate continuing wool processing.

Apart from a knife blade of good Saxon form (**28**), the finds from Site 8 comprise three objects of uncertain identification (**59, 62, 64**), one of which (**59**) may be an instrusive object of later date, and three miscellaneous pieces.

The presence of a horseshoe fragment indicates the presence and use of horses. To this should be added two horseshoe fragments – a possible Type 2 shoe (**66**) and a certain Type 2a shoe (**67**) – from Phase 4 contexts on Sites 3 and 4 respectively. These could be late Saxon in date. Overall the Phase 3 assemblage is limited in number and range.

Two hooked tags of Saxon type and date (**100-101**) can be identified amongst unstratified finds. These came from Site 4. Already noted are the shears (**88**) and four heckle teeth (**89-92**), which could be Saxon.

Catalogue

Tools (Fig. 4.16)

The tools could all be used in the processing of wool or hides. The shears (1) could have been for clipping wool or for general cutting. The awl (2) may have been used in leatherworking, or in carpentry. The heckle teeth (3-6) are all from combs used in the preparation of wool for spinning. An incomplete example, with teeth held in an iron binding, comes from the Lake End Road West site, Dorney, Buckinghamshire (Scott 2002, 37, fig. 4.5: 5) from an early to

Table 4.22: Anglo-Saxon contexts (Phases 2 & 3): Summary Quantification by Context and Function

			Function							
Site	*Phase*	*Context*	*Tools*	*Transport*	*Measure*	*Household*	*Personal*	*Security*	*Structural*	*Nails*
eval	2b	451								
	2b	452				1				
	3	550					1			
	3	564	1							
Eval		*Totals*	*1*			*1*	*1*			
2	2a	2431	2				1			
	2a	2478								
	3	2084								
	3	2484				1				
Site 2		*Totals*	*2*	*0*	*0*	*1*	*1*	*0*	*0*	*0*
4	2b	6027					1			
	2b	6044				1				
	2b	6654				1		1		
	2b	7053	1	1						
	2c	6712								
	2c	7027								
	2c	7035					1			
	2c	7077								
	3	6156				1				
	3	6160		1						
	3	6187	1							
	3	6402								1
	3	6832								1
	3	7236				1				
Site 4		*Totals*	*2*	*2*	*0*	*4*	*2*	*1*	*0*	*2*
8	2b	15100	7							1
	2b	15101					1			
	2b	15119								
	2b	15218	1							
(3)	3	3003								
	3	15259				1				
	3	15305								
	3	15423								
	3	15486								
Site 8 (and 3)		*Totals*	*8*	*0*	*0*	*1*	*1*	*0*	*0*	*1*	*6*
Totals			13	2	0	7	5	1	0	3

mid Saxon pit. A more complete example with iron binding was found at York (Ottaway 1992, 538-41 & fig 212).

The ivory pinbeater (10) from SFB 12800 on Site 10 is a notable find. Pinbeaters are a distinctive Anglo-Saxon object, but the use of ivory rather than bone is suggestive of high status.

1 *(not illustrated)* **Shears arms and spring bow**, encrusted. Blades missing. Fe. L 110 mm. Site 4; HFKML 01, 6763 sf 341. Ph 4.

2 **Awl**. Possible awl. Tapering rectangular section tang, with broken blade at the other end. Fe. L 70 mm. Site 4; HFKML 01, 6187, sf 319. Ph 3

The following objects (nos **3-6**, see also **89-92**) are distinctive objects and formed parts of heckles (cf almost complete examples from Norwich: Goodall in Margeson 1993, 182 and fig. 134, 1420-1422; York: Ottaway 1992, 538-41, and fig. 212; and Lake End Road West site, Dorney, Buckinghamshire: Scott 2002, 37 and fig. 4.5: 5).

3 *(not illustrated)* **Heckle tooth fragment**. Broken tapering spike of circular section. Could be part of a heckle tooth. Fe. L 58 mm. Site 2; HFKM 95, 2431, sf 87. Ph 2a.

4 *(not illustrated)* **Possible heckle tooth**. Tapering spike, eroded and laminated. Possibly of circular

Misc	*Query*	*Unk*	*Totals*
1			1
			1
			1
			1
1			*4*
			3
1			1
	1		1
	1		2
1	*2*	*0*	*7*
			1
			1
			2
			2
2			2
2			2
	1		2
1			1
	1		2
			1
			1
			1
			1
1			2
6	*2*	*0*	*21*
3			11
			1
	1		1
			1
	1		1
			1
2	1		2
	1		1
1			1
4	*0*	*21*	
14	*7*	0	53

section. Fe. L 89 mm. Site 2; HFKM 95, 2431, sf 86. Ph 2a.

5 *(not illustrated)* **Possible Heckle tooth**. Tapering spike of circular section, slightly flattened and of sub-rectangular at the wide end. L 91 mm. Site 4; HFKML 01, 7053, sf 348. Ph 2b.

6 *(not illustrated)* **Heckle tooth**. Tapering spike of circular section. Squared and battered at the broad end. Fe. L 116 mm. Site 2; HFKM 95, 564, sf 97. Ph 3.

7 Possible **punch** made from cut long bone. The cut end is chamfered. L 84 mm. Site 4; HFKML 01, 6058, sf -. Ph 1.

Possibly a punch for marking pottery, or perhaps more probably a rough-out for a handle.

8 **Needle** or **awl** made from small long bone. The tip and stem are highly polished. L 81 mm. Site 4; HFKML 01, 6357, sf 325. Ph 1.

9 **Needle** or **awl**. Curved stem of oval section. The section changes near the tip and has slightly hollowed out sides – reflects form of original bone? Highly polished. L 93 mm. Site 8; HFWIB 03, 15218, sf 4022. Ph 2b

10 **Pinbeater**, made of ivory, and tapering to a point at each end. L 163 mm. Site 10; HFKML 02, 12787, sf 2968. Ph 1.

This is a long example of the weaving tool found in Anglo-Saxon contexts. There are examples from West Stow (West 1985, 125 & figs 191, 7; 210, 13; 246, 15-17) and Lake End Road West site, Dorney, Buckinghamshire (Riddler 2002, 41 and fig.4.10, 10-11).

Catalogue nos 11-18 are all similar bone needles and were found together. They are probably weaving tools, cf examples from Winchester (Keene 1990, vol 1, 233) and West Stow (West 1985, 125, figs 210, 14; 233, 3; 246, 18-24). It is probable that they were deliberately placed as a termination deposit.

11 **Needle** with pierced triangular head. Curved stem of oval section. Polished. L 124 mm. Site 8; HFWIB 03, 15100, sf 4003. Ph 2b.

12 **Needle** with pierced triangular head. Stem of circular section. L 110 mm. Site 8; HFWIB 03, 15100, sf 4004. Ph 2b.

13 *(not illustrated)* **Needle** with pierced triangular head. Stem of circular section. Complete but broken. L 110 mm. Site 8; HFWIB 03, 15100, sf 4005. Ph 2b.

14 *(not illustrated)* **Needle** with pierced triangular head. Stem of circular section. L 108 mm. Site 8; HFWIB 03, 15100, sf 4006. Ph 2b.

15 **Needle** with pierced triangular head. Stem of circular section. L 112 mm. Site 8; HFWIB 03, 15100, sf 4007. Ph 2b.

16 *(not illustrated)* **Needle** with pierced triangular head. Stem of circular section. Stem broken, tip missing. L 100 mm. Site 8; HFWIB 03, 15100, sf 4008. Ph 2b.

17 *(not illustrated)* **Needle** with pierced triangular head. Stem of circular section. L 114 mm. Site 8; HFWIB 03, 15100, sf 4009. Ph 2b.

18 *(not illustrated)* **Needle** with pierced triangular head. Stem of circular section. Broken but complete. L 102 mm. Site 8; HFWIB 03, 15100, sf 4010. Ph 2b.

The two spindle whorls (nos **19-20**) are of forms paralleled at West Stow (West 1985, 139, and fig. 244, 12-13) and Winchester (Woodland 1990, fig. 46, 102, 105 and 112)

19 Domed **spindle whorl** with concentric grooves around circumference. Ceramic. D 25 mm; H 15 mm. Site 4; HFKML 01, 6763, sf 339. Ph 4.

20 Domed **spindle whorl**. Ceramic. D 33 mm; H 14 mm. Site 4; HFKML 01, 7210, sf 327. u/s.

Transport (Fig.4.17)

In addition to the objects catalogued there is a fiddle key horseshoe nail from a Phase 4 context (context 6763, sf 337). The horseshoe fragment (**22**) is undiagnostic, but could be early in date.

21 **Strap junction**, with one complete narrow strap with two nail holes. Part of a nail remains in one hole. There is a neat loop. The second strap is largely missing. Fe. L 58 mm. Site 4; HFKML 01, 7053, sf 347. Ph 2b.

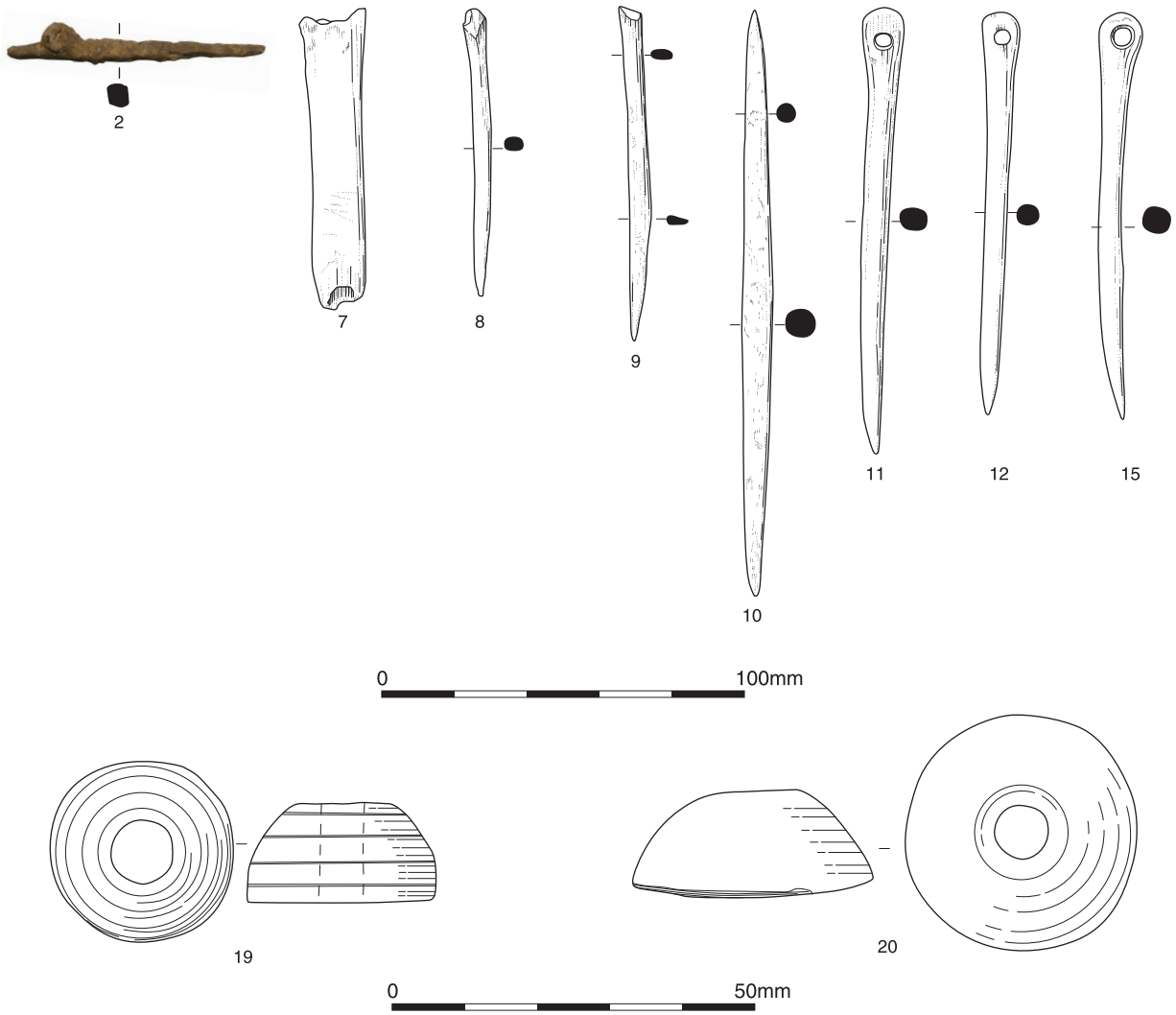


Fig. 4.16 Small Finds – Anglo-Saxon tools

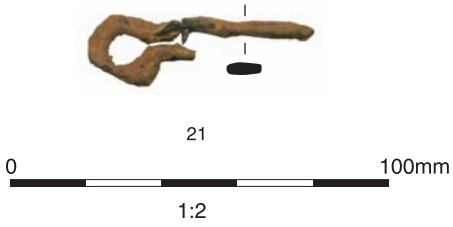


Fig. 4.17 (above) Small Finds – Anglo-Saxon transport objects

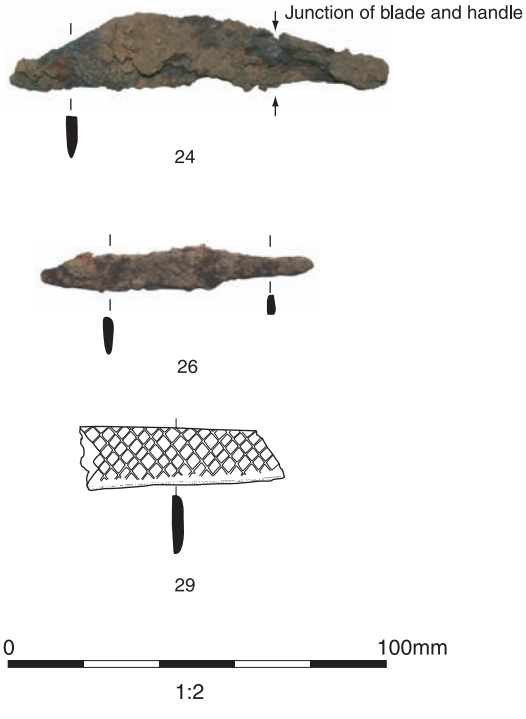


Fig. 4.18 (right) Small Finds – Anglo-Saxon household objects

22 *(not illustrated)* **Horseshoe fragment**. Heel fragment from a branch of thin section, no calkin, part of one nail hole of uncertain form. Fe. L 42 mm. Site 4; HFKML 01, 6160, sf -. Ph 3.

Household (Fig. 4.18)

Knives

23 *(not illustrated)* **Knife blade fragment**, comprising tip of triangular section blade. The back and edge curve to the tip. Fe. L 77 mm. Site 1; HFKM 95, 1268, sf 61. Ph 1.

24 **Tanged knife**, with short straight back and angled point. Fe. L 99 mm. Site 2; HFKM 95, 452, sf 92. Ph 2b.

Knife with an angle back blade form (Ottaway Type A2) which according to Ottaway occurs from the 8th century onwards. Most are pre-Norman Conquest in date (Ottaway 1992, 561-64, see esp. figs 228: 2798 & 229: 2809).

25 *(not illustrated)* **Knife, whittle tang**, with broken blade and tang. Gently sloping choil. Uncertain form. Fe. L 30 mm. Site 2; HFKM 95, 2484, sf 94. Ph 3.

26 **Knife, small, whittle tang**. Straight or slightly curved back which than curves down to the tip. Triangular section. Small curved choil. Complete. Fe. L 71 mm. Site 4; HFKML 01, 6156, sf 318. Ph 3.

A knife of Ottaway Type C3, which according to Ottaway are broadly dateable from the 9th to the 11th century (Ottaway 1992, 570, see esp. fig. 234: 2929).

27 *(not illustrated)* **Knife fragment**, from a whittle tang knife with elongated circular section bolster. The bolster and small part of the blade survive. Fe. L 49 mm. Site 4; HFKML 01, 7236, sf -. Ph 3.

Probably post-medieval in date and therefore intrusive.

28 *(not illustrated)* **Knife blade**, with narrow slightly curved back with parallel edge and triangular section. Whittle tang? Tip and tang missing. Fe. L 68 mm. Site 8; HFWIB 03, 15259, sf 4027. Ph 3.

Ottaway Type D blade with convex curved back (Ottaway 1990, 572).

29 Knife **handle plate**. Tapering plate with cross-hatched decoration. Tapering plate with rounded edges. Not finished. Back quite rough. Bone. L 54 mm. Site 4; HFKML 01, 6044, sf -. Ph 2b

Other

30 *(not illustrated)* **Pendant hook** or **hanger**. Tapering strip formed into a hook at one end, and pinched at the upper end, but broken. Fe. L 172 mm. Site 4; HFKML 01, 6654, sf 333. Ph 2b.

Personal (Fig. 4.19)

In addition to the objects catalogued listed below a single hobnail (context 7025, Ph 2c) was found in a Phases 1-3 context. It is probably residual and derived from Roman levels. The foot of a small long brooch (**35**) and a decorated copper alloy hairpin (**45**) were recovered from the spoil heap (context 10508) on Site 10. Although unstratified, both are Saxon types. Also from Site 10 were comb fragments. One group was from an SFB (**42**), and the other (**41**) from amongst a group of finds, including Saxon pottery, in a dark silt deposit (context 10575). A number of objects of certain or probable Romano-British derivation (**31-34**) are included because they were found in the fills of SFBs.

Jewellery

31 *(not illustrated)* Possible **finger ring** formed from a coil of square section wire. Fe. D 21 mm. Site 10; HFKML 02 12787, sf 2967, Ph 1.

32 Possible **bracelet fragment**, comprising thin strip of rectangular section with regular closely set small notches along one edge. One end tapers to a blunt point. ID uncertain. Copper alloy. L 47 mm. Site 10; HFKML 02 12737, sf 3066. Ph 1.

33 **Bow brooch**. Well-preserved small brooch formed from a single strip. Sprung pin with internal chord. A so-called 'Nauheim derivative'.Copper alloy. L 33 mm. Site 10; HFKML 02 12793, sf 3068. Ph 1.

34 **Bow brooch** fragment, comprising catchplate and part of bow. The bow is of hollow curved cross section and has a possible rivet hole. Possibly a 'Nauheim derivative with expanded bow'. Copper alloy. L 33 mm. Site 10; HFKML 02 12794, sf 3083. Ph 1.

35 **Small long brooch**, with lozenge-shaped foot. The head is missing. Eroded. Copper alloy. L 46 mm. Site 10; HFKML 02, 10508, sf 921. Ph 1.

This is a form that dates to the 6th century.

Bone Combs

The comb fragments (**36-42**) are all from double-sided composite combs. It is not possible to establish the length of the combs because the surviving pieces are so fragmentary. See the examples from Lake End Road West site, Dorney, Buckinghamshire (Riddler 2002,) which are dated to the later 7th or 8th century, and from West Stow (West 1985, 127-8 and figs 252-53), which range in date from the 5th to 7th century. The Higham Ferrers examples are predominantly from Phase 1 contexts.

36 **Comb**. Two fragments plus a number of loose teeth. The larger fragment has two half round side plates with slight decorative striations running their length. There are four extant rivets. The teeth are much eroded. Second fragment is part of the end of the tooth plate. Bone. L 59 mm. Site 4; HFKML 01, 6058, sf 298. Ph 1.

37 **Comb** fragments. Four sizeable fragments and a number of small pieces. Two fragments with *in situ* plate fragments are slightly tapered. The plates are notched along the edges. The other two fragments are corners from the tooth plate. One fragment has wider teeth spaced at c. 4 teeth per cm (11 teeth per inch). The second fragment has narrow teeth spaced at 6 teeth per cm (15 teeth per inch). Bone. L 67 mm; W 31 mm. Site 4; HFKML 01, 6346, sf 326. Ph 1

38 **Comb** fragments. Four large fragments and a number of small pieces. There are two side plate fragments, with a decoration of transverse parallel lines in panels. The plates are notched along the edges where the teeth have been cut. The other two fragments are from the tooth plate. One side has smaller narrower teeth than the other. Bone. Side plate fragments: L 49 mm; W 16 mm; and L 23 mm; W 15 mm. Tooth plate fragments: L 18 mm; W 26 mm; L 16 mm, W 17 mm. Site 4; HFKML 01, 6357, sf 324. Ph 1.

39 *(not illustrated)* **Comb** fragment, comprising part of tooth plate, with teeth largely broken off, and two narrow side plates of half round section. The latter are decorated with crosses. Bone. L 55 mm. Site 2; HFKM 95, 2431, sf 107. Ph 2a.

40 *(not illustrated)* **Comb** teeth. Seven individual broken teeth. Bone. L 19 mm. Site 2; HFKM 95, 550, sf -. Ph 3.

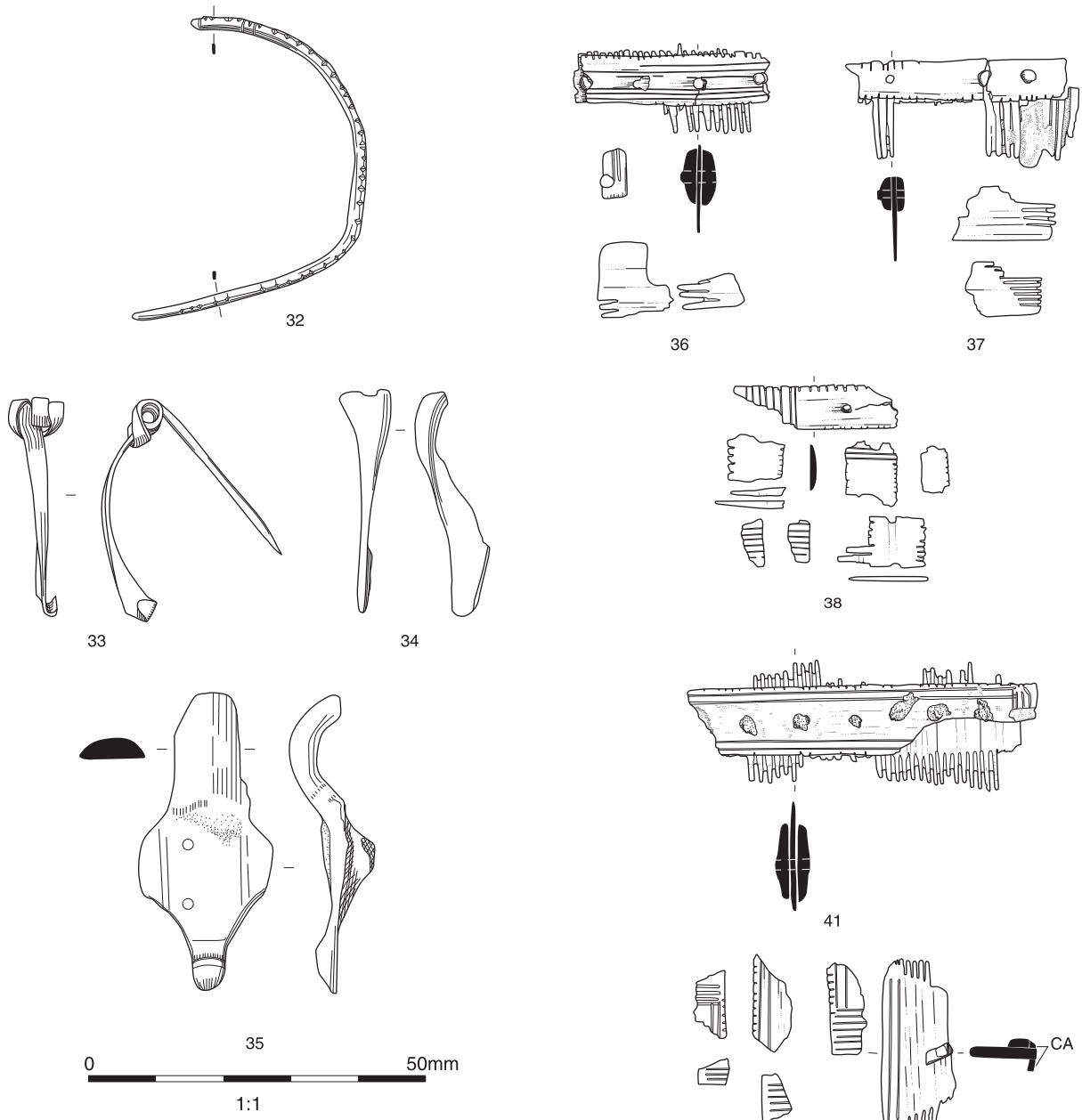


Fig. 4.19 Small Finds – Anglo-Saxon personal objects

*Plate 4.1 Small finds – No. **46**, interlace decorated sheet*

41 **Composite comb fragment**, secured by iron rivets. L 105 mm. Site 10; HFKML 02, 10575, sf 989. Ph 1.

42 **Composite comb fragments**, comprising end of the double sided tooth plate, part of decorated handle plate and teeth fragments. The comb was held together by iron rivets. W 51 mm. Site 10; HFKML 02, 12732, sf 2921. Ph 1

43 *(not illustrated)* Possible **hairpin** fragment. Tapering stem fragment ending in sharp point. Highly polished. Bone. L 50 mm. Site 4; HFKML 01, 6027, sf 274. Ph 2b.

44 *(not illustrated)* Tip of **hairpin** or **needle**. Circular section. Bone. L 22 mm. Site 8; HFWIB 03, 15101, sf 4023. Ph 2b.

45 **Hairpin** fragment, comprising hexagonal facetted head, and small part of stem. The main facets have five ring and dot motifs, the side faces two ring and dots, and the smaller facets single rings and dots. The stem may have been cut. Copper alloy. L 16 mm. Site 10; HFKML 02, 10508, sf 920. Ph 1.

The head of the pin can be paralleled amongst finds from Hamwic (Hinton and Parsons 1996, 23 form Bb1ii and fig. 9: 4/2, 169/327, etc).

Decorative metalwork (Pl. 4.1)

46 Fragment of **decorated sheet or plate**. Part of a pattern of delicate but vigorous ribbon interlace and a possible roundel survives. The pattern is in low relief on thin plate about 1 mm thick. Possibly originally gilded. Cu alloy. L 15 mm; W 17 mm. Site 8, HFWIB 03, 15119, sf 4014. Ph 2b

Although elements of the ribbon interlace pattern survive the overall decorative scheme is incomplete. The pattern may have been cast, or possibly die-stamped, onto the surface of the plate, and it is possible that the object was gilded originally. The object is difficult to date closely on the basis of the decoration alone, but it could very well have originated in the early to later 8th century, which would agree with the dating of the Phase 2b context, in which it was found. There are similarities to the interlace on the heads of the Fiskerton pin set (Wilson 1984, illustration 33) which are generally date to the 8th century. A recent find of a dress pin from Horncastle, Lincolnshire (Department of Culture, Media and Sport 2001, *Treasure Annual Report 2000*, 40 and fig.55; Treasure ID M&ME 326) is slightly simpler but has similar interlace to the Fiskerton pins and has been dated to the later 8th century. These examples are of much higher quality being of silver gilt and silver respectively. However the decoration of the Higham fragment would fit happily with this Mercian metalwork. The original function of the fragment is uncertain, but it is unikely to be a fragment of a strap end because it is rather too thin in section. Possibly it is a fragment for the head of a decorative dress pin, but more probably it is part of a decorative mount perhaps for attachment to a wooden box or for furniture.

Security

The only item that can be identified in this category is a key.

47 *(not illustrated)* **Key stem**, with expanded head and rolled loop and attached ring. Bit missing. Fe. L 158 mm. Site 4; HFKML 01, 6654, sf 334. Ph 2b.

The form of the key suggests that it is a barrel padlock, or slide, key. The handle form is found in late Saxon/early medieval contexts (eg. Winchester: Goodall 1990, 1005-06, 1020-22 & figs 322-23; York: Ottaway 1992, 673-76 & figs 289-290) as well as later medieval contexts (eg. York: Ottaway and Rogers 2002, 28767 & fig.1453).

Structural

48 *(not illustrated)* **Clamp**, or **dog**. with flat rectangular section back tapering to points at each end. The points are incomplete. Fe. L 43 mm. Site 1; HFKM 95, 1252, sf-. Ph 1.

Nails

The nails from Saxon contexts, in contrast to Romano-British contexts, are very limited in numbers and have been tabulated (Table 4.23). Most come from Phase 1 contexts.

Bindings (Fig.4.20)

49 **Edge binding** formed from thin sheet. Angular in section and slightly flattened at one end. No visible pin/rivet holes. Cu alloy. L 38 mm. Site 1; HFKM 95, 1265, sf 73. Ph 1.

50 **Edge binding** formed from thin sheet. No visible pin/rivet holes. Cu alloy. L 33 mm. Site 1; HFKM 95, 1268, sf 74. Ph 1.

Miscellaneous objects

The miscellaneous finds are tabulated and not illustrated (Table 4.24).

Table 4.23: Anglo-Saxon Contexts (Phases 1-3): Summary of nails

Identification / Comments	*Count*	*Size*	*Site*	*Provenance*	*Phase*
Nail, Type 2, almost complete	1	L 54	1 2 3	HFKM 95, 1252, sf -	1
Nail, Type 1, almost complete	1	L 92	1 2 3	HFKM 95, 1255, sf -	1
Nail, Possible Type 1, incomplete, heavily encrusted and laminated.	1	L 47	1 2 3	HFKM 95, 1268, sf 62	1
Nail, Type 1, almost complete	1	L 48	1 2 3	HFKM 95, 1269, sf 64	1
Nail, Type 1? Nail, incomplete and much eroded.	1	0	1 2 3	HFKM 95, 1307, sf 113	1
Nail, Type 1, incomplete. L 47+mm	1	L 47	4 5 9	HFKML 01, 6058, sf 352	1
Nail, Type 1, incomplete	1	0	4 5 9	HFKML 01, 6058, sf 351	1
Nail, Type 1, small. Sample <107>	1	0	4 5 9	HFKML 01, 6631, sf -	1
Nail stem fragment	1	0	8	HFWIB 03, 15100, sf 4014	2b
Nail stem fragment, tapering to point.	1	0	4 5 9	HFKML 01, 6402, sf 345	3
Nail, possible Type 1, almost complete	1	L 27	4 5 9	HFKML 01, 6832, sf 346	3

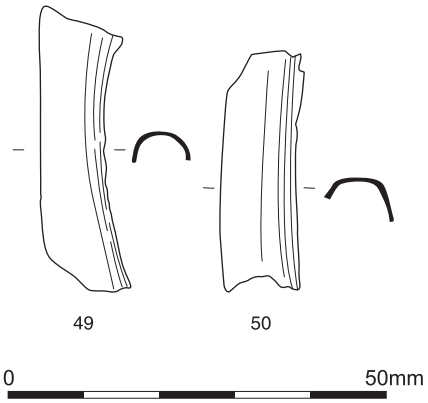


Fig. 4.20 Small Finds – Anglo-Saxon structural objects

Objects of uncertain function (Fig 4.21)

51 **Decorative fitting**, possibly a terminal. It has a flat back. The lower portion is formed by an angular knob, above is a reeded raised band. The top of the object has a thin curved piece sticking up with iron corrosion adhering. Cu alloy. L 21 mm. Site 1; HFKM 95, 1255, sf 58. Ph 1.

52 *(not illustrated)* **Disc** formed from thin sheet, dished and highly polished. It has a pair of holes near one edge. Function uncertain, but it could be decorative. Cu alloy. D 34 mm. Site 1; HFKM 95, 1265, sf 84. Ph 1.

53 *(not illustrated)* **Small copper alloy fragment**. Comprises thin sheet with a hole, with a second small fragment backing the first. A thin strip attached to the second sheet passes through the front sheet.. L 11 mm. Site 1; HFKM 95, 1268, sf -. Ph 1.

54-55 *(not illustrated)* **Curved thin strips**. The two fragments do not join. The larger fragment is wider at one end and has part of a nail/rivet hole. The shorter length is curved, of uniform width, and no nail hole. Cu alloy. L 96 mm & 40 mm. Site 1; HFKM 95, 1268, sf 85. Ph 1.

56 **Plate** cut from bone. Elongated trapezoid. Unfinished? L 73 mm; W 16 mm. Site 4; HFKML 01, 6058, sf -. Ph 1.

57 *(not illustrated)* **Blade fragment**, heavily encrusted. Thin in section. Possibly chisel blade fragment? Fe. L 44 mm. Site 4, HFKML 01, 6357, sf -. Ph 1.

58 *(not illustrated)* **Tubular object**, tapered at each end. The x-ray suggests that the object contains a bar down the centre – perhaps a tang, and that there are four bands about the object, equally spaced along its length. Possibly a heavily mineralised tool or knife handle? Fe. L 93 mm. Site 4; HFKML 01, 7035, sf -. Ph 2c.

59 **Cast cruciform fitting**. Two arms terminated in knurled knobs, and two have cable decoration and were hinged at their outer ends. Central oval knob. Flat back. Part of a ceremonial collar? Cu alloy. L 22 mm; W 18 mm. Site 8; HFWIB 03, 15423, sf 4038. Ph 2b.

60 **Small hooked fragment**, curved and of square cross-section. Flared and flattened at the end opposite hook end. Cu alloy. L 15 mm. Site 2; HFKM 95; 2084, sf 69. Ph 3.

61 *(not illustrated)* **Tapering spike** of square section. Could be a nail stem or spike. Fe. L 81 mm. Site 2; HFKM 95, 2484, sf 102. Ph 3.

62 **Blade fragment** of triangular section. The back and edge are very slightly curved, and appear to taper towards the point (incomplete). The ?tang is curved.

Table 4.24: Anglo-Saxon contexts (Phases 1-3): Summary of miscellaneous pieces

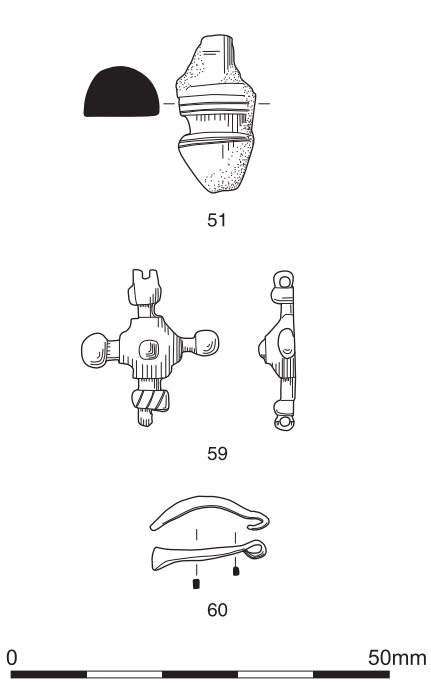
Identification / Comments	*Metal*	*Count*	*Fragt Count*	*Size*	*Site*
Strip, short length, of curved cross-section.	fe	1	1	L 32	1 2 3
Plate, corner fragment	cu	1	1	L 34	1 2 3
Rod or bar. Heavily encrusted and laminated. Possibly nail stem fragment	fe	1	1	L 48	1 2 3
Wire or pin fragment, thin, circular section	fe	1	1	375	1 2 3
Small strip, tapering.	cu	1	1	L 14	4 5 9
Wire fragment, curved. Could be part of a small brooch?	fe	1	1	L 44	1 2 3
Strip, folded	fe	1	1	L 34	1 2 3
Plate or sheet, irregular outline. No visible nail holes.	fe	1	4	0	8
Plate, two joining fragments. One slightly curved edge	fe	1	2	L 54	8
Plate fragment, with curved edge; other edges broken. One nail head extant.	fe	1	1	0	8
Sheet fragments, irregular x 2. No original edges.	fe	2	2	0	4 5 9
Wire fragments, short x 2.	fe	2	2	L 11 & 13	4 5 9
Melted waste, irregular splash.	pb	1	1	0	4 5 9
Plate fragment, heavy, with one slightly curved edge. Encrusted	fe	1	1	0	4 5 9
Strip fragments x 2. One (i) slightly tapered; (ii) one fragment has a pointed terminal with nail	fe	2	2	L 33	8
Thick wire or thin rod	fe	1	1	L 67	8

ID not certain. Fe. L 97 mm. Site 3; HFKM 95, 3003, sf 34. Ph 3.

63 **Handle plates**? Two polished narrow plates. Polished. The plates narrow to each end and are joined by two iron rivets. The wide space between plates suggests that this is not from a comb. Bone or ivory. L 80 mm.Site 4; HFKML 01, 6156, sf 310. Ph 3.

It is unlikely that this pair of joined bone strips formed parts of a comb, because the spacing between them is too great and there is no trace of the notching along the edge of the strips. This notching, which is noticeable on the cat nos **37** and **38** for example, is caused by the cutting of the comb teeth.

64 **Object** with central stem of triangular section. Rectangular flange at one end with elongated slot in the centre. The outer edge is folded up and incomplete. Possibly hinged? The other end comprises a curved strip. Function unclear. Fe. L 106 mm. Site 8; HFWIB 03, 15305, sf 4029. Ph 3.



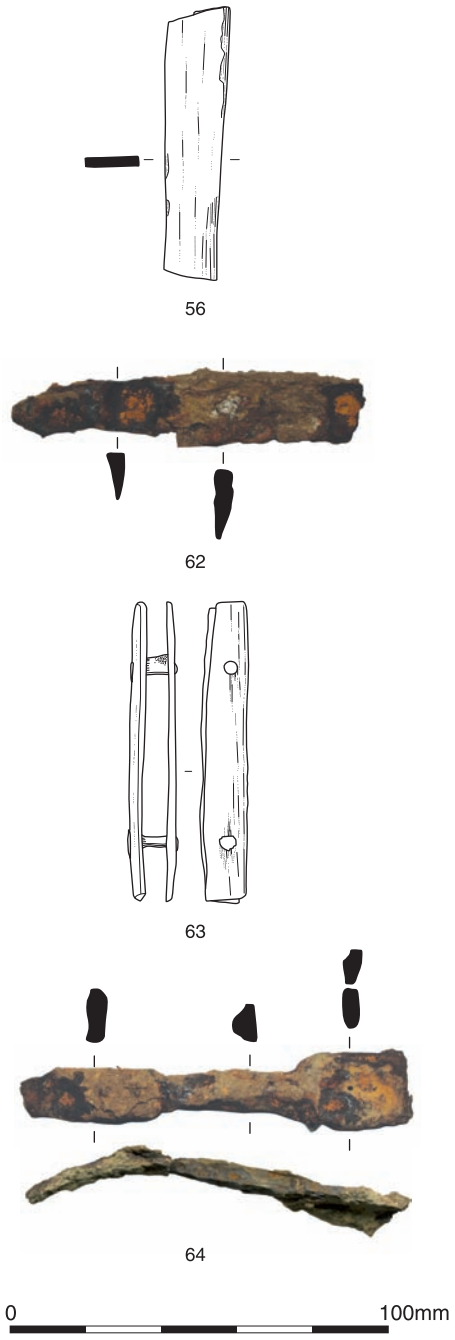


Fig. 4.21 Small Finds – Anglo-Saxon miscellaneous objects

Provenance	*Phase*
HFKM 95, 1255, sf 57	1
HFKM 95, 1257, sf 88	1
HFKM 95, 1271, sf -	1
HFKM 95, 1304, sf 78	1
HFKML 01, 6366, sf -	1
HFKM 95, 2478, sf 93	2a
HFKM 95, 451, sf 109	2b
HFWIB 03, 15100, sf 4013	2b
HFWIB 03, 15100, sf -	2b
HFWIB 03, 15100, sf -	2b
HFKML 01, 6712, sf 336	2c
HFKML 01, 7027, sf -	2c
HFKML 01, 7077, sf -	2c
HFKML 01, 7236, sf -	3
HFWIB 03, 15305, sf 4031	3
HFWIB 03, 15486, sf -	3

Table 4.25: Medieval contexts (Phases 4 & 5): Summary Quantification by Context and Function

Site	Phase	Context	Function Tools	Transport	Measure	Household	Personal	Security	Door	Structural
eval	5	904								
	5	1105								
Eval		*Totals*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
3	4	3004		1						
	5	3002					1			
Site 3		*Totals*	*0*	*1*	*0*	*0*	*1*	*0*	*0*	*0*
4	4	6025								
	4	6154		1						
	4	6266		1						
	4	6763	2	1						
	4	7033								
	4	7506								
	5	6254								
	5	6772								
	5	6800		2						
	5	7250								
	5	7289	1							
Site 4		*Totals*	*1*	*4*	*0*	*0*	*0*	*0*	*0*	*0*
5	4	4007								
	4	4009								
	4	5016					1			1
Site 5		*Totals*	*0*	*0*	*0*	*0*	*1*	*0*	*0*	*1*
6	4	9333					1			
	4	9335					1			
	4	9343								
	4	9468				1				
	5	9032		2						
	5	9039								
	5	9402								
Site 6		*Totals*	*0*	*2*	*0*	*1*	*2*	*0*	*0*	*0*
8	4	15366								
	4	15399								
	4	15523			1					
	4	15540								
	5	15007								
	5	15028								
	5	15029					1			
	5	15044								
	5	15064								
8	5	15101					1			
	5	15159								
	5	15172		1						
	5	15188								
	5	15191								
	5	15212								
	5	15246					1			
	5	15456								
	5	15506								
	5	15512							1	
	5	15520					1			
Site 8		*Totals*	*0*	*1*	*1*	*0*	*4*	*0*	*1*	*0*
Medieval		Totals	1	8	1	1	8	0	1	1

Nails	*Misc*	*Query*	*Unk*	*Totals*
	1			1
1				1
1	*1*	*0*	*0*	*2*
				1
				1
0	*0*	*0*	*0*	*2*
2	1			3
				1
				1
2				5
	1			1
1				1
		1		1
	1			1
1				3
	1			1
				1
4	*4*	*1*	*0*	*27*
1				1
1				1
1		1		4
3	*0*	*1*	*0*	*60*
				1
				1
	2			2
				1
	1			3
	1			1
1				1
1	*4*	*0*	*0*	*130*
1				1
	4			4
		1		2
1				1
1				1
		1		1
				1
1	1			2
1				1
				1
	1	1		2
	1			2
	1			1
1				1
1				1
				1
	1			1
1				1
1				2
1				2
10	*9*	*3*	*0*	*289*
19	18	5	0	68

Finds from Medieval Phases 4-5 (Tables 4.25–4.27)

Sixty eight metal objects come from medieval contexts, 32 from Phase 4 contexts and 36 from Phase 5 contexts (Tables 4.18 & 4.25). Finds from ***Phase 4*** contexts include eight nails and eight miscellaneous pieces (Table 4.27). There are a pair of shears (**1**), two horseshoe fragments (**66-67**) and two horseshoe nails (Table 4.26) and a possible weight (**69**). The two horseshoe fragments are of an early form which could be residual from Phase 3. The only household item is a knife blade fragment (**70**). There are three single personal items: a copper alloy hairpin (**71**), a strap end (**75**) and a lace chape (**77**). There is one structural fitting: an L-shaped staple (**80**), and two items of uncertain identification (**81-82**). The finds come from Sites 3, 4, 5, 6 and 8.

Finds from ***Phase 5*** include eleven nails and ten miscellaneous fragments (Tables 1 & 10). There is a blade from a pair of shears (**65**), a hooked attachment from a pair of spurs (**68**) and four horseshoe nails (Table 4.26). There are no household objects, but five personal items. These comprise three buckles (**72-74**), a strap end (**76**) and a lace chape (**78**). There is an L-shaped hinge pintle (**79**). This is small and could be from a window shutter or from a piece of furniture, rather than a door. Finally there are three unidentified objects (**83-85**). The finds come from Sites 3, 4 6 and 8.

A number of objects, which can be dated to the medieval phases on typological grounds, were recovered from later phases or by metal detector. These include a dagger chape (**86**), cast vessel leg (**96**), a circular brooch (**97**), five buckles (**102-105, 107**), a buckle pin (**108**), a strap guide (**109**), two bar mounts (**110-111**), a strap end (**113**), part of a purse mount (**118**), a book clasp (**120**) and a key (**121**).

The range and quantity of finds from medieval phases is limited, but with the emphasis on personal items, it probably represents a domestic assemblage of some pretension.

Catalogue

Tools (Fig. 4.22)

65 **Shears blade**, with parallel edge and back. The back is angled at the tip. The blade is plain with a square blade top. The handle is of oval section, expanded and flattened to form the spring, part of which survives. Fe. L 160 mm. Site 4; HFKML 01, 7289, sf 354. Ph 5.

Transport (Fig.4.22)

Horseshoes

See the typology of horseshoes in the discussion of finds from excavations in London (Clark 1995).

66 *(not illustrated)* **Horseshoe fragment**. Heel from a thin branch with small upset calkin, with single incomplete countersunk nail hole. Possible Type 2 shoe. Fe. L 57 mm. Site 3; HFKM 95, 3004, sf 42. Ph 4.

67 *(not illustrated)* **Horseshoe fragment**. Narrow branch fragment with single round nail hole and oval countersinking. Type 2a. Heavily encrusted. Fe. L 43 mm. Site 4; HFKML 01, 6154, sf 311. Ph 4.

Table 4.26: Medieval Contexts: Horseshoe nails

Identification / Comments	*Count*	*Size*	*Site*	*Provenance*	*Phase*
Horseshoe nail, fiddle key nail with worn head.	1	L 29	4, 5, 9	HFKML 01, 6266, sf -.	Ph 4
Horseshoe nail. Fiddle key nail incomplete	1	L 20	4, 5, 9	HFKML 01, 6763, sf 337.	Ph 4
Horseshoe nail. Worn fiddle key nail, clenched stem	1	L 25	4, 5, 9	HFKML 01, 6800, sf 343.	Ph 5
Horseshoe nail. Fiddle key nail	1	0	4, 5, 9	HFKML 01, 6800, sf 342	Ph 5
Horseshoe nail. Possible fiddle key nail	1	L 33	6, 7	HFCF 02, 9032, sf 803	Ph 5
Possible horseshoe nail with expanded head. Eroded and encrusted.	1	0	8	HFWIB 03, 15172, sf -	Ph 5

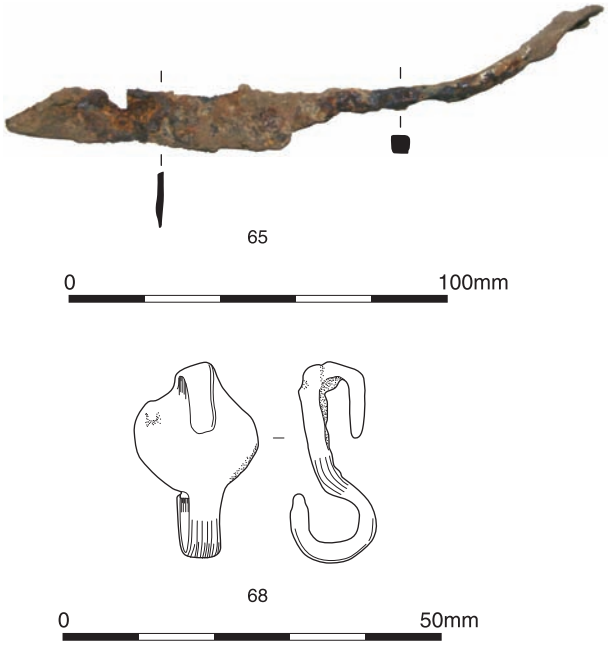


Fig. 4.22 Small Finds – Medieval tools

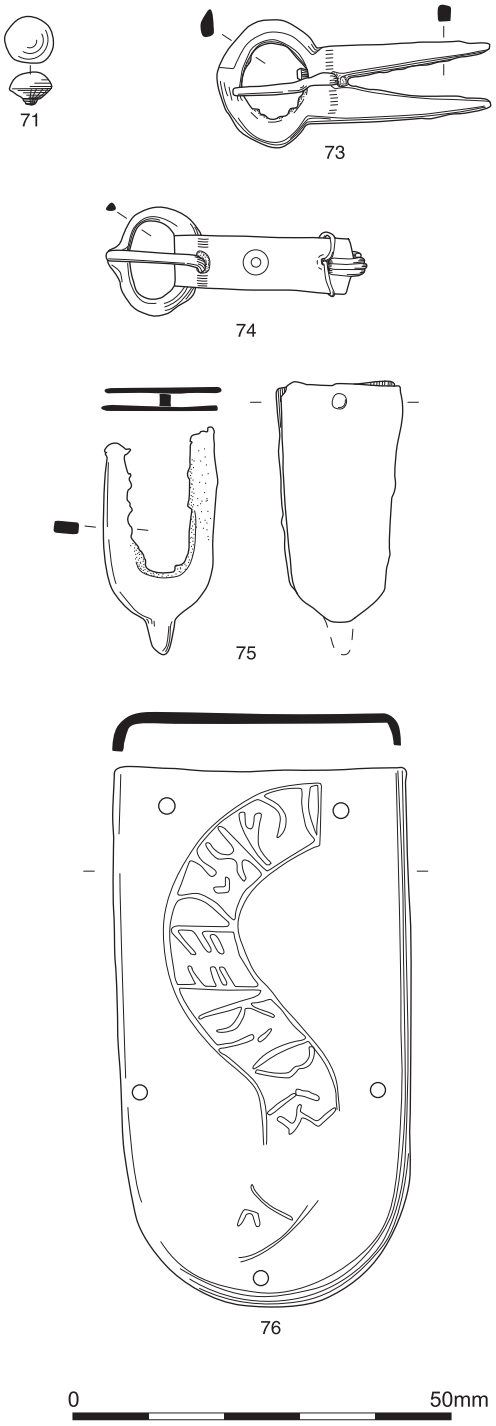


Fig. 4.23 (right) Small Finds – Medieval personal objects

Horseshoe nails

There were only six horseshoe nails from medieval contexts (Table 4.26)

Riding gear

68 **Spur attachment.** Hooked attachment from spur leather. Fe. L 25 mm. Site 6; HFCF 02, 9032, sf 801. Ph 5.

Cf examples from London (Ellis 1995, 149-50 and fig. 106: 365-371).

Weight

69 *(not illustrated)* Possible **Weight**. Cylindrical with wide central perforation. Pb. L 25 mm, D 25 mm Site 8; HFWIB 03, 15523, sf 4036. Ph 4.

Household

70 *(not illustrated)* Possible **blade fragment**, heavily encrusted. The blade appears to taper and have a triangular section. Fe. L 95 mm. Site 6;HFCF 02, 9468, sf -. Ph 4.

Personal (Fig 4.23)

Hairpin

71 **Hair pin head**, domed, scar only of stem. Cu alloy. D 6 mm. Site 6; HFCF 02, 9335, sf -. Ph 4.

Buckles

72 *(not illustrated)* **D-shaped buckle frame**, with flat pointed pin. Encrusted. Fe. L 36 mm, W 33 mm. Site 3; HFKM 95, 3002, sf 63. Ph 5.

73 **Oval buckle frame** with composite rigid plate. The back and front plates are missing. The forked spacer is extant. The frame is of triangular section. Cu alloy. L 36 mm; W 16 mm. Site 8; HFWIB 03, 15101, sf 4021. Ph 5.

74 **Oval buckle frame** with folded plate, small. There are two rivet holes in the plate. The inner rivet hole has an extant rivet; the outer rivet hole has thin wire passing through it and wrapped around the end and sides of the plate. Cu alloy. L 34 mm, W 14 mm. Site 8; HFWIB 03, 15520, sf 4043. Ph 5.

Strap ends

75 **Strap end**, three piece with forked spacer. Plain outer plates. Single rivet. Cu alloy. L 38 mm; W 15 mm. Site 5; HFKML 00, 5016, sf 37. Ph 4.

See examples from London (Egan and Pritchard 1991, 140-46 & figs 93-6). A late medieval form.

76 **Strap end**, comprising tongue-shaped plate, with lip around three sides. Five nail or rivet holes. Decorated with snake-like motif with rune-like letters incised on face. Appears to be made from modern rolled plate. Cu alloy. L 73 mm, W 39 mm. Site 8; HFWIB 03, 15029, sf 4001. Ph 5.

Lace chapes

77 *(not illustrated)* **Lace chape** with butted seam, and two opposed pin/rivet holes. Cu alloy. L 24 mm. Site 6; HFCF 02, 9333, sf -. Ph 4.

78 *(not illustrated)* **Lace chape** with overlapping seam and one pin/rivet hole Cu alloy. L 24 mm. Site 8; HFWIB 03, 15246, sf -. Ph 5.

Door, window or furniture fittings

79 *(not illustrated)* **L-shaped hinge pintle**, incomplete. For a small drop hinge. Fe. L 59 mm. Site 8; HFWIB 03, 15512, sf 4044. Ph 5.

Structural fittings

80 *(not illustrated)* **L-shaped staple** or holdfast. Fe. L 56 mm; H 39 mm. Site 5; HFKML 00, 5016, sf 38. Ph 4.

Table 4.27: Medieval contexts: miscellaneous objects

Identification / Comments	*Metal*	*Count*	*Size*	*Site*	*Provenance*	*Phase*
Tongue-shaped strip, small	fe	1	L 20	4 5 9	HFKML 01, 6025, sf 239	4
Plate fragment, with one straight edge with a notch.	fe	1	L 39	4 5 9	HFKML 01, 7033, sf 350	4
Bar or rod, heavily encrusted	fe	1	L 63	6 7	HFCF 02, 9343, sf -	4
Waste, flat droplet, formed over a corner or edge	cu	1	0	6 7	HFCF 02, 9343, sf -	4
Waste, offcut. Small tapering strip	pb	1	0	8	HFWIB 03, 15399, sf 4040	4
Waste, offcut Small irregular fragment	pb	1	0	8	HFWIB 03, 15399, sf 4041	4
Waste, small melted fragment	pb	1	0	8	HFWIB 03, 15399, sf 4042	4
Waste, small fragment	pb	1	0	8	HFWIB 03, 15399, sf 4043	4
Bar fragment	fe	1	L 64	1 2 3	HFKM 95, 904, sf 23	5
Plate fragment, with original edges and two nail holes at one end and much eroded at the other, wider end. Curved in cross section	fe	1	L 142	4 5 9	HFKML 01, 6772, sf 340	5
Plate fragment, irregular in outline, and no decoration or nail holes visible on x-ray.	fe	1	0	4 5 9	HFKML 01, 7250, sf 353	5
Ring Plain, heavily encrusted. Diameter 23mm x 21mm	fe	1	D 23 x 21	6 7	HFCF 02, 9032, sf 802	5
Waste, small droplet of leaded bronze?	cu	1	0	6 7	HFCF 02, 9039, sf 800	5
Waste, tapering offcut, folded	pb	1	0	8	HFWIB 03, 15044, sf 4018	5
Bar or nail stem fragment	fe	1	L 65	8	HFWIB 03, 15159, sf 4019	5
Bar or rod fragment	fe	1	L 67	8	HFWIB 03, 15172, sf -	5
Block. Dense block of sub-square section	fe	1	L 36	8	HFWIB 03, 15188, sf 4020	5
Waste, small flat melted fragment	pb	1	0	8	HFWIB 03, 15456, sf 4039	5

Nails

There are only 19 nail fragments from Medieval (Phase 4-5) contexts, and they have not been separately tabulated.

Miscellaneous fragments (Table 4.27)

Only 18 miscellaneous fragments were found. They include 10 iron fragments – mainly bar and plate, but including a dense block and a ring – two copper alloy droplets and six lead fragments. The latter include both offcuts and melted waste. Much of the lead came from context 15399 on Site 8 (Phase 4).

Objects of uncertain identification (Fig. 4.24)

81 *(not illustrated)* **Possible tang** of rectangular section, with remains of bent stem. Perhaps from a drill bit or gouge? Fe. L 89 mm. Site 5; HFKML 00, 5016, sf 27. Ph 4.

82 **Strap fragment**, short, formed from cut thin strip, with two angle cut corners and two rivet holes. Broken at one end. Cu alloy. L 16 mm, W 11 mm. Site 8; HFWIB 03, 15523, sf 4037. Ph 4.

83 **Long bone** cut short, with angled cut faces on either side. L 50 mm. Site 4; HFKML 01, 6254, sf -. Ph 5

84 **Curved tapering antler point**. The cut broad end is polished. The tip still retains its original grooved surface. There is a crudely cut notch around $^1/_2$ of the circumference of the stem near the broad end. Function uncertain. L 43 mm. Site 8; HFWIB 03, 15028, sf 4000. Ph 5

85 *(not illustrated)* **Loop** formed from rod, with short piece of broken strip through the eye. Perhaps a drop-hinge eye? Fe. L mm. Site 8, HFWIB 03, 15159, sf 4018. Ph 5.

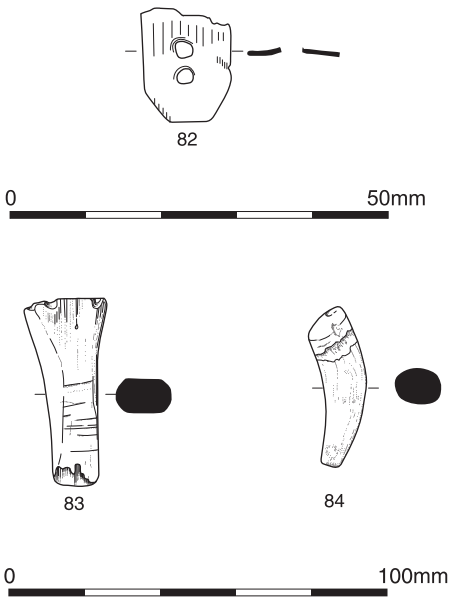


Fig. 4.24 Small Finds – Medieval objects of uncertain function

Fig. 4.25 Small Finds – Unstratified tools

Finds from Phase 6 contexts and Unstratified Finds

A substantial number of finds were recovered from Phase 6 (16th century to modern) contexts, and others were unstratified. Amongst these finds are some that can be identified typological as Saxon or medieval, or probably Saxon or medieval and these are catalogued below.

Catalogue

Weapons

86 *(not illustrated)* **Dagger chape** formed from thin sheet, rolled and overlapped. There is a single rivet or pin hole. Cu alloy. L 31 mm. Site 2; HFKM 95, 2001, sf 46. Ph 6.

Medieval. Comparable pieces have been found at York (Ottaway and Rogers 2002, 2904, & fig. 1478).

Tools (Fig. 4.25)

87 Possible **metalworking hammer**. Maybe a cross- or straight, pane hammer. Fe. L 0 mm. Site 6; HFCF 02, 9368, sf -. Ph 6.

Uncertain identification. Uncertain date.

88 **Shears**. With narrow tapering blades of triangular cross-section. The top of each blade is curved with a slight recess. The tips of the blades are broken. The arms are circular in section. Only part of the sprung bow is extant. Fe. L 280 mm. Site 2; HFKM 95, 2001, sf 50. Ph 6.

Medieval.

89 *(not illustrated)* **Heckle tooth**. Tapering circular section spike, encrusted. Fe. L 72 mm. Site 4; HFKML 01, 6125, sf 272. u/s

90 *(not illustrated)* **Heckle tooth**. Tapering circular section spike. Fe. L 100 mm. Site 4; HFKML 01, 6125, sf 244. u/s

91 *(not illustrated)* **Heckle tooth**. Tapering circular section spike. Fe. L 90 mm. Site 4; HFKML 01, 6125, sf 307. u/s

92 *(not illustrated)* **Heckle tooth**. Tapering circular section spike, tip bent into a hook. Fe. L 75 mm. Site 4; HFKML 01, 6125, sf 297. u/s

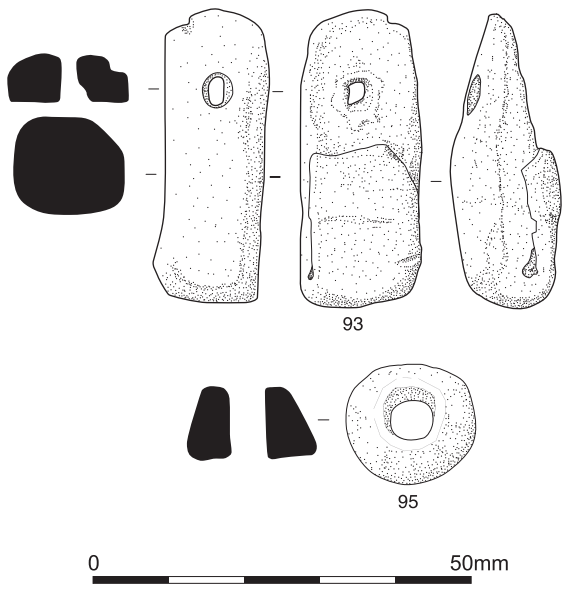


Fig. 4.26 Small Finds – Unstratified weights

Measurement (Fig. 4.26)

None of these can be closely dated, but Anglo-Saxon and medieval examples of pendant weights and conical weights can be cited.

93 **Pendant weight** formed from strip folded and hammered to form the lower thicker portion. Pierced for suspension through the thinner upper portion. Pb. L 39 mm. Site 4; HFKML 01, 6030, sf 288. u/s

94 *(not illustrated)* **Possible weight** comprising irregular cone, with thin hole through the centre. Pb. L 27 mm; H 24 mm. Site 4; HFKML 01, 6030, sf 286. u/s [ID 116]

95 **Possible weight**, irregular truncated cone with large central hole. Pb. D 18 mm. Site 4; HFKML 01, 6125, sf 284. u/s

Household

96 *(not illustrated)* **Cast vessel leg**, of heavy leaded bronze. Tapering solid leg, broken off at narrow end. Signs of hammering on one face, and possibly on opposite face. Cu alloy. L 78 mm. Sites 2; HFKM 95, 2001, sf 45. Ph 6.

Late medieval or post-medieval

Personal (Fig. 4.27)

Brooches

Medieval. See in general Egan and Pritchard 1991, 248-55, & figs 160-64.

97 **Circular brooch**. The frame is of flat rectangular section. The face is decorated with plain edgings flanking flat beading. There is a slight constriction where the pin was attached. Cu alloy. D 26 mm. Site 2; HFKM 95, 2001, sf 49. Ph 6.

98 **Disc brooch** comprising flat disc with overlaid thin sheet with embossed decoration. Outer edge is decorated with a pie crust, or ribbed, band, then a concentric groove. In the centre is a slightly recessed panel with an irregular wavy edge. There is a central hole to secure a decorative stud or similar feature. Cu alloy. D 29 mm. Site 4; HFKML 01, 6030, sf 281. u/s

99 **Small enamelled disc brooch**. There are eight fields radiating from a central circular field. The radial fields are defined by fine applied strips of copper alloy. The catch hook and attachment point for the pin survive on the back. Cu alloy. D 21 mm. Site 4; HFKML 01, 6030, sf 315. u/s

Hooked tags

A Saxon type, current from the 7th to 11th century (Hinton 1996, 10), the function of which is not certain, but almost certainly used as some form of fastening for clothing. A silver pair from Winchester may have fastened a garter (Hinton 1990, 548), but others may have been used to fasten purses. The plain example (**101**) is paralleled by examples from Winchester (Hinton, 1990, 552, fig. 149: 1426-27). The example with ring and dot pattern (**100**) is paralleled at Hamwic (Hinton 1996, 9-10, fig. 4: 36/190 & 169/488).

100 **Hooked tag**. Trapezoid plate with five punched ring and dot motifs, two with stitching holes. The hook has been straightened. Cu alloy. L 19 mm; W 10 mm. Site 4; HFKML 01, 6125, sf 203. u/s

101 **Hooked tag**. Plain teardrop-shaped hooked plate with two stitching holes. Cu alloy. L 20 mm. Site 4; HFKML 01, 6125, sf 330. u/s

Buckles

102 **Double loop rectangular buckle** with chamfered or bevelled inner and outer edges. Flat on the back. Cast in an open mould. Cu alloy. L 41 mm; W 28 mm. Site 2; HFKM 95, 2001, sf 53. Ph 6.

This buckle is a late medieval or post-medieval form.

103 **Double oval buckle frame**, with one half largely missing. Cast. Cu alloy. L 29 mm; W 28 mm. Site 7; HFCF 02, 9527, sf -. u/s

An early post-medieval form – see generally Margeson 1993, 28 and fig. 16: 163-73 and fig. 17: 174. See also examples from Camber Castle (Scott 2001, 260, fig. 7.2: 26-28, 31).

104 **Buckle with cast oval frame, and folded plate**. The front part of the plate is decorated with central grooves. The back plate is slightly short with a cut decorated end. Cu alloy. L 34 mm; W 28 mm. Site 8; HFWIB 03, 15130, sf 4015. Ph 6.

Probably medieval or early post-medieval. Not precisely paralleled.

105 **Asymmetrical buckle** with elongated oval loop of square cross section, with rectangular strap loop. No pin nor evidence for one. Cu alloy. L 19 mm; W 30 mm. Sites 4, 5, 9; HFKML 01, 6030, sf 290. u/s

Late medieval or early post-medieval. Cf the examples from Battle Abbey (Geddes 1985, 158 & fig. 49: 17)

106 **Folded buckle plate**, small and rectangular with cast relief decoration. The pattern appears to comprise a sinuous abstract plant motif. The plate is broken at the fold and the back is missing. There are two rivet holes one at each outer corner. Cu alloy. L 25 mm; W 13 mm. Site 2; HFKM 95, 2001, sf 47. Ph 6.

The abstract pattern, with its *Art Nouveau* echoes, suggests that this object may be of late 19th-or early 20th-century date.

107 Possible **folded buckle plate** formed from thin sheet, with chased border of running triangles, and five rivets. Cu alloy. L 27 mm; W 25 mm. Site 5; HFKML 00, 5000, sf -. Ph 6.

Medieval. A comparable piece comes from Swan Lane, London (Egan and Pritchard 1991, 160 7 fig. 104: 756). It is identified as a possible strap end.

108 Possible **buckle pin fragment**. It has punched two ring and dot motifs and a small hole. It is curved at one end. Cu alloy. L 26 mm. Site 4; HFKML 01, 6125, sf 207. u/s

Medieval. Compare with similarly decorated example from York (Ottaway and Rogers 2002, 2896, & fig. 1472: 14334).

Strap guide

109 **Strap guide.** Trapezoid frame with internal opposed lugs. Cu alloy. L 22 mm. Site 4; HFKML 01, 6125, sf 302. u/s

Medieval. See Egan and Pritchard 1991, 231-33 & fig. 149: 1254-65, and Ottaway and Rogers 2002, 2902-03 & fig. 1477: 14378-79.

Bar mounts

The bar mounts from Higham Ferrers have central and terminal lobes and are a medieval form. Examples come have been found in York (Ottaway and Rogers 2002, 2907-09 & fig. 1480: 14437), and London (Egan and Pritchard 1991, 213-15 & fig. 134: 1154, 1157-58).

110 **Bar mount**, with domed centre with large hole, and two tapering arms of half round section. The latter terminate in domed ends, and are pierced with small pin holes. The back of the object is flat and shows filing marks. Cast in a one piece open mould. Cu alloy. L 30 mm; W 12 mm. Site 4; HFKML 01, 6125, sf 200. u/s

111 Possible **large bar mount**. Incomplete, gilded. Cu alloy. L 45 mm; W 18 mm; Site 4; HFKML 01, 6125, sf 303. u/s

Strap guide or belt plate

112 Possible **rectangular strap guide** or **belt plate**, with slight medial grooves/ridges. Two thin fixing arms, one at each end. Fe. L 24 mm; W 18 mm. Site 4; HFKML 01, 6276, sf 323. u/s

No precise parallel known. Broadly comparable objects from Anglo-Scandinavian contexts at Coppergate, York (Ottaway 1990, 688-90 & fig. 297) and from Medieval contexts at York (Ottaway and Rogers 2002, 2902-03 & esp. fig. 1477: 12722) have been identified as strap guides.

Strap ends

113 **Shield-shaped strap end**, small and plain but with a slight raised ridge around edge. Thin sheet at the back riveted to front. Cu alloy. L 17 mm; W 15 mm. Site 4; HFKML 01, 6030, sf 278. u/s

Small short strap end comparable to examples from London (Egan and Pritchard 1991, 146-48 & fig.96: 694-701), and York (Ottaway and Rogers 2002, 2900 & fig.1475: 14362. The Higham Ferrers example is distinctly shorter than the cited examples.

114 **Long narrow strap end**, with rounded terminal. Part of the front face is chamfered. It has a single rivet hole. Cu alloy. L 43 mm; W 7 mm. Site 4; HFKML 01, 6125, sf 306. u/s

No parallel found.

115 Possible **strap end**. It comprises a trapezoid plate, with two rivets, separated by a constriction from curved and ?decorated but incomplete end. There is a thin plate on the back of the trapezoidal plate. Fe. L 34 mm. Site 4; HFKML 01, 6125, sf 216. u/s

Saxon. This fragment is similar to a strap end from Coppergate (Ottaway 1992, 690 & fig. 298: 3792).

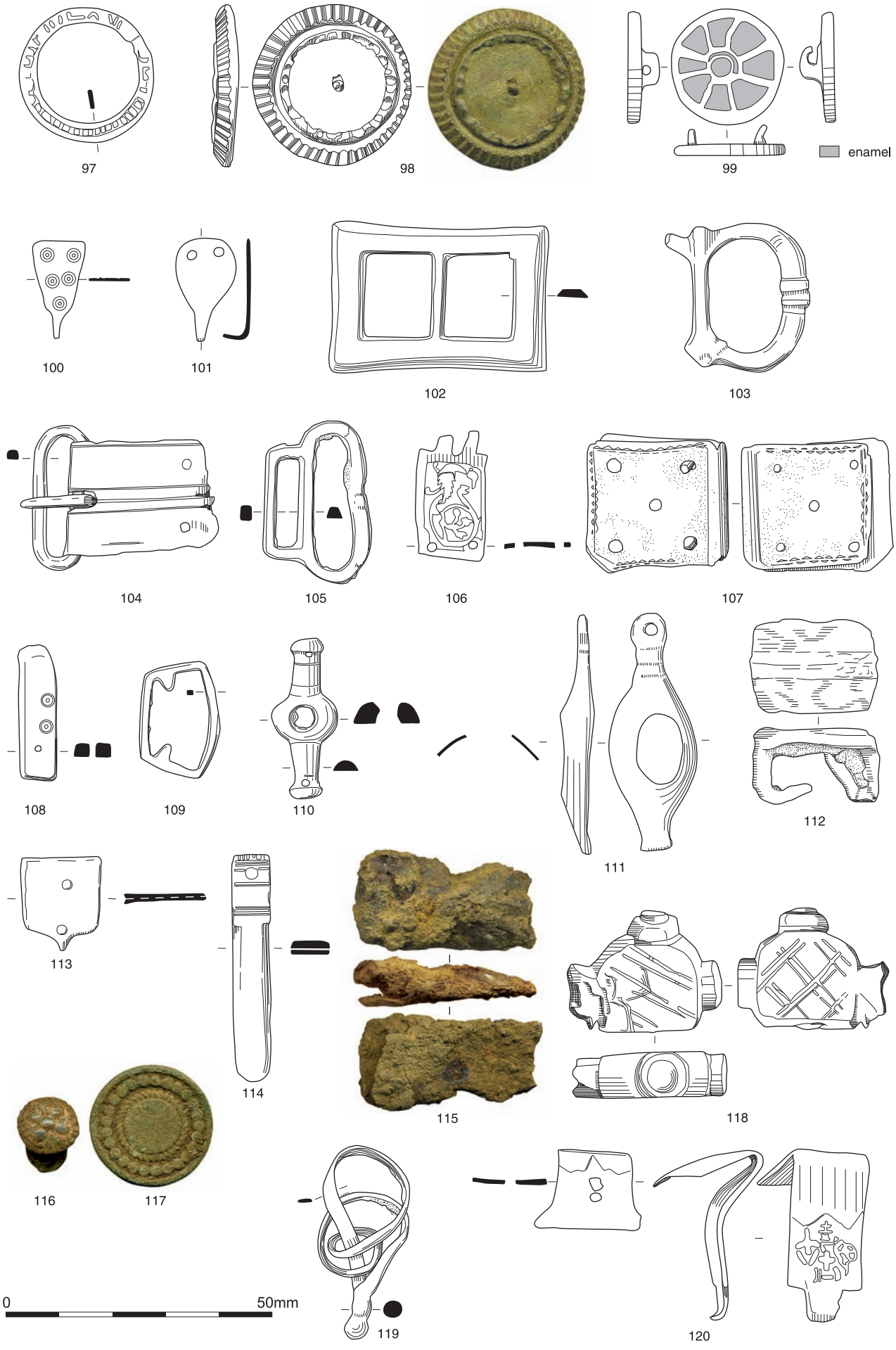
Buttons

116 **Small cast button** with quincunx pattern of small pellets on a hatched background. The loop is bent over. Cu alloy. L 12 mm. Site 2; HFKM 95, 2001, sf 44. Ph 6.

Possibly medieval.

117 **Flat disc button**, with thin outer edge, a concentric circular of pellets, a cable border and plain flat circular central portion. Loop on the back. Cu alloy. L 23 mm. Site 2; HFKM 95, 2001, sf 44. Ph 6.

Fig. 4.27 (facing page) Small Finds – Late medieval and post-medieval personal objects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50mm

Purse bar

Purse mount fragment, comprising central moulded swivel to which the loop was attached. The spindle is partially extant. Only the stubs of the two arms survive. The object has been cut and hammered. Cu alloy. L 29 mm; H 23 mm. Site 4; HFKML 01, 6125, sf 225. u/s
Late medieval

Possible personal

119 Possible **pendant**, formed from thin strip looped and coils and joined at a knobbed terminal. Cu alloy. L 37 mm. Site 2; HFKM 95, 2001, sf 37. Ph 6.

Book Clasp

120 **Book clasp**, bent. The back plate is missing. There are two closely set rivet holes near the flared end, but no visible rivet, or rivet hole, near the hooked end. The face of the plate is plain in the centre, but textured, with no clear pattern at each end. The plain central section is slightly raised in relation to the textured zones and marked by distinct edges, zig-zag at the hooked end and lobed at the flared end. Originally about 50 mm long. Cu alloy. L 33 mm; W 19 mm. Site 2; HFKM 95, 2001, sf 55. Ph 6.
Medieval.

Security (Fig. 4.28)

121 **Key** with solid stem and plain oval bow. The stem projects well beyond bit and there is a stop midway along the bit. The bit is long and has six teeth. Fe. L 190 mm; W 53 mm. Site 8; HFWIB 03, 15260, sf 4035. Ph 6.

Uncertain identification (Fig. 4.28)

122 **Cast fitting** tapering from a swelled end to a knobbed terminal. The widest portion is hollow at the back. Silvered or tinned. Cu alloy. L 36 mm. Site 1; HFKM 95, 1250, sf 31. Ph 6.

123 **Teardrop-shaped drop handle**. Cast, with hollow back. Trapezoid suspension loop. Cu alloy. L 46 mm, W 17 mm. Site 2; HFKM 95, 2001, sf 56. Ph 6.
Post-medieval furniture fitting.

124 **Decorative binding or strip**. Thin strip terminating in a crude trefoil, now bent. Originally c 60 mm long. Pb. L 22 mm. Site 4; HFKML 01, 6030, sf 287. u/s

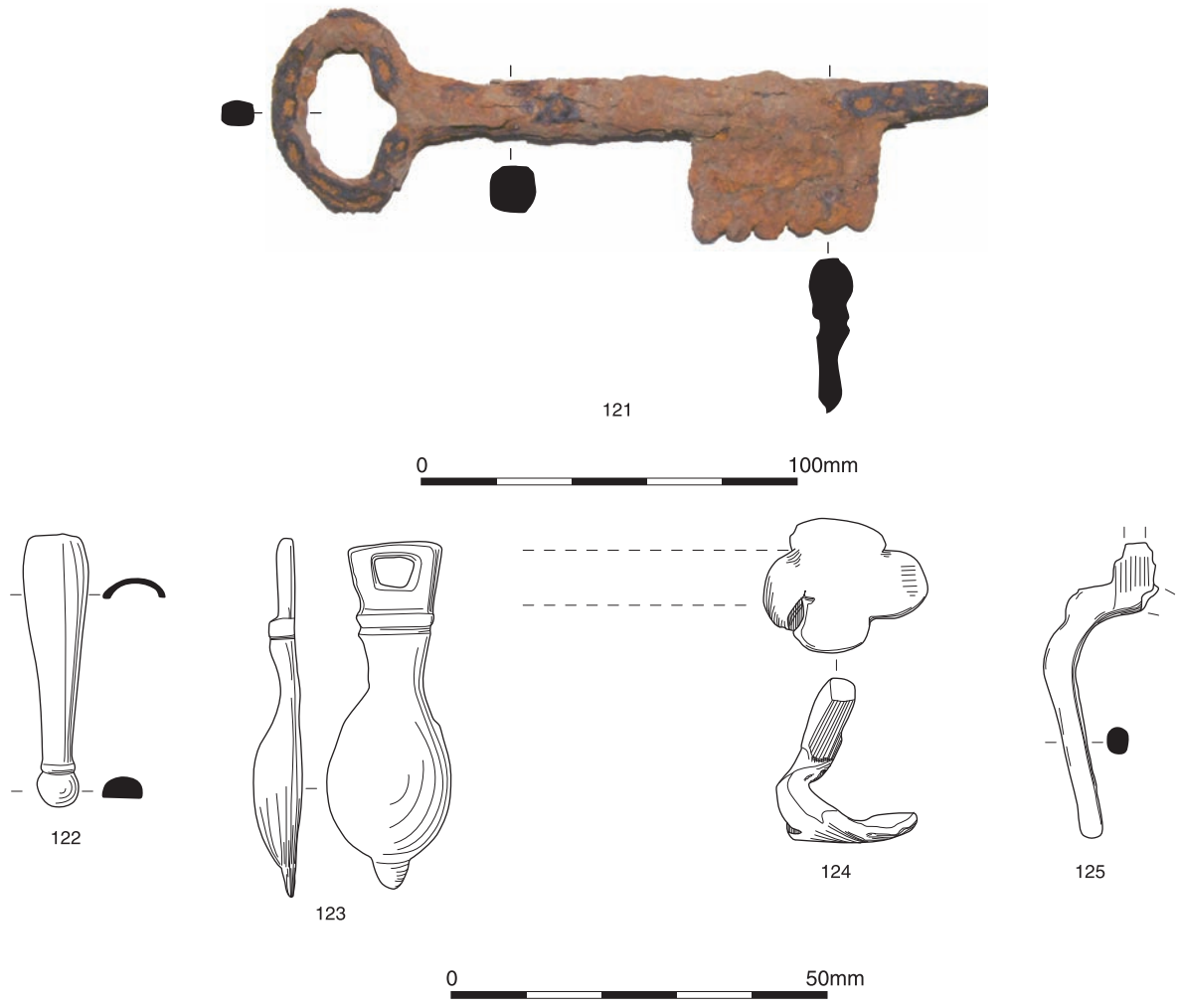


Fig. 4.28 Small Finds – Unstratified miscellaneous objects

125 **Forked object**, apparently incomplete. Cu alloy. L 40 mm; Site 4; HFKML 01, 6125, sf 210. u/s

126 *(not illustrated)* **Object** with sub-rectangular stem or handle. One end has an incomplete flat apparently round head, the other end flares. Both ends are incomplete. Fe. L 60 mm. Site 4; HFKML 01, 6125, sf 263. u/s

COIN *(PL. 4.2)* *by Martin Allen*

The coin from the site (4028) is a silver penny of the St Edmund Memorial coinage, later phase (*c.* 905-917/18), with St Edmund's name on both sides (North 1994, no. 483/1). The repetition of a version of the obverse inscription on the reverse is a feature of many St Edmund Memorial coins of the later (post-Cuerdale hoard) phase (Blackburn and Pagan 2002, 14).

Obverse +SC EADMVDI (S on its side) around chevron-barred A.
Reverse +SCE EADM (S on its side) around cross pattée.
Weight: 1.25 g. Die axis: 200o.

The St Edmund Memorial coinage was the normal currency of the Southern Danelaw (which included Higham Ferrers) from *c.* 895 to the conquest of the area by Æthelflæd of Mercia and Edward the Elder (899-924) in 917/18 (Blackburn and Pagan 2002). It was quickly replaced by the English coinage of Edward the Elder, and it is unlikely that the excavated coin could have been in use and available for loss later than *c.* 925 (pers. comm. Dr Mark Blackburn).

The coin has been recorded in the Fitzwilliam Museum's online Corpus of Early Medieval Coin Finds from the British Isles 410-1180 as EMC no. 2006.0114 (www.fitzmuseum.cam.ac.uk/coins/emc).

Plate 4.2 Silver penny of the St Edmund Memorial coinage, later phase (c. 905-917/18)

WORKED STONE *by Fiona Roe*

The worked stone assemblage amounts to 14 objects (Table 4.28). There are fragments of lava quern of varied date from 9 contexts, 2 whetstones which came from a middle Saxon ditch and late Saxon gully, and 3 further worked fragments of less certain purpose.

Niedermendig lava

Niedermendig lava does not survive well under certain conditions, which explains to some extent the limited size of the assemblage and the fact that only fairly small fragments were found. Nevertheless there are examples from phases 1 – 4, demonstrating that this high quality quernstone was transported to Higham Ferrers over a long period of time. There is a recognizable rotary quern fragment (6631) from an early Saxon SFB, another four fragments from middle Saxon ditch fills (408, 451, 3035 & 15149) and further small fragments (6268) from a late Saxon pit. There are also small fragments from similar Medieval contexts (6037, 15382). The best preserved piece (3002) was unstratified and this has part of a vertical handle hole near the rim, a feature also seen on querns found at Dorestadt (Parkhouse 1976, 182). A similarly placed handle hole survived on a lava millstone found at Goltho, Lincolnshire (Beresford 1987, 195 & fig 166).

It is becoming clear that Niedermendig lava was imported into England extensively throughout the Anglo-Saxon period and indeed later. Finds have been recorded in particular at sites in eastern England, since these were most conveniently positioned to receive goods from across the North Sea. Quantities of lava were also shipped up the Thames, as for example to middle Saxon Dorney, Buckinghamshire (Roe 2002, 37 & CD). Finds that can be attributed to the early Saxon period are less easy to trace but numerous lava fragments came for example from early to middle Saxon Quarrington in Lincolnshire (Taylor 2003, 255). At Riby Crossroads, Lincolnshire, a site with occupation from the 6th or 7th century, the pieces of lava were again in poor condition (Watt 1994, 283). At Flixborough, Lincolnshire, lava fragments are known to have occurred in middle and late Saxon contexts (Loveluck 2001, 93). The fact that lava does not always survive well could account for the shortage of Northamptonshire Saxon sites where it has been recorded, but it is known to have been found at Raunds (Blinkhorn 1999, 16) and Maxey (now in Cambridgeshire; Addyman 1964, 59). It is notable that on many middle Saxon sites with lava querns, Ipswich ware also features among the finds; these goods (and no doubt other commodities), may well have been transported in the same trading network.

Lava querns are also known from a number of Roman sites, but this aspect of the trade may have ceased before the arrival of the first Saxons, although future work could prove otherwise. Ability to grind corn and make bread would have been a matter of importance to newly arrived immigrants in the 5th and 6th centuries, and so it seems likely that they arrived already equipped with lava querns. They probably also ensured that arrangements were available to supply replacements for worn out or broken querns. In the case of Higham Ferrers, these may have been obtained from Suffolk, since Ipswich ware was also being acquired. However a route avoiding laborious land transport would have been available

up the river Nene, perhaps via the port at Kings Lynn. The settlements at Northampton, Raunds, Irthlingborough and Brixworth could also have benefited from river-born traffic up the river Nene, while at Maxey there was a link with the coast via the river Welland. It is becoming clear that many rural communities were able to obtain goods from overseas (Hamerow 2002, 190, 192), and it has been suggested that geography was as important as 'status' for maintaining long distance trading connections (Hamerow 1999, 201). Such trade would not have been difficult to achieve for Northamptonshire sites which, although not near the coast, were linked by river systems to the North Sea.

Other materials (Fig. 4.29)

There are five objects made from other varieties of stone. A whetstone (2020 – Fig.4.29, 2) was made from an iron-stained sandstone probably collected from the local Northampton Sand. A second whetstone (6621 SF 331- Fig. 4.29, 1) of this type was found in the enclosure ditch fill. Other fragmentary pieces of local sandy limestone (cxt 451) and sandstone (cxt 15161), displaying worked surfaces, are of uncertain purpose. A piece of Millstone Grit with a worn surface (1311) may be a re-used rotary quern fragment from the nearby Roman site.

Fig. 4.29 Worked stone – Whetstones

Table 4.28 Catalogue of Worked Stone by Phase and Site

Site	Context	SF	Description	Stone	Context type
Phase 1: early Saxon, 5th – 6th century					
4	6631	-	Fragment from rotary quern, weathered, traces of wear on grinding surface; 145 x 97 x 38 mm, 615 g	Niedermendig lava	SFB fill
Phase 2b: middle Saxon, mid 8th – late 8th century					
3	408	-	2 fitting fragments, worn grinding surface; 74 x 55 x 23 mm, 105 g	Niedermendig lava	ditch fill
3	451	-	2 fitting fragments; 60 g	Niedermendig lava	ditch fill
3	451	-	Fragment, slightly concave, smooth surface, may have been utilised? 108 x 78 x 23 mm, 220 g	Limestone, sandy	ditch fill
3	3035	-	1 fragment, weathered; 95 g	Niedermendig lava	ditch fill
Phase 2b/c: middle Saxon, late 8th century					
4	6621	331	Fragment from small whetstone with wear along two long sides; 41 x 17 x .95 mm, 8 g	Fine-grained sandstone, slightly micaceous and iron-stained	ditch fill
Phase 2c: middle Saxon, late 8th – early 9th century					
8	15149	4025	1 fragment with possible grinding surface, worn thin; 96 x 81 x 21 mm, 251 g	Niedermendig lava	ditch fill
Phase 3: late Saxon, 9th – 11th century					
2	2020	-	part of whetstone, rectangular block, well worn; 82 x 45 x 35 mm, 170 g	Sandstone, sandy coloured (iron stained), some feldspar, a little mica, probably local Northamptonshire Sand	gully fill
4	6268	-	6 fragments, weathered; 112 g	Niedermendig lava	pit fill
Phase 4: Medieval, 12th – 13th century					
4	6037	-	1 fragment; 30 g	Niedermendig lava	ditch fill
8	15382	-	6 fragments; 153 g	Niedermendig lava	pit fill
Phase 6: Post-medieval to modern, 16th – 20th century					
8	15161	-	Fragment with apparently worked, flat surface, traces of mortar, uncertain identity; 51 x 33 x 12 mm, 35 g	Sandstone, porous, may be weathered Northampton Sand	well fill
Unstratified					
1	1311	75	Fragment with smooth, worn surface, possibly re-used piece of rotary quern; 86 x 79 x 63 mm, 285 g	Millstone Grit	pit fill
3	3002	35	2 fitting fragments from rim of rotary quern with a pitted surface and part of handle hole near edge; 133 x 85 x 28 mm, 345 g	Niedermendig lava	layer

BUILDING MATERIAL: THE MALTING OVEN CLAY *by Emily Edwards, Edmund Simons and Alan Hardy*

The well-preserved remains of a malting oven represent a unique Middle Saxon survival. Initially located by an untargeted evaluation trench, the structure was later fully exposed (Site 5). After excavation and examination the structure was sealed under a protective layer of gravel, and remains intact within the current housing development.

A detailed description of the archaeological features and deposits associated with the structure is included in Chapter 3. A description and interpretation of the fired clay, and a discussion on the construction, use and destruction of the oven follows.

Dating

In the absence of any artefactual dating or dated typological parallels, the only means of dating the structure was radiocarbon assay. The barley grain found in the oven chamber produced a radiocarbon date of Cal 662 -1014 at 98% confidence – 710 to 963 at 78% confidence. This date range is consistent with the later part of the date range for the estate centre complex.

Assemblage

The fired clay assemblage consisted of a large quantity (84kg) of material recovered by hand from deposits within the oven chamber (4010). All of the clay appeared to be structural, with many pieces showing very clear wattle impressions, and little or no evidence for post-depositional abrasion or

weathering. The assemblage is interpreted as fragments of the clay covering of a wicker frame superstructure which had been constructed over the stone foundation.

Methodology

The quantity of material recovered is estimated to represent a randomly selected 10% of the original structure. The material has been grouped by form, and the fragments counted and weighed. (A small quantity of heavily abraded material, almost certainly derived from the same structure, was found in nearby medieval features but has not been included in this analysis). The material from the oven was also examined for evidence of wattle or other impressions of organic and non-organic inclusions. The wicker impressions were measured in order to determine the range of sizes of pieces used. The surviving fragments with wattle impressions were grouped according to size, shape and number of impressions of rods (uprights) and sails (cross pieces). Those with significant (and perhaps informative) flat surfaces were also noted separately.

Dimensions and characteristics of the clay fragments

Many of the fragments were very large, measuring 350-400 mm in length with – broadly – three ranges of clay thickness. The thickest pieces ranged from 60 mm-85 mm, the middle range 35-47 mm and the thinnest fragments from 15-25 mm thick.

Of a total of 428 pieces, 20 showed impressions of rods and sails; 50 showed impressions of sails. Of those with both rods and sails, 14 had convex surfaces and 3 or 4 were concave (the rest being flat). Of those with sails alone, over 35 had surfaces, only 1 of which was concave, 2 convex and three displayed both convex and concave surfaces.

The majority of the external surfaces on pieces were flat, and crudely smoothed while those that were curved were mostly concave (Pl. 4.3.a1/a2, d1/d2, 4.4.j1/j2). A total of 10 fragments displayed impressions of sawn or split oak planks, stone faces or wipe-marks. (Pl. 4.4.e1, f1, g1/g2, h1).

Fabric

Fabric type and level of oxidation were noted. The clay was sandy and contained moderate quantities of shell, chalk, and limestone possibly as naturally occurring inclusions. All of the clay fragments showed impressions of organic material (probably straw), used as a temper to prevent the clay cracking during the initial firing or subsequent use. This would suggest that the oven's construction occurred after harvest – that is, in late summer, a likelihood supported by one piece that bears the clear impression of a fully developed head of corn.

Discussion of the material

Oven Structure and Building Techniques

While the evidence from the clay fragments is by no means complete, when considered in conjunction with the stone structural remains, and the charred plant remains, it is possible to suggest with some confidence a plausible interpretation of construction, appearance, preparation and use of the malting oven.

Construction (Pl. 5.2)

Pit and base

The first stage comprised the excavation of a shallow, flat-bottomed rectangular pit (the oven chamber), with a long, slightly wedge shaped trench (the flue) extending from one end. The base of the pit was floored with unworked flat stone slabs, covered with a thin layer of clay, and the sides of the pit and the trench were lined with unmortared rubble stone walling. No disturbed stone slabs were noted in the overburden or the demolition material in the oven, giving support to the idea that the walls would not have extended much above the contemporary ground surface, if at all, when first built. Where the flue entered the chamber, the walling extended across the opening, and the arch was supported by three flat slabs on edge (see Fig. 3.33 section 36 and Pl. 3.6). It is significant that the arch extended into the chamber itself; this would have directed the hot air to rise through the centre of the chamber, rather than just at the flue end.

Drying platform

There would have been a drying platform, on which to spread the grain, suspended above the chamber floor. This platform could have been a separate element, possibly a wattle hurdle laid flat, but is perhaps more likely that, given the sophistication of the rest of the structure, the platform would have been a slatted timber screen (perhaps similar to a modern wooden pallet) which incorporated a frame resting on the stone walls, after the fashion of a wall plate. Significantly a few of the clay fragments contained impressions suggesting that they were pressed against sawn or split timbers (see Pl. 4.4, g1/g2)

Superstructure

It is almost certain that the clay was collected from the immediate proximity of the oven. A large pit was partially excavated approximately 10 m to the west of the oven. Although it produced some later medieval dating material, it also contained, in its lower fill, some very abraded pieces of fired clay, almost certainly derived from the oven superstructure. This implies that the pit was open at the time of the oven's use.

The framework of the superstructure was woven from wattles and thin saplings, probably of hazel. There was no direct evidence to indicate how the wicker framework was anchored to the stone base. A possible (and simple) solution would have entailed inserting the rods (vertical wattles) into drilled holes in the timber wall plate. Once the top of the uprights had been tied together to form a dome or arch, the sails (horizontal withies) would have been woven into the structure. Some clay fragments displayed sharply concave outer surfaces, with marks of withies in three directions. These could represent parts of the superstructure where the tunnel over the flue meets the chamber dome.

It would have been necessary to provided access into the chamber. In Pl. 5.2 this is conjecturally shown as framed opening, with a removable wooden screen or door, incorporated in the superstructure.

Preparation for use

Significantly the clay floor of the chamber, and the exposed internal faces of the stonework of both the chamber and the flue were reddish in colour, suggesting exposure to fairly intense heat. It is difficult to reconcile this with its function as a malting oven, which would have required only gentle heat (around 70 ºC, albeit over a sustained period). Other examples of late Saxon ovens, such as those found at Stafford, demonstrate signs of burning in the flue and at the entrance to the chamber only, in keeping with the presumed *modus operandi* of the malting process (Moffett 1994, 56). To explain signs of intense burning throughout the oven chamber at Higham Ferrers, it is suggested that, once the structure was built, a fire was set within the chamber itself for a few days, to dry out and lightly fire the clay superstructure, thus making it reasonably weatherproof, without setting fire to the wicker framework – no evidence was found that the wattles themselves were burnt.

A single firing in this way still may be too little to account for the intensity of reddening of the oven floor and walls, but if the superstructure was periodically rebuilt (perhap annually) the oven could have had a number of these 'firing' episodes (Ruth Shaffrey pers. comm.)

Use of the oven

Malting is an important part of making ale from grain. The process today is essentially the same as in the late Saxon period: The barley grain is soaked in water for a day or two, and then spread out on a floor, where it begins to germinate, and the starch in the grain turns to sugar. The grain is then gently heated for a few days to about 70-80 ºC, which stops the germination. The resulting malted grain is then milled to produce a grist. This is then added to water and the grain husks raked off. The liquid is then boiled and sealed in casks. Honey is added to sweeten the taste and produce mead.

It is probable that the soaked grain would have been spread out on sacking over the platform within the chamber of the Kings Meadow oven. The airflow would have drawn warm air from a small fire at the end of the flue into the chamber and up through the grain. The large slab of stone found at the open end of the flue may have been used to seal the end of the flue to retain heat within the chamber.

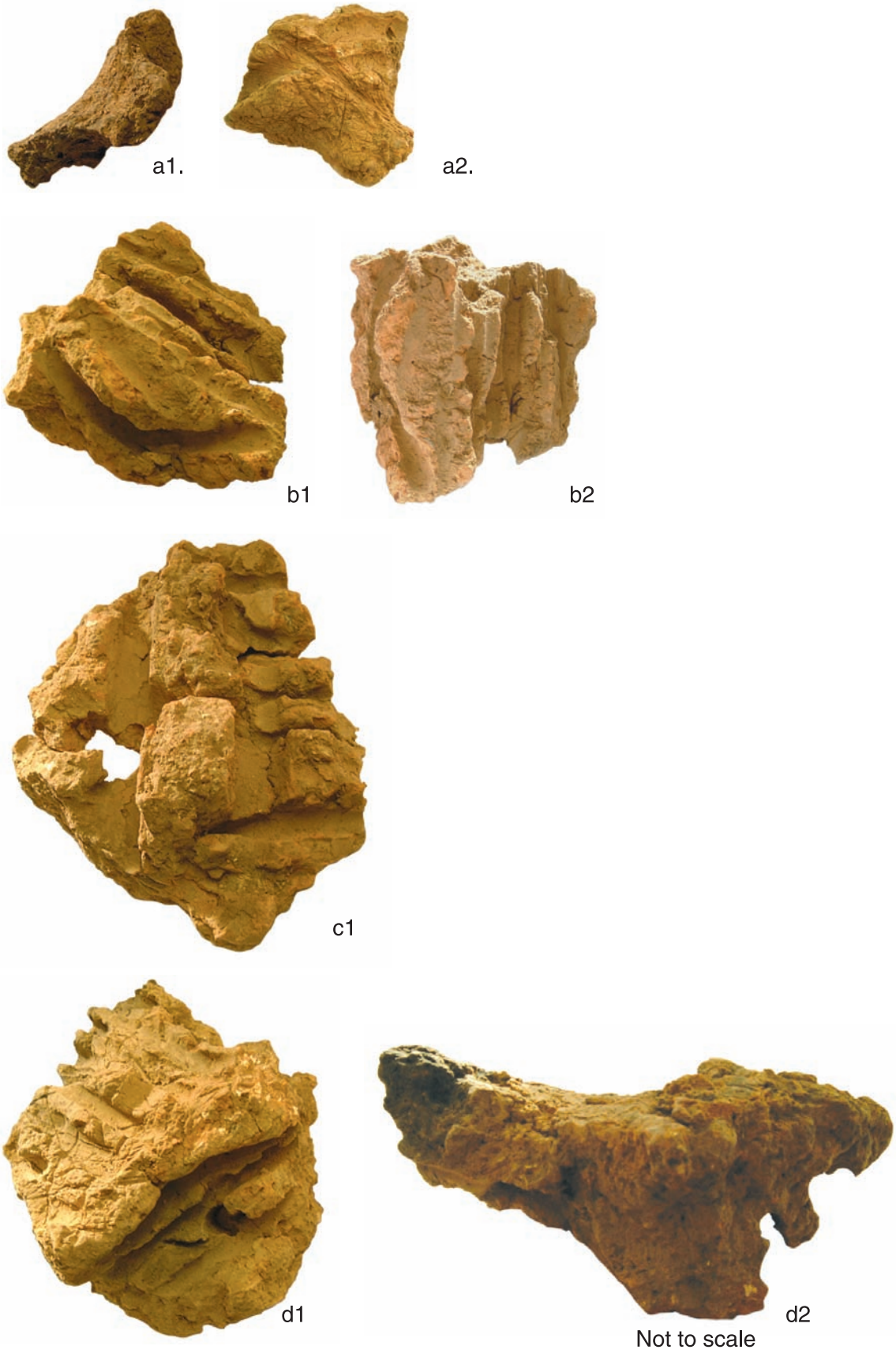
Associated structures

No evidence was found of any associated structure, or structures, either forming a shelter for the oven or representing associated buildings such as storage sheds. It can be assumed that such buildings – albeit probably light and insubstantial – existed, and therefore that they may have been sited outside the excavated area. The very shallow gully close to the west side of the oven (Fig. 3.33), and the scatter of features revealed in the three subsequent evaluation trenches, are enigmatic. The mix of dating material recovered from their fills precludes close dating. The pit identified in the western trench could well be a shallow quarry pit, dug during the construction of the oven; the abraded fired clay and late medieval pottery from its upper fill suggests it remained open after the oven's demise, and filled slowly.

The position of the oven in relation to other features of similar date is worthy of consideration. Its radiocarbon date and its sophisticated structure leave little room for doubt that it can be associated with the operation of the estate complex in its later years. While the oven – a fire risk – would no doubt have been situated well away from barns and domestic buildings, it does appear to tbe excessively far from contemporary structures. It is over 100 m south-west of the rest of the excavated complex. This might suggest that other elements may also have been sited on the south-west side of Kings Meadow Lane. This area had largely been covered by modern housing and light industrial development before the excavation began, and so no further investigation of the area was possible. This theme is discussed more extensively below (see Chapter 5).

Duration of the oven

Clearly the structure was built to process good quantities of grain, but was it intended to last more than one season? The stone oven and flue bases would not be affected by the weather, but it is arguable whether the superstructure would withstand prolonged adverse weather conditions. However, there is no reason why the wattle and daub superstructure could not have been renewed each year. When the structure finally ceased to be used, it seems that it was deliberately and rapidly demolished. None of the clay fragments from within the chamber displayed any signs of abrasion, which suggests that the superstructure was not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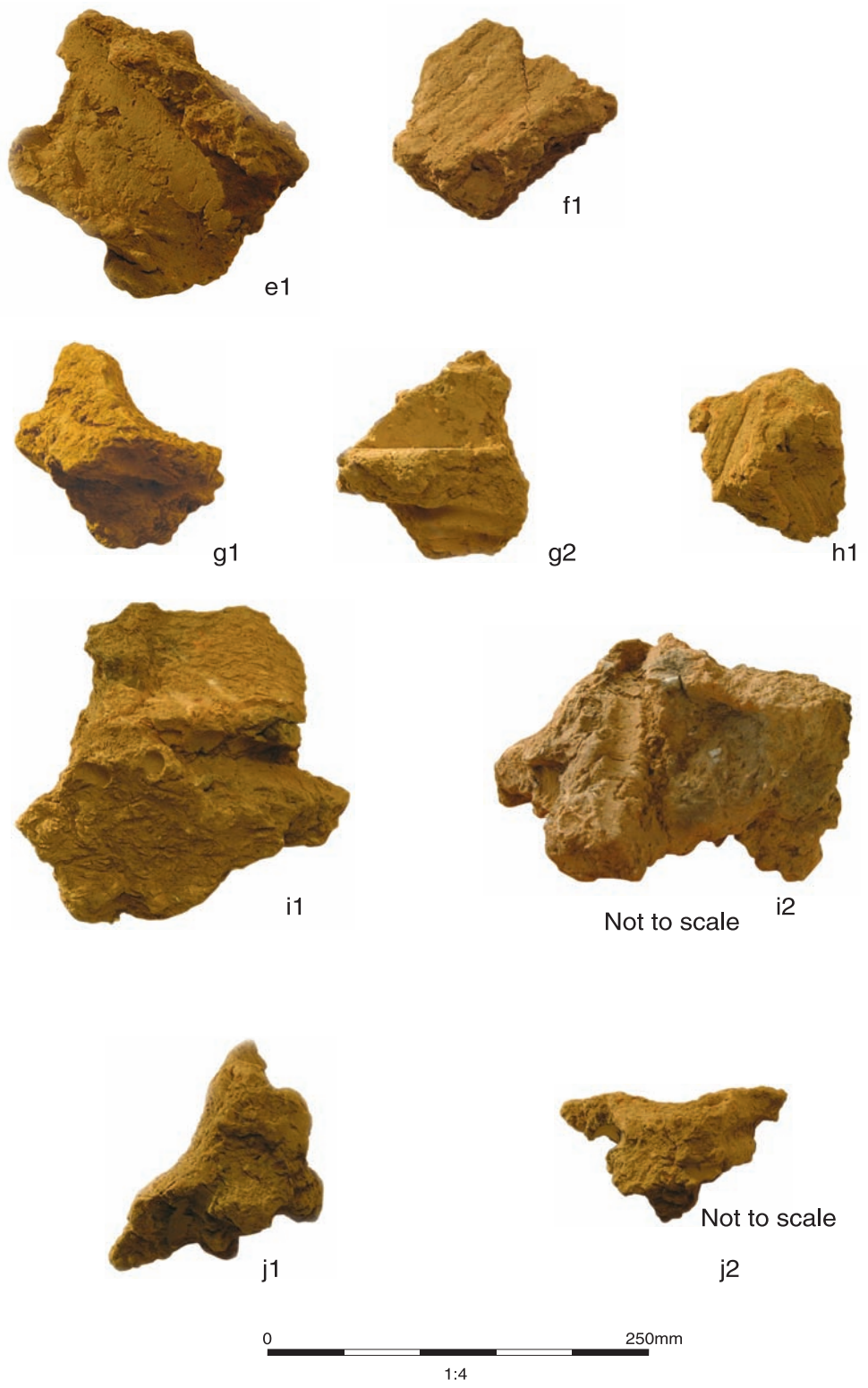

Plate 4.4 (above) Malting oven fired clay

Plate 4.3 (facing page) Malting oven fired clay

merely abandoned and allowed to decay slowly. The demolition perhaps took place at the same time as the clearance of the rest of the estate centre.

Similar middle Saxon structures are conspicuous by their absence from the archaeological record in England. A few examples of corn drying ovens have been identified, some reminiscent of Roman 'T'-shaped ovens or likely to be re-used furnaces, as for example in the case of two 8th-century ovens at Gillingham in Dorset (Nenk, Margeson and Hurley, 1991, 221). One of the best examples, albeit radiocarbon dated to the early 10th century, was found as an isolated feature during the excavation of a Bronze Age cemetery at Ewanrigg, Cumbria in 1985 (Bewley *et al* 1992 fig. 4; and Bewley 1987, 233). The oven comprised a circular flat-bottomed stone-lined pit measuring 2 m in diameter, with a projecting flue on one side. Charred oats, barley and wheat in the chamber suggested its use as a grain drying oven, although its use as a malting oven is quite possible too.

Local examples of medieval malting ovens, dating to the late 12th or early 13th century, have been found at West Cotton, Raunds (Chapman, forthcoming). These are of similar build, with a rectangular stone-lined chamber and a superstructure of clay over a wattle frame.

Catalogue of illustrated fired clay fragments (Pls 4.3-4.4)

4.3.a1/a2 'T'- shaped piece of structural clay. Five Sails, width of 17-20 mm. An impression of an ear of corn in addition to several grain impressions. Slightly concave surface.

4.3.b1/b2. Many sails, ranging from 9-15 mm. Includes the impression of a bent hazel rod. Flattish surface. Ironstone embedded within the body of the fragment.

4.3.c1 Sails 10-20 mm in width. Rods 20 mm Consists of 2 large refitting pieces. Slightly concave surface. Clear impression of withies wound around the uprights. Some impressions clearly show the shaped ends of rods.

4.3.d1/d2 Sails 12-15 mm, rods 20 mm. It shows an impression of a hazel rod running in a third direction to the rods and sails, possibly from part of superstructure where the chamber meets the flue.

4.4.e1. Sails 8 mm. Rod 27 mm. An impression that could be evidence of the clay having been smoothed over a join. It appears to have been created by the side of someone's hand being wiped across the clay. 15 mm across.

4.4.f1. Rod 62 mm, whole width not present. Possible impression of an Oak plank. No exterior surfaces present.

4.4.g1/g2. Sails 22 mm, entire width of rod not present. The fragment has a flat, smooth impression forming a 90° angle which could have been the result of the clay being pressed over the edge of a squared timber.

4.3.h1. Sails 10 mm. Rods 25-30 mm. Impressions of a plank or split hazel. No surfaces.

4.4.i1/i2. Sails 9-24 mm. Two fingerprints in the clay. A slightly concave surface

4.4.j1/j2 Evidence of the shape of the oven: A concave surface, indication of a possible basket shape or of clay applied internally.

HUMAN SKELETAL REMAINS

by Annsofie Witkin

Summary

The articulated and disarticulated remains from Higham Ferrers consisted of an adult female, a neonate and the disarticulated remains from a minimum of two adult males. The adult female and the disarticulated remains were all from the deliberate backfill of a ditch. It is argued that these individuals were all probable victims of execution. The skeletal evidence from the female indicated that her body had been displayed until advanced decomposition had taken hold. This is also likely to have been the fate of the two males represented by the disarticulated remains. The neonate most likely represented the surreptitious burial of a stillborn child.

Methodology

Preservation and completeness

There are a number of factors which affect the preservation as well as the completeness of a skeleton. The main factor is the pH value of the soil, but the depth of the burial, the degree of *in situ* compression, truncation and the quality of excavation and post-excavation treatment will also have an effect (Brothwell 1981, 7-9).

Preservation of the skeletons as a whole rather than as individual elements was scored on a sliding scale from 'destroyed' to 'excellent' depending on the amount of erosion and flaking of the outer surface of the bone. Completeness of the skeleton was also scored on a sliding scale from less than 25% complete to 100% complete. Preservation and completeness of the skeleton affects primarily the recording of pathological lesions and metric data.

Skeletal inventory

The skeletal components of the individual were recorded in tabular form as present or absent. Dental inventory was recorded following the Zsigmondy system. Dental notations were recorded using the universally accepted recording standards and terminology (after Brothwell 1981).

Assessment of age

The assessment of age provides the biological age of the skeleton and not the chronological age of the individual. This is because factors such as nutrition and lifestyle have an impact on skeletal growth and subsequent degeneration. Ageing of subadults provides more narrow age ranges since the growth and maturation sequence of children is fairly predictable and uniform.

The neonate was aged by using longbone length (Scheuer *et al* 1980). The adult individual was aged using the degenerative changes of the pubic

symphyses (Todd 1920; 1921; Brooks and Suchey 1990) and the auricular surface (Lovejoy *et al* 1985). Both disarticulated mandibulae were aged by dental attrition (Miles 1962; Brothwell 1981).

Sex determination

The sexually morphological differences between males and females emerge after the onset of puberty. Generally, sex can therefore only be determined with any degree of accuracy in individuals aged over *c* 17 years and the differences between the sexes are most pronounced in the pelvis since the female pelvis is adapted to childbirth. Cranial, pelvic and post-cranial metrical measurements were used for the determination of sex. The features from the cranium and the pelvis used for the determination of sex were chosen from *Standards* (Buikstra and Ubelaker 1994). The metric data used for the assignment of sex were the femoral head diameters (Chamberlain 1994).

Stature estimation

Stature was calculated using the regression formulae devised by Trotter (1970) for white males and females. The combined measurement of the femur and tibia was used since it carries the least error.

Pathology

The remains were examined for abnormalities of shape and surface texture. When observed, pathological conditions were fully described and recorded following accepted osteological standards. Throughout life, joints are subjected to wear and tear. This gradual deterioration of the joint surfaces is therefore common in older individuals. Today, up to 85% of individuals are affected by joint diseases such as osteoarthritis (Roberts and Manchester 1995, 100). The changes that take place are new bone formation around the margins of the joint or on the surface itself. Porosity may also be present on the joint surfaces. The aetiology is multifactoral but increasing age, genetic predisposition, lifestyle and environmental factors such as climate all play a part in the development of degenerative joint disease.

Taphonomy

Taphonomic processes involve chemical, biological and physical postmortem changes to the bone. These include colour and shape changes, weathering, carnivore or herbivore gnawing and cultural modifications (Buikstra and Ubelaker 1994, 106). Animal tooth marks are quite commonly observed on human skeletal remains. Carnivorous gnawing is usually located on the trabecular ends of longbones although ribs are also subjected to carnivorous gnawing. Herbivorous gnawing is commonly carried out by rats and rabbits. The characteristic parallel square-bottomed grooves are often located on site of bony prominences such as the orbital rim (Buikstra and Ubelaker 1994, 98).

Results

Skeleton 6678

The skeleton was situated within the Phase 2c backfill (6621) of an enclosure ditch (7330) dating to the late 8th–early 9th century. The individual was orientated SW-NE – along the line of the ditch. There was no grave cut and the body must therefore have been deposited at the same time as the backfilling of the ditch took place. The skeleton was prone, tightly flexed with the feet directly beneath the pelvic area (Pl. 4.5). The ankles were very close together possibly indicating that they had been bound.

Preservation and completeness

The skeleton was in an average state of preservation but the cortical surfaces of both femora and tibiae were badly eroded. Postmortem breaks were also present on the left femur, tibia and fibula as well as the pelvis. The ribs were also very fragmented. Around 65% of the skeleton was present and the elements missing comprised the cranium, mandible, both arms, hands, scapulae, clavicles, all cervicals, the first thoracic vertebral element, sternum, manubrium, six left ribs and two right ribs, the fourth lumbar vertebra, right patella, all foot phalanges, right metatarsals and most of the tarsals from both feet.

Age and sex

The skeleton was a female individual aged between 30 and 50 years. The somewhat broad age range was caused by the lower age estimate of the right pubic symphysis. However, due to the slight degenerative changes present on the body it is likely that she was aged between 30 and 40 years.

Stature

Skeleton 6678 was 1.62 m tall. This is marginally taller than the national average of 1.61 m for the time period (Roberts and Cox 2004, 390).

Pathology

The degenerative changes on skeleton 6678 were slight and affected the knees and the spine. Schmorl's nodes was also present on the lower thoracic vertebrae and upper lumbars. These are caused by a disc hernia in which the disk protrudes through the vertebral surface causing a defect. These are common degenerative defects and are found in most people over 45 years of age (Aufderheide and Rodríguez-Martín 1998, 97).

Taphonomy

Carnivorous puncture marks were present on the spinal processes of the first and second lumbars of

Plate 4.5 Skeleton 6678 in situ and detail of toothmarks on the lumbar vertebrae

skeleton 6678 (Pl. 4.5). Three puncture marks were situated on the first lumbar of which one perforated the process. Only one was present on the second lumbar. The size of the puncture marks indicated that it was a medium sized carnivore (Domínguez-Rodrigo and Piqueras 2003, 1386). The shape of the puncture marks is consistent with the tooth morphology of a dog.

Skeleton 2591

Provenance and preservation

The burial was situated on Site 2, at the north-western edge of the complex of small Phase 3 paddocks. The skeleton was orientated NW-SE and located in a small oval pit (2604) which measured 0.7 by 0.4 m and was 0.14 m deep (Fig. 3.37 and Pl. 5.5). A radiocarbon date of the late 9th to early 10th century (Cal. 780 AD to 1030 at 95.0% confidence interval) was recovered from the bones. Skeleton 2591 was generally excellently preserved apart from the lower legs, which were poorly preserved. The skeleton was near complete; the only elements missing being the right and left distal ulnae and the distal end of right radius.

Age and sex

The skeleton was a baby aged between 37 and 38 weeks *in utero*. A baby is full-term at 40 weeks and this newborn was therefore slightly premature.

Pathology and taphonomy

No pathological lesions were present on the neonate. Gnaw marks were present on the lower limbs of the neonate (2591) and the left femur was particularly badly affected. Unfortunately, all bones were used for radiocarbon dating before a detailed analysis of

the gnaw marks was carried out. It is therefore not possible to ascertain whether the gnaw marks was produced by a scavenging carnivore such as a dog or a fox or a herbivore such as a rat.

Disarticulated remains

Disarticulated remains were recovered within a few metres of skeleton 6678, from the same backfill of ditch 7330. A mandible (sf 355) and a pelvic fragment were recovered from context 6050 and a mandible (sf 356), patella, femur shaft and parietal fragment from context 6621. On the basis of radiocarbon dating, mandible Sf 355 is contemporary with skeleton 6678 and mandible Sf 356 is earlier, possibly dating to the late 7th–early 8th century (see below).

The disarticulated remains recovered from the ditch fills are summarised in Table 4.29; the remains constituted a minimum number of two individuals, both male.

Preservation and completeness

The mandible (SF No. 356) and the patella from context 6621 were complete. The breaks present on all the other bones were old as indicated by the colour of the exposed cortex. There was minimal erosion of the ends of the bones as well as the surface. The femur shaft does however show some slight surface changes consistent with erosion from stones in the soil and plant root tracks.

Age and Sex

Only the mandibles could be aged and sexed. Both were males and mandible 355 was from an individual aged 30-38 years and mandible 356 from a male aged 24-30 years.

Pathology

One small carious lesion was present on the dentition of mandible Sf 355. Dental caries is a destruction of the enamel caused by the production of acid from bacteria present in dental plaque (Hillson 1996, 269). The cavities are commonly found in areas where food is likely to get trapped (Hillson 1996, 275).

Small deposits of calculus were present on the right premolars and left lateral incisor on mandible Sf 356. Dental calculus is formed by mineralised plaque, which accumulates on the base of living plaque deposits (Hillson 1996, 225), is a common pathological condition, and is generally related to poor oral hygiene.

Periodontal disease is commonly caused by the accumulation of calculus between the teeth and the soft tissue. This causes inflammation of the soft tissue – gingivitis – which may lead to inflammation of the bone, which in turn would cause bone loss and subsequent exposure of the roots of the teeth. The loss of the tooth would eventually follow (Roberts and Manchester 1995, 56). There are two types of periodontal disease, horizontal bone loss which involves the simultaneous loss in height of the alveolar margin involving the whole dental arcade and vertical bone loss which is localised around an individual tooth or a pair of teeth (Hillson 1996, 263-265). Moderate to considerable vertical bone loss affected the right molars on mandible Sf 355 and moderate horizontal bone loss was present on mandible Sf 356.

One dental abscess was present on mandible Sf 355 which affected the left canine. An abscess may be formed when bacteria enter the pulp cavity through dental caries, excessive attrition or trauma to the crown. An abscess can also occur when a periodontal pocket is formed. When bacteria accumulate in the pulp cavity an inflammation starts which can track to the apex of the root. As the pressure builds up from the continuous accumulation of pus, a hole (sinus) forms on the surface of the jaw which allows the pus to escape (Roberts and Manchester 1995, 50). It is at this advanced stage that the abscess is visible and recorded archaeologically. The only dental anomaly present was a congenitally missing or impacted third molar on mandible Sf 356. It is impossible to ascertain the reason for the absence of the tooth without an x-ray.

The mandibular condyles on mandible Sf 356 had slight osteophyte formations at the joint margins. These were very mild degenerative changes.

Slight porosity was present on the superior part of the parietal fragment from context 6621. This type of lesion is known as porotic hyperostosis and is caused by anaemia. The lesions were healed. The aetiology of anaemia is multifactoral and it is impossible to discern the direct cause of the porotic hyperostosis. Causes of anaemia include an iron-deficient diet, parasitic infection, chronic disease

Table 4.29: Summary of the disarticulated human remains

Context number	*Small finds number*	*Skeletal element*	*Side*	*Age*	*Sex*
6050	355	Mandible	-	30-38 years	Male
6050	-	Iliac blade	Left	Adult	Unsexed
6621	356	Mandible	-	24-30 years	Male
6621	-	Parietal	Right	Adult	Unknown
6621	-	Femur shaft	Right	Adult	Unknown
6621	-	Patella	Right	Adult	Unknown

and excessive blood loss (Roberts and Manchester 1995, 166-167).

Taphonomy

Mandible Sf 356 had longitudinal cracking present on the body. This is caused by weathering and indicates that the bone was exposed on the ground surface prior to deposition. The surface changes are slight and were recorded as stage 1, the mildest form of weathering seen on bone (after Behrensmeyer 1978).

Discussion

The placement of skeleton 6678 in a ditch must be seen as a deviant form of interment. As such, normal social identity is not expressed, but what is expressed is the circumstance of death and the types of sanctions which the society in question merited the individual (Shay 1985, 226).

The death penalty appears in English law codes from the end of the 7th century. It has been argued that until the 11th century, executed criminals were treated differently and buried separately as if their punishment had not ended with death (Daniell and Thompson 1999, 83). A series of characteristics has been identified which can be used for the identification of execution burials. These include random orientation, prone and decapitated corpses, instances of tied hands and location on, or adjacent to, principal boundaries (Reynolds 1997).

The location of skeleton 6678 within a 'boundary' ditch (Pl. 3.6) and the body position supports the contention that this individual was an execution victim. However, the bones also provide a far more detailed narrative as to what happened to the body after execution and prior to the rather haphazard disposal of the body in the ditch.

The female was missing the arms, head, neck and the 4th lumbar, and in addition there were carnivorous puncture marks on the spinal processes of the first and second lumbar vertebrae. The burial, along with skeletal and taphonomic evidence is consistent with her having been strung up and displayed after execution. The evidence of the ankles being very close together in the burial strongly suggests that the legs were bound together and that she was suspended upside-down. She was displayed in this manner until putrefaction was so advanced that the gravitational pull separated the body at its weakest point which would have been at the waist. This would account for the missing 4th lumbar since the vertebral elements adjacent to the point of separation would have become loosened and one vertebra could easily have become dislodged and carried off by scavenging mammals.

It is not possible to ascertain the exact length of time the woman was suspended before the body separated. The rate of decay is complicated and in this instance it is primarily affected by climatological factors such as humidity, precipitation and temperature (Sledzig 1998, 111). In general, the higher the temperature and humidity the more rapid the decomposition and in very hot humid conditions skeletonisation may occur in two to four weeks. On the other hand, cold weather slows decay and skeletonisation may take up to two years (Sledzig 1998, 111-112). However, given that the bones of the woman were scavenged by carnivores it seems likely that the remains would still have been fleshed. It is therefore possible to give a very tentative time estimate of weeks rather than months.

Assuming the body was suspended upside-down and out of the reach of carnivores, the arms would have been disarticulated through carnivorous activity *after* the upper half of the body had fallen to the ground. Studies of scavenging mammals have established that the sequence of exploitation of a carcass starts with the most meat bearing parts, which are usually the hindquarters followed by the forequarters (Lyman 1994, 147). The same pattern is observed in bone dispersal from carnivorous activity and the bones from the head would be the last part to be removed from the carcass (Lyman 1994, 187). The presence of the legs in the burial also adds to the premise that she was suspended upside-down. Had the whole of the body been accessible to scavengers, either on the ground or while suspended, the legs would have either been missing – like the arms – or there would have been carnivorous teeth marks present on them.

There are substantial amounts of ligaments and tendons surrounding the shoulder joint which makes this a relatively strong structure. The weakest attachment point of the arm to the torso is therefore the synovial joint between the manubrium and the clavicle. It was at this point the arms of the female had become separated from the body and they could have easily been dragged away and consumed elsewhere. However, the pattern of the missing bones from the woman does not follow the pattern of bone dispersal outlined above since it would have been more likely that the head would still have been attached to the torso. As the head was also missing, a more likely scenario may be that the woman was suspended by her feet, with her arms and head within reach of scavenging mammals. In this scenario, the arms and the head could have been torn off the body prior to the trunk dropping to the ground, indeed their activity may even have facilitated the separation of the torso from the hips.

However, what is certain is that the torso was partly eaten by carnivores once it was on the ground. The only elements with puncture marks were the first and second lumbars, consistent with a medium sized carnivore – most likely a dog. This strongly suggests a relatively low level of exploitation of the carcass, which may indicate that the torso was lying on the ground for a relatively short period of time, possibly a day or two. The legs were cut down from the scaffolding and removed together with the torso and the remains of the body was probably placed in an organic container such as a

sack and deposited in the ditch. The position of the body in the ditch would therefore have been purely accidental with no premeditated thoughts regarding body position or orientation.

The disarticulated human remains found within the same fill of the ditch are likely to have been remains from other execution victims. The evidence of weathering on mandible Sf 356 indicated that this individual at least had also been displayed after death. Unfortunately, the time line given for the developing stage 1 is rather broad and ranges from 0-5 years for mammals (after Behrensmeyer 1978 and Andrews 1990). However, considering the location of the bones in the ditch and their disarticulated nature, it is likely that all three individuals had been displayed posthumously.

The remains indicate that over a period of time at least three individuals – two males and a female – were killed. The radiocarbon dating idicates that one of the males is likely to be a contemporary of the female and the other is substantially earlier. This suggests that the site was used for executions over a considerable period of time.

The neonate

The later burial of neonate 2591 is also a deviant form of interment. However, the age of the individual suggests that it was born slightly prematurely. The child may have been stillborn, or may have died shortly after birth and before being baptised. As such, the burial appears to be surreptitious and it is possible that the burial was carried out hurriedly since the grave was very shallow.

ANIMAL BONE *by Emma-Jayne Evans (with revisions by Lena Strid)*

Introduction

A total of 10,149 fragments of bones and teeth were recovered from Saxon, medieval and post-medieval deposits; 643 fragments were recorded at the University of Birmingham by Umberto Albarella and Cluny Johnstone in 1995 during the assessment stage of Sites 1-3, with a further 9506 fragments from the remaining sites recorded by staff at OA.

Methodology

The bones recorded at the University of Birmingham were recorded using the methods described in Davis (1992) and Albarella and Davis (1994). Identification of the bone at OA was undertaken with access to the reference collection and published guides. All the animal remains were counted and weighed, and where possible identified to species, element, side and zone (Serjeantson 1996). Also, fusion data, butchery marks, gnawing, burning and pathological changes were noted when present. Ribs and vertebrae were only recorded to species when they were substantially complete and could accurately be identified, or were from an identifiable articulated skeleton in which case there could be no doubt as to their species. Undiagnostic bones were recorded as small (small mammal size), medium (sheep size) or large (cattle size). The separation of sheep and goat was undertaken using the criteria of Boessneck (1969) and Prummel and Frisch (1986), in addition to the use of the reference material housed at OA. Where distinctions could not be made, the bone was recorded as sheep/goat (s/g).

The condition of the bone was graded using the criteria stipulated by Lyman (1996), grade 0 being the best preserved bone and grade 5 indicating that the bone had suffered such structural and attritional damage as to make it unrecognisable.

The quantification of species was carried out using the total fragment count, in which the total number of fragments of bone and teeth was calculated, and this figure broken down to the total number of fragments identifiable to each species. In addition the minimum number of individuals (MNI) was calculated using the zoning method (Serjeantson, 1996). The elements used for working out MNI do not include mandibles, ribs, vertebra, loose teeth, tarsals and carpals.

Tooth eruption and wear stages were measured using a combination of Halstead (1985), Grant (1982) and Levine (1982), and fusion data was analysed according to Silver (1969). Measurements of adult, that is, fully fused bones were taken according to the methods of von den Driesch (1976), with asterisked (*) measurements indicating bones that were reconstructed or had slight abrasion of the surface. Withers heights were calculated using Fock (1966), Harcourt (1974), Kieserwalter (von den Driesch and Boessneck 1974, 334), Teichert (1975) and Matolcsi (1970).

Results

The majority of the bone from this site was recovered by hand collection, as shown in Table 4.30. The only species recovered by sieving that were not

Table 4.30: Total number of hand collected and sieved animal bones

Phase	*Hand collected*	*Sieved*	*Total*
1	1338	960	2298
2b	1571	265	1836
2c	1201	544	1745
3	1027	177	1204
4	891	49	940
5	1428	151	1579
6	496	14	510
Unphased	37	-	37
Total	7989	2160	10149

Table 4.31: Domestic animals identified by species and phase

Phase	*Cattle*	*Sheep/goat*	*Sheep*	*Goat*	*Pig*	*Horse*	*Dog*	*Cat*	*Unidentified*	*Total*
1	158	125	6	3	121	5	3	1	1753	2175
2b	190	189	8	2	189	45	39	26	973	1661
2c	167	64	4	-	54	28	118	-	1261	1696
3	125	97	4	-	59	13	4	-	868	1170
4	104	98	2	-	61	17	57	-	582	921
5	132	165	5	1	72	47	20	4	1110	1556
6	121	40	2	-	18	6	14	-	274	475
U/s	4	4	-	-	3	-	-	-	26	37
Total	1001	782	31	6	577	161	255	31	6847	9691

present in the hand-collected material were the shrew, water vole, vole, mole and mouse. As only these few small mammals are added to the total species list from sieved material, both the hand-collected and sieved material will be discussed together in this report.

The condition of the bone from Higham Ferrers was good, with a large majority (approximately 77%), scoring 2 according to Lyman's grading. This good condition has allowed for a large variety of species to be identified, with approximately 32.5% of the total number of bone fragments being identifiable. Tables 4.31–3 show the species present at this site.

Phase 1: 5th – 6th century

The majority of the animal bones excavated were recovered from this phase. Of the sheep/goat bones, only six could positively be identified as sheep and one as goat, so therefore they will discussed as a single sheep/goat group.

The total fragment count suggests that cattle, sheep/goat and pig were present in similar numbers, with all other species much less frequent. The minimum number of individuals indicates that sheep/goat and pig were most common with an MNI of 4 each, with cattle being slightly lower at 3, although MNI is not a very reliable method when applied to small samples, it is less affected by recovery bias. However, there is a much greater number of unidentifiable medium sized bones than large bones, which may also suggest that medium sized animals, that is sheep/goat and pig would have had much higher fragment counts than cattle if more of the bone had been identifiable to species, further substantiating the claim that sheep/goat and pig were present in higher numbers than cattle

The majority of the animal bone from this phase was recovered from SFBs, pits and associated postholes as shown in Table 4.34 below.

The age at death of cattle based on tooth wear and eruption stages could be estimated on five mandibles, and gave an age of 8–18 months for one individual, young adult for two individuals, adult and senile animal for the last two individuals. Although this is only based on a small sample, it seems that there were more animals being killed at a young age, most likely for meat production, with some older animals being kept probably for traction. The fusion data also supports the tooth wear data in that there were animals dying at a young age, with a minimum of two animals dying before reaching 1.5 years, and another two at 2–3 years and 3.5–4 years. However, out of all the bones available for assessment of fusion data, only 23.5% were seen to be unfused, suggesting that while cattle were killed at an optimum age for meat production, many had been kept into adult-

Table 4.32. Wild animals identified by species and phase

Phase	*Red deer*	*Fallow deer*	*Roe deer*	*Hare*	*Rabbit*	*Fox*	*Badger*	*Field vole*	*Vole*	*Water vole*	*Mouse*
1	3	-	1	-	1	-	-	22	3	3	4
2b	2	-	-	3	-	-	1	2	12	-	3
2c	2	-	-	-	1	-	-	3	3	1	2
3	-	-	-	-	-	-	-	1	1	-	2
4	2	-	-	-	-	1	-	-	-	-	
5	-	1	-	1	-	-	-	-	-	-	-
6	-	-	1	-	-	-	-	-	-	-	-
U/s	-	-	-	-	-	-	-	-	-	-	-
Total	9	1	2	4	2	1	1	28	19	4	11

Table 4.33: Birds identified by species and phase

Phase	Domestic fowl	Goose	Mallard	Duck	Teal	Swan	Grey partridge	Crane	Buzzard	Crow	Swallow	Bird	Total
1	10	2	-	-	-	-	-	-	-	-	-	8	20
2b	76	5	1	1	1	3	1	-	-	2	1	28	117
2c	4	-	-	-	-	-	-	1	-	-	-	2	9
3	6	-	3	0	-	-	-	-	-	-	-	5	14
4	7	1	-	-	-	-	-	-	-	-	-	6	14
5	4	6	2	-	-	-	-	-	-	-	-	7	19
6	4	2	2	-	-	-	-	-	24	-	-	2	34
U/s	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	111	16	8	1	1	3	1	1	24	2	1	58	228

Table 4.34: Distribution of identifiable animal bones from phase 1

	Sunken feature building	Posthole	Pit	Ditch	Finds reference	Gully	Layer	Total
Cattle	99	24	29	2	3	1	-	158
Sheep/goat	82	14	27	5	5	-	1	134
Pig	81	18	17	4	-	-	1	121
Horse	1	2	1	-	1	-	-	5
Dog	2	-	-	-	-	-	1	3
Cat	-	-	1	-	-	-	-	1
Domestic fowl	6	-	4	-	-	-	-	10
Goose	2	-	-	-	-	-	-	2
Red deer	3	-	-	-	-	-	-	3
Roe deer	1	-	-	-	-	-	-	1
Rabbit	-	-	1	-	-	-	-	1
Bird	2	-	5	-	-	-	1	8
Frog/toad	35	-	25	3	-	-	-	63
Field vole	-	15	-	7	-	-	-	22
Mole	-	-	-	1	-	-	-	1
Mouse	4	-	-	-	-	-	-	4
Shrew	1	-	-	1	-	-	-	2
Vole	3	-	-	-	-	-	-	3
Water vole	-	3	-	-	-	-	-	3
Total	322	76	110	23	9	1	4	545

Shrew	Mole	Rat	Frog/Toad	Total
2	1	-	63	103
2	1	-	27	53
1	-	-	29	42
-	-	-	12	16
-	-	-	2	5
-	-	1	1	4
-	-	-	-	1
-	-	-	-	-
5	2	1	134	224

hood, probably, as the tooth wear evidence suggests, for breeding and traction purposes. The presence of two neonatal bones may suggest the small scale use of milk, or they may simply be natural fatalities.

Butchery marks, most commonly chop marks through the shafts of long bones, were noted, suggesting that animals had been processed for meat and marrow. There is also evidence of skinning on a metacarpal and a proximal phalanx, which along with the meat and marrow production, suggests that the entire carcass was used. There is also some evidence of horn working, in the form of several horn cores which had been chopped at the base.

Withers heights could be calculated on two long bones, giving heights of 1.11 m and 1.13 m. Pathologies were noted on two bones, a pelvis with eburnation on the acetabulum indicative of the bone on bone wear often seen in degenerative joint disease such as arthritis, and the expansion of the lateral aspect of the proximal articulation of a second phalanx, which is often attributed to the stresses placed on the feet during traction.

A number of articulating cattle bones were found in fills of the SFBs, suggesting that they had suffered little or no disturbance once they had been deposited in the (presumably) disused SFB pits.

The age at death of sheep/goat based on tooth eruption and wear stages suggests that two animals died aged 3–10 months, four at 10–20 months, and one at 5–8 years. This young age at death pattern suggests that the majority of sheep/goats were exploited for meat production, with a small number being kept well into adulthood for breeding purposes and wool production. Fusion data also suggests that there were animals dying before reaching skeletal maturity, with 33.3% of the bones available for analysis being unfused. As with the cattle, it is likely that the animals kept into adulthood were used for breeding, and to a lesser extent for wool production. The presence of a few neonatal bones also suggests that sheep/goat were breeding within the vicinity of the site as it is unlikely that such young animals would have been imported.

Butchery marks were only noted on three bones, two of which had been chopped for marrow extraction, and another had dismemberment cut marks, indicating the processing of the carcasses for meat production. As with the cattle remains, withers height could be calculated on two long bones, giving a height of 0.62 m and 0.54 m. No pathologies were noted on any of the sheep/goat bones.

Tooth eruption and wear stages for pig suggest the age at death was immature for two animals and sub-adult for three. Fusion data supports the idea that the majority of the pigs were slaughtered at a young age for their meat, with 81.2% of the bones available for fusion data analysis being unfused. The presence of foetal bones also suggests that these animals were breeding within the vicinity of the site. The high proportion of juveniles in the assemblage is unsurprising as pigs were usually killed for their meat at an early age, and there was little to be gained in keeping them into adulthood.

Butchery marks were only present on one bone, a scapula with cut and chop marks along the edge of the blade. Pathological changes were noted on one pig bone in the form of well healed periostitis along the shaft of a 3rd metatarsal. This 3rd metatarsal was seen to articulate with a 4th metatarsal, a navicular and a cuboid, suggesting they had been not disturbed after deposition. A type 3 non-pathological depression was present on an ulna.

Only five horse bones were recovered from this phase, giving a minimum number of one. Fusion data provides the only ageing information, suggesting that all the remains are from adult horses. Withers heights could not be calculated from any of the bones present, and no butchery marks or pathologies were noted.

The three dog bones present suggest a minimum number of one, as does the single cat bone recovered. The minimum number of domestic fowl is three, one of which has a spur on the tarsometatarsus, indicating that it is likely to be male. Cut marks on two bones suggests that they could have been kept for meat, but it is also likely that they were kept for eggs and possibly for cock fighting. The goose bones are consistent with an unimproved domestic form, and one bone bears a cut mark, highlighting their use for meat production.

Red deer is represented by three bones, one of which was a worked fragment of shed antler. Only one roe deer bone was recovered, which suggests that while deer were hunted during this phase, it is unlikely that they contributed a great deal to the diet of the local population. The remaining wild species present, namely rabbit and various small mammals are likely to be intrusive, and to have died naturally rather than being exploited by the human population.

Phase 2: Late 7th – Early 9th century

Sub-phase 2a: Late 7th century to mid 8th century

No animal bones were recovered from Phase 2a deposits

Sub-phase 2b: Mid 8th century to late 8th century

As with phase 1, cattle, sheep/goat and pig dominate the assemblage from phase 2b. Of the sheep/goat bones, only eight were positively identified as sheep and two as goat, therefore these will be discussed together as sheep/goat. The total fragment count from this phase suggests that sheep/goat are the dominant species with cattle and pig following closely behind, whereas the minimum number of individuals suggests that pig are dominant with eight, followed by seven sheep/goats and three cattle. The fact that pig and sheep/goat are more common is further supported by the fact there are a great deal more unidentifiable medium-sized fragments than large fragments, which if they had been identifiable to species would have no doubt increased the minimum number of these animals.

Table 4.35 shows that the majority of the bone from this phase was recovered from ditches, with with limited quantities recovered from pits and postholes.

The age at death of cattle based on tooth wear and eruption stages was estimated for seven mandibles, giving ages of 8–18 months, 30–36 months, young adult, two adult and two senile. Although this is again based on a small sample, there do appear to be slightly more cattle kept into

Table 4.35. Distribution of animal bone from phase 2b

	Ditch	*Pit*	*Post hole*	*Total*
Cattle	176	10	4	190
Sheep/goat	188	8	3	199
Pig	180	5	4	189
Horse	44	-	1	45
Dog	38	-	1	39
Cat	26	-	-	26
Domestic fowl	76	-	-	76
Goose	5	-	-	5
Red deer	2	-	-	2
Hare	3	-	-	3
Badger	1	-	-	1
Bird	28	-	-	28
Frog/toad	20	2	5	27
Field vole	2	-	-	2
Mole	1	-	-	1
Mouse	3	-	-	3
Shrew	1	-	1	2
Vole	-	-	12	12
Swan	3	-	-	3
Crow	2	-	-	2
Duck	1	-	-	1
Mallard	1	-	-	1
Swallow	1	-	-	1
Teal	1	-	-	1
Grey partridge	1	-	-	1
Total	804	25	31	860

adulthood than in the earlier phase, perhaps indicating a greater dependence on the use of cattle for traction. The fusion data also suggests that cattle were being kept into adulthood, with 21.4% of the bones coming from juvenile animals.

Evidence of butchery was noted on many bones, in the form of both dismemberment marks and chops, suggesting the processing of carcasses probably for for marrow extraction. As with the earlier phase there is some evidence of horn working in the form of horn cores that have been chopped through the base, and evidence of skinning in the form of chop marks through a 1st phalanx.

Withers heights could be calculated on five bones, giving heights of 1.07 m, two at 1.11 m, 1.23 m and 1.41 m. Pathological changes were only observed on one bone; a pelvis with eburnation on the acetabulum as with the pelvis from phase 1. A type 2 non-pathological depression was also noted on a mandibular condyle. A number of articulating cattle bones were recovered from a ditch fill, suggesting they had undergone very little disturbance after their final deposition.

The age at death of sheep/goat could be estimated for thirty mandibles using tooth eruption and wear analysis. Four were aged at 1–3 months, six at 3–10 months, eight at 10–20 months, four at 20–34 months, six at 3–5 years, one at 5–8 years and one at >8 years. This age at death pattern suggests that the majority of sheep/goats were being killed, at an optimum age for meat production before reaching adulthood. The presence of some older individuals may represent those kept for breeding purposes or small scale wool production. The fusion data also suggests that many animals were being killed before reaching skeletal maturity, with 39% of the bones available for fusion data analysis being unfused. The presence of a foetal tibia suggests that the breeding of these animals occurred within the immediate vicinity of the site, or that a pregnant ewe was brought to the site and then miscarried or was killed whilst there.

Dismemberment cut marks were noted on several bones, as were chop marks, both indicating that the animals had been processed for their meat and marrow. Withers heights could not be calculated on the sheep/goat bones from this phase, and pathological changes were only noted on a mandible with much expansion of the bone around the premolars, and porosity of bone around the expansion, probably due to an infection.

The age at death of pigs was estimated on twenty three mandibles using tooth eruption and wear stages and gives ages of juvenile for seven mandibles, immature for two, sub-adult for eleven and adult for three. This suggests that the vast majority of the pigs on site during this phase were sub-adult or younger, which is also reflected in the fusion data analysis, with 69.8% of bones used for fusion data analysis being unfused. Dismemberment butchery marks were only noted on two bones. The remains of a partially articulated carcass were recovered from the large enclosure ditch. The carcass was aged as adult using the tooth wear analysis, but fusion data suggests it could not have been more than 3 years old.

The minimum number of horses from this phase is two. Age at death could only be estimated using fusion data, which suggest that at least one animal died around 3–3.5 years of age. The remaining bones were all fully fused. Butchery marks were found on three bones, two astragali, which appear to have skinning marks, and an atlas with dismemberment marks. Horses are likely to have been kept for riding and light traction rather than for their meat, but would more than likely have been slaughtered as they started to decline with age. It is probable that the meat may then have been used, possibly to feed the dogs, and their hides would have been used for leather working.

The partial remains of an articulating adult horse skeleton, comprising twenty-one bones of the vertebrae and forelimbs, was found in ditch fill 2302. Withers heights could be calculated on one bone, giving a height of 1.39 m. No pathologies were observed on any of the horse bones.

The minimum number of dogs is two, one of which is represented by a partial articulating

skeleton recovered from a ditch fill (context 1056) and comprises the forelimbs. The only ageing data available comes from one unfused proximal ulna, suggesting an age at death for one animal as before 9–10 months. Two skulls have been smashed in the back in a similar fashion, which may suggest the deliberate breaking of the skulls to access the brain. One incidence of pathology was noted, a mandible with the second molar missing, with the root socket being well healed.

Of the twenty six cat bones recovered, twenty one come from an almost complete sub-adult cat skeleton, recovered from a ditch context 2440. The minimum number of cats is therefore two. No butchery marks or pathologies were noted on any of the cat bones

A large proportion of the domestic fowl bones from this site were recovered from this phase. The minimum number is six, four of which were recovered from ditch 15099. Butchery marks were only noted on one bone, but as domestic fowl is easy to pull apart once cooked, it is not necessary to use knives to dismember the bird during consumption.

The minimum number of goose is one. There are similar minimum numbers for mallard, teal, swan and grey partridge. This phase provides the evidence for the greatest variety of birds being consumed on the site. All were discarded in the enclosure ditch. Two fragments of unworked red deer antler were also recovered from the enclosure ditch, but these may have been brought into the site as shed antler, perhaps found in the surrounding landscape. The presence of hare, badger, crow and swallow, and the small mammals including field vole, water vole, mouse, shrew, mole and frog/toad are likely to be intrusive animals, present as natural fatalities.

Sub phase 2c: Late 8th century to early 9th century

There is a change in the total fragment count of the main domestic species in this Phase. Cattle are dominant, with many fewer sheep/goat fragments, and pig with only a third the numbers of cattle bones. The four sheep bones recovered will be discussed with the sheep/goat bones. There is a minimum of four cattle, three sheep/goats and three pigs. There is also a change in the numbers of fragments recovered with considerably more large fragments recovered compared to medium ones, suggesting that the minimum number of cattle would be higher than sheep/goat if more of the bone could have been identified to species. This contrasts with phases 1 and 2b, which yielded more of medium sized fragments than large.

Table 4.36 shows that, as with phase 2b, the majority of the animal bone is recovered from ditches, most of it from ditch 7330. Much of the bone from pits was recovered from pit 7503.

Age at death for cattle was calculated on eleven mandibles using tooth eruption and wear stages and gave ages of 1–8 months, 8–18 months for two mandibles, 18–30 months for one, young adult for two, adult for one, old adult for one and senile for three. As with the other phases this age at death pattern suggests that the majority of animals were being killed before reaching maturity, indicating an economy based on meat production. It's likely that the older animals were those kept for breeding and traction purposes. The fusion data indicates that, with 33.9% of the bones used for analysis being unfused, a reasonable number were being kept into adulthood, further substantiating the tooth wear evidence that older animals were being kept for breeding and traction.

Table 4.36: Distribution of animal bone from phase 2c

	Beam slot	*Ditch*	*Hearth*	*Pit*	*Post hole*	*Total*
Cattle	3	127	-	37	2	169
Sheep/goat	-	37	2	29	6	74
Pig	-	42	3	6	5	56
Horse	1	22	-	5	-	28
Dog	-	117	-	1	-	118
Domestic fowl	-	4	-	1	-	5
Red deer	-	2	-	-	-	2
Rabbit	-	-	-	1	-	1
Bird	-	1	1	-	1	3
Frog/toad	-	23	6	-	-	29
Field vole	-	3	-	-	-	3
Water vole	-	1	-	-	-	1
Mouse	-	2	-	-	-	2
Shrew	-	1	-	-	-	1
Vole	-	3	-	-	-	3
Crane	-	1	-	-	-	1
Total	4	234	12	79	3	320

Butchery marks were noted on a number of bones, in the form of dismemberment cut marks and chops through the shaft of long bones, indicating the processing of carcasses for meat and marrow. Withers heights could be estimated for five cattle bones, giving heights of 1.07 m, 1.10 m, 1.13 m and 1.24 m for two. Pathological changes were noted on a pelvis, with eburnation and pitting of the acetabulum, characteristic of osteoarthritis. Articulations were seen between vertebra and a sacrum, from ditch 7330, which may represent the disposal of a carcass after primary butchery, with the meat bearing limb bones being taken elsewhere on the site.

Age at death of sheep/goat using tooth eruption and wear stages could be calculated on seven mandibles, with four giving an age of 10–20 months, and three an age of 3–5 years. This indicates that sheep/goat were kept for meat and wool production. With only 14.3% of the bones available for fusion analysis being unfused, it is likely that the herds contained a substantial amount of older animals. These were probably kept for breeding purposes and wool production.

Butchery marks in the form of dismemberment cut marks and the chopping of long bone shafts were only present on four bones. No pathologies were noted on any of the bones, and withers heights could not be calculated from any of the measurements taken.

Only three pig mandibles could be aged, suggesting two immature and one adult individual. The fusion data suggests that 70% of the bones came from juvenile animals, which is unsurprising as pigs are usually killed at a young age for their meat. Dismemberment cut marks were seen on a scapula, but no pathologies or articulations were noted on any of the bones. Articulations were noted between an atlas, axis and two cervical vertebra, suggesting little disturbance after their disposal. An ulna has a type 3 non-pathological depression on the articulation.

The minimum number of horse from this phase is two. One unfused distal tibia suggests that at least one individual died before reaching 1.5–2 years, and an unfused ulna suggests another died before reaching 3.5 years. A femur, humerus and tibia had been chopped through the shaft, probably for marrow extraction. Articulations of two groups of bones were present, a lower hind leg, and an upper fore leg.

The minimum number of dog from this phase is two, with all the bones except eleven being recovered from ditch 7330. The majority of the dog remains are from two articulating skeletons, both from context 6193. The presence of deciduous teeth and unfused phalanges suggests that at least one was a puppy. Withers heights were calculated on both skeletons from context 6193, one giving a height of 0.54 m, and the other giving heights varying from 0.33 to 0.38. This variation in the heights from the second skeleton can be explained by the fact that the dog displays signs of having suffered from rickets, resulting in noticeable length differences in the bones present. Some elements were more affected than others. Rickets is quite an unusual disease to find in carnivores, and suggests that the dog must have had a poor diet, and was kept indoors for most of its life. Pathological changes were also noted on one ulna from context 6051, which displayed new bone formation around the articulation, possibly the result of a trauma and/or non-specific infection.

The minimum number of domestic fowl is one; the only other bird species identifiable was crane, a bird not uncommon in Saxon times. It is likely that the crane was consumed on site, as these birds would have been eaten at this time, and a single bone of this species is unlikely to be present through natural causes.

The only representation of red deer from this phase was a skull fragment and a piece of antler that had been chopped through the base of the tine and hollowed out. The only other wild mammals present were a rabbit, and various small mammals such as field vole, water vole, mouse, shrew and frog/toad.

Phase 3: Mid 9th century to 11th century

Cattle continue to be dominant in total fragment count in this phase. Four sheep bones were identified, and will be discussed with the sheep/goat remains. There is a minimum of six cattle, four sheep/goats and two pigs. There is more medium sized unidentifiable fragments than large (246 fragments compared to 163), which may increase the minimum number of sheep/goat and/or pig, but it is still fair to say that cattle was the more dominant species. The bones from this phase were recovered from a large variety of features, with pits being the most common for bone deposition.

Age at death of cattle could be ascertained from one mandible, giving the age of old adult. Although

Table 4.37: Distribution of animals bones from phase 3

	Ditch	*Pit*	*Gully*	*Post hole*	*Sunken feature building*	*Hearth*	*Quarry pit*	*Beam slot*	*Layer*	*Stake hole*	*Tree throw/ Bowl*	*Finds reference*	*Unknown*	*Total*
Cattle	26	35	9	7	8	-	3	1	-	3	2	6	2	102
Sheep/goat	28	28	4	4	5	1	1	3	1	-	2	1	1	79
Pig	12	13	6	8	3	1	-	-	2	1	1	3	-	50
Horse	2	4	-	-	2		1	-	1	-	-	-	-	10
Dog	-	3	-	1	-	-	-	-	-	-	-	-	-	4
Domestic fowl	2	2	-	2	-	-	-	-	-	-	-	-	-	6
Mallard	-	2	-	-	-	1	-	-	-	-	-	-	-	3
Bird	1	1	-	2	-	-	-	-	-	-	-	1	-	5
Frog/toad	-	5	-	-	-	2	-	-	-	-	-	-	1	8
Field vole	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Mouse	-	1	-	-	-	-	-	-	-	-	-	-	-	1
Vole	1	-	-	-	-	1	-	-	-	-	-	-	-	1
Total	71	94	19	25	18	6	5	4	4	4	5	11	4	270

tooth wear analysis suggests that only older animals were present, 9.1% of the bones analysed were unfused, suggesting that some young individuals were present also. It is therefore likely that, as with the other phases cattle were used for both meat and traction.

Butchery marks were noted on several bones, primarily in the form of chops through the shafts of long bones. There are cut marks present on a mandible, possibly caused during dismemberment, to gain access to the tongue. Withers heights could be calculated on two bones, giving heights of 1.02 m and 1.11 m.

The age at death of sheep/goat was calculated on five mandibles, giving ages of 1–3 months, 20-34 months and 3-5 years for three mandibles. The presence of very young individuals suggests that the animals are breeding close to the site, and it appears that more sheep/goats were being kept into adulthood in this phase. The fusion data also indicates that 29.4% of bones were unfused, which along with the tooth wear information perhaps reveals a change in the economy to one based primarily on wool production, but with some animals still being killed at an early age for meat.

Dismemberment cut marks and chops through the shafts of long bones suggest that some sheep/goats were being processed for meat and marrow. Withers heights could not be calculated from any of the bone measurements, and no articulations were seen between any bones. One metatarsal has a lump on the shaft, possibly due to trauma.

Two pig mandibles could be aged, suggesting one immature and one sub-adult animal. A total of 77.8% of relevant bones were unfused, suggesting that a large proportion of the pig population were killed before reaching maturity. A large proportion of the pig bones comprise teeth and feet bones, further suggesting that the animals were brought in as whole carcasses and processed at the site. The presence of foetal/neonatal bones also suggests that they were breeding within the vicinity of the site.

Butchery marks were only noted on one maxilla, probably occurred during dismemberment.

The minimum number of horse is one. One animal was aged at 5.5–7.5 years. One unfused proximal tibia suggests another animal died before reaching 3–3.5 years of age. Two bones have been chopped through the shaft, probably for marrow extraction. Withers height could not be calculated from the measurements taken, and no pathologies were noted.

The minimum number of dog is one. The majority of the remains were recovered from pit 6675, with one bone from posthole 6136.

A minimum of one domestic fowl was recovered, with at least one juvenile present. The only other bird species identified was mallard. The only wild mammals present were various small creatures such as field vole and mouse. There is also evidence for frog/toad.

Phase 4: 12th century to 14th century

The total fragment counts of cattle and sheep/goat from this phase are almost equal, with pig present in fewer numbers. Two sheep bones were identified, which have been combined with the sheep/goat bones for this discussion. The minimum number suggests that sheep/goats are the dominant at four, with a minimum of three cattle and pig present. There are considerably more medium sized unidentifiable fragments than large fragments, further suggesting that sheep/goat and possibly pig were more numerous than cattle during this phase.

The bones are distributed throughout a variety of features, with pits being the most common for bone deposition, as shown in Table 4.38 below.

Age at death could be estimated using three mandibles, gives ages of 18–30 months, adult and

Table 4.38: Distribution of animal bones from phase 4

	Ditch	*Drain*	*Gully*	*Layer*	*Pit*	*Post hole*	*Quarry pit*	*Structure*	*Tree throw*	*Total*
Cattle	36	1	3	1	52	-	10	1	-	104
Sheep/goat	47	-	4	-	36	-	12	-	1	100
Pig	33	-	-	-	20	1	6	1	-	61
Horse	3	-	2	-	9	2	1	-	-	17
Dog	-	-	1	-	55	-	1	-	-	57
Domestic fowl	4	-	-	-	2	-	-	-	1	7
Goose	-	-	-	-	1	-	-	-	-	1
Red deer	1	-	-	-	1	-	-	-	-	2
Bird	2	-	-	-	2	-	1	1	-	6
Fox	1	-	-	-	-	-	-	-	-	1
Frog/toad	1	-	-	-	1	-	-	-	-	2
Total	128	1	10	1	179	3	31	3	2	358

old adult. Fusion data suggests that 20.7 % of relevant bones were unfused, suggesting that cattle were used for both meat and traction. Dismemberment cut marks were noted on several bones, and many had been chopped for marrow extraction. Skinning marks were also noted around the base of a single horn core. This suggests that cattle were used for a number of different products during this phase.

Withers heights could not be calculated from any of the measurements taken of the bones, and no articulations or pathologies were observed. A type 1 non-pathological depression is present on the proximal articulation of a 2nd phalanx.

Age at death of sheep/goat was calculated for eight mandibles, giving ages of 10–20 months for three, 20–34 months for one, 3–5 years for two, 5–8 years for one and >8 years for another. This suggests a mixed economy of wool and meat production. Fusion data suggests that 35% of relevant bones were unfused, further substantiating the tooth wear evidence that sheep were kept for meat and wool. The presence of foetal/neonatal bones also suggests that sheep/goats were being bred within the vicinity of the site.

One bone had been chopped for marrow extraction, and there were cut marks evident on a mandibular ramus, probably caused by dismemberment to gain access to the tongue. Withers heights could not be calculated from any of the measurements taken, and no pathologies were observed on any of the bones.

Five pig mandibles could be aged, giving ages of immature for two and sub-adult for three. Fusion data indicated that 43.8% of the bones analysed were unfused, suggesting that almost half of the pigs were killed before reaching skeletal maturity. Cut marks were noted on several bones, and some had been chopped for marrow extraction. No pathologies were recorded, and only one articulation between a radius and ulna was observed, from ditch 7329.

A minimum number of two horses were recovered from this phase, neither of which could be aged using tooth eruption and wear stages. Fusion data suggests that the horses had reached skeletal maturity before they died. One cut mark was observed on a 2nd metacarpal, which also had pathological changes; it appears to have been fusing to the 3rd metacarpal with bone remodelling, and was possibly caused by infection along shaft. Articulations were observed between a 2nd, 3rd and 4th metatarsal from pit 9439.

The minimum number of dogs is two. The majority of the bones are from an articulating skeleton from pit 15567, and appear to be from an adult dog. There is also a mandible from quarry pit 9344, which has been aged as <6-7 months, and an unfused scapula from pit 9341, possibly of the same age at death. Withers heights could be calculated on the skeleton, giving a height of approximately 0.40 m. No pathologies or butchery marks were seen on any of the bones.

A minimum number of three domestic fowl were recovered from this phase, one of which was a juvenile bird. A single goose bone, from pit 6267, suggests that geese had been eaten during this phase, although how much they would have contributed to the diet cannot be inferred from a single bone. A fragment of red deer antler and a metatarsal with dismemberment cut marks indicates that the local population perhaps undertook some hunting. The remaining wild animals identified from this phase were a single fox bone and two frog/toad bones.

Phase 5: Late 14th – late 15th century

The total fragment count from this phase suggests that sheep/goat were present in greater numbers than cattle and pig. This is also true of the minimum number of individuals, which suggests a minimum of nine sheep/goats, five pig and four cattle. There is also a greater number of unidentified medium sized fragments than large fragments, which would likely further increase the numbers of sheep/goat and perhaps pig. Five sheep bones and one goat bone were identified from this phase, which will be discussed with the sheep/goat remains.

The majority of the bones were recovered from quarry pits, with slightly fewer from ditches, and the remaining bone scattered over a number of features, as shown in Table 4.39 below.

Age at death of cattle could be determined from two mandibles, giving ages of 1-8 months and 8-18 months. It is difficult to determine the use of cattle from only two ageable mandibles, but the fusion data suggests that 26.6% of the relevant bones were unfused, which is similar to the evidence from earlier phases and suggests that cattle had been kept for meat production, and to a lesser extent for traction.

Butchery marks are primarily those attributed to marrow extraction, but there is also evidence of dismemberment and skinning, suggesting that the entire carcass was used. Withers heights could be calculated for two individuals, giving heights of 1.03 m and 1.13 m. Pathological changes were observed on one bone, a metatarsal with osteophytic lipping and slight porosity of the proximal articulation, characteristic of degenerative joint disease. A 2nd phalanx has a type 1 non-pathological lesion on the proximal articulation.

Age at death for sheep/goats could be estimated using eight mandibles, and gave ages of 3–10 months for one, 10–20 months for one, 20–34 months for three, 3–5 years for two and 5–8 years for one. This suggests that the majority had been killed at an optimum age for meat production before reaching adulthood. The presence of three older individuals may suggest that some sheep/goats had been kept for wool, which is further substantiated by the fusion data, which indicates that 16.7% of bones were fused.

Table 4.39. Distribution of animal bone from phase 5

	Ditch	*Gully*	*Kiln*	*Layer*	*Other*	*Oven*	*Pit*	*Post hole*	*Quarry pit*	*Sunken feature building*	*Trackway*	*Total*
Cattle	42	3	5	11	-	1	9	3	55	3	-	132
Sheep/goat	69	4	4	15	2	-	8	2	56	11	-	171
Pig	18	2	2	4	-	-	2	1	43	-	-	72
Horse	18	2	5	-	-	-	1	-	18	2	1	47
Dog	5	-	-	-	-	-	1	-	14	-	-	20
Cat	-	-	1	-	-	-	-	-	3	-	-	4
Domestic fowl	-	-	1	-	-	-	1	-	2	-	-	4
Goose	1	-	3	1	-	-	-	-	1	-	-	6
Mallard	-	1	-	-	-	-	-	-	1	-	-	2
Bird	1	-	2	1	-	-	-	-	3	-	-	7
Fallow deer	1	-	-	-	-	-	-	-	-	-	-	1
Frog/toad	-	-	-	-	-	-	-	1	-	-	-	1
Hare	-	-	-	-	-	-	-	-	1	-	-	1
Rat	-	-	-	-	-	-	-	-	1	-	-	1
Total	155	12	23	32	2	1	22	7	198	16	1	469

Dismemberment cut marks are present on a number of bones, and many have been chopped for marrow extraction. Withers heights could not be determined from any of the measurements taken. Pathological changes were seen on a mandible, with swelling of medial aspect around M1 and M2, possibly due to an infection at tooth roots.

Nine pig mandibles could be aged, giving ages of juvenile for one, immature for two and sub-adult for six. This suggests that all the pigs had been killed before reaching maturity, but the fusion data suggests that only part of the pig population had been killed as juveniles, with 35% of the bones being unfused. Cut and chop marks are present on a number of bones, and an ulna has a type 3 non-pathological lesion on its articulation.

Horse bones from this phase give a MNI of two, although age at death could be calculated for at least five individuals, giving ages of 6.5–9 years, 7–9 .75 years, 9 .75–12.25 years, 11–20 years and 14+ years. All the horse bones were fused, with the exception of a calcaneus, suggesting one animal died before the age of three. Withers heights could be calculated of one individual, giving a height of 1.37 m. Two sets of left astragalus and calcaneus – one from quarry pit 6798, and the other from kiln 9072 – were articulated. The articulating tarsals from the kiln had eburnation and porosity on their articulations, with extensive new bone growth, characteristic of osteoarthritis. A metatarsal had tarsals fused to the proximal articulation, with extensive new bone growth around the joint, characteristic of spavin.

The minimum number of dogs is two. All the bones are fused, suggesting that all the remains recovered are from adult dogs. Withers heights could be calculated for one individual, giving a height of 0.38 m. An astragalus and calcaneus from ditch 15158 were seen to articulate.

Four cat bones were recovered, two of which were from juveniles. The birds present from this phase include domestic fowl, goose and mallard, all of which are likely to have been exploited for their meat, and possibly eggs. The wild species are represented by fallow deer and hare, and single rat bone and one frog/toad bone.

Phase 6: 16th – 19th century

A large proportion of the bones from this phase come from pits as shown in Table 4.40 below. Most of the bones are from cattle and give a minimum number of twenty. Sheep/goats were present in fewer numbers with a minimum number of five, and pig have a minimum of only two. The high minimum number of cattle is due to a large number of horn cores, the majority of which were recovered from pit 9342.

Age at death of cattle could only be determined using one mandible, giving an age of 1-8 months. Of the bones used for fusion analysis, only 8.3% were unfused, suggesting that the majority of animals had reached skeletal maturity. As most of the bones are horn cores from horn-working debris, there is too small a sample to infer animal husbandry regimes, but butchery marks on several bones suggest that at least some of the cattle were processed for consumption. One of the cattle skulls recovered has holes in the parietal bone, thought to be of congenital origin. Withers heights could not be calculated on any of the bones present, and no pathological changes were noted.

The age at death of sheep/goats was calculated on two mandibles, both giving ages of 5-8 years.

Table 4.40: Distribution of animal bone from phase 6

	Demolition layer	*Ditch*	*Evaluation trench*	*Finds reference*	*Gully*	*Layer*	*Pit*	*Quarry pit*	*Rubble layer*	*Structure*	*Subsoil*	*Wall*	*Well*	*Total*
Cattle	28	-	1	1	1	11	77	1	-	-	-	-	1	121
Sheep/goat	2	1	-	7	2	11	15	1	-	2	-	1	-	42
Pig	2	-	-	-	-	7	5	-	1	2	1	-	-	18
Horse	-	1	-	-	-	-	4	-	-	1	-	-	-	6
Dog	-	2	-	1	-	1	10	-	-	-	-	-	-	14
Domestic fowl	-	-	-	-	-	-	3	-	-	-	-	-	1	4
Goose	-	-	-	1	1	-	-	-	-	-	-	-	-	2
Mallard	-	-	-	-	-	-	2	-	-	-	-	-	-	2
Bird	-	-	-	-	-	-	2	-	-	-	-	-	-	2
Roe deer	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Buzzard	-	-	-	-	-	24	-	-	-	-	-	-	-	24
Total	32	4	1	11	4	54	118	2	1	5	1	1	2	236

Fusion data suggests that only 13.3% of the bones were unfused, which, along with the tooth wear data suggests that the majority of the sheep/goat were being kept well into adulthood, perhaps reflecting a change in the economy to one predominantly based on wool production.

Butchery marks were noted on three bones, one with cut marks, and another two which had been chopped. Withers heights could be determine for one individual, giving a height of 0.57 m. No articulations were seen between any of the bones.

Age at death for pig was calculated on two mandibles, giving ages of immature and sub-adult. The sample of pig bones is very small and the evidence for the proportion of unfused bones – only 50% – may not be representative of the age at death of the pig population as a whole. Cut marks were noted on two bones, but no pathologies or articulations were seen on any of the bones.

The minimum number of horse is one. Very little information can be gained from such a small sample, although the presence of a canine tooth suggests that at least one individual was a male. A minimum of two dogs were present during this phase, with four bones from pit 15189 likely to come from the same animal. A minimum of one domestic fowl was recovered, one bone of which exhibited dismemberment cut marks. Goose and mallard were also present, both of which are likely to have been consumed. The remains of a buzzard were recovered from layer 9004. This is more likely to have been a natural fatality rather than the product of human exploitation. The only other wild species recovered from this phase was a roe deer, represented by a single antler fragment, which had been chopped from the skull at the base.

Discussion (Fig. 4.30)

Although none of the bone samples from any phase on this site is large, some interesting conclusions may be drawn as to the use of domestic and wild species from the Saxon and medieval periods at Higham Ferrers. Domestic species are present in varying numbers throughout all periods, with some exploitation of wild species and birds also occurring, suggesting that whilst cattle, sheep/goat and pig provided the majority of the meat for the local population, the diet was supplemented by birds such as domestic fowl, goose and duck, and by the small scale hunting of deer.

During phase 1 and sub-phase 2b, sheep/goat, closely followed by pig appear to have been the dominant species, with cattle less exploited. While cattle probably provided the greatest amount of meat, sheep/goat would have been the most numerous animals providing not only meat, but also milk and wool. The evidence for high numbers of pigs from the Saxon period is not uncommon for this time, and they only started to decline in the later middle Saxon period (Phase 2c) and medieval phases, suggesting that there was no substantial decline in the woodland coverage until the late Saxon period. Phase 2c and 3 saw a change in the balance of livestock species; cattle became dominant and there was a relative decline in the numbers of sheep/goat and pig. However, the medieval period saw a reversion back to the predominance of sheep/goat, which is not unexpected as the wool industry increased during this period. The withers heights of cattle and sheep/goat provide too small a sample for any in-depth analysis, but they appear to be consistent with those expected from the Saxon and medieval periods.

Age at death is commonly used to determine animal butchery techniques, and this site is no exception. Throughout all phases cattle appear to have been primarily used for meat, and to a lesser extent for traction. Pathologies on some of the cattle bones suggest that some animals were suffering from osteoarthritis, a degenerative joint disease often associated with old age. Pathological changes

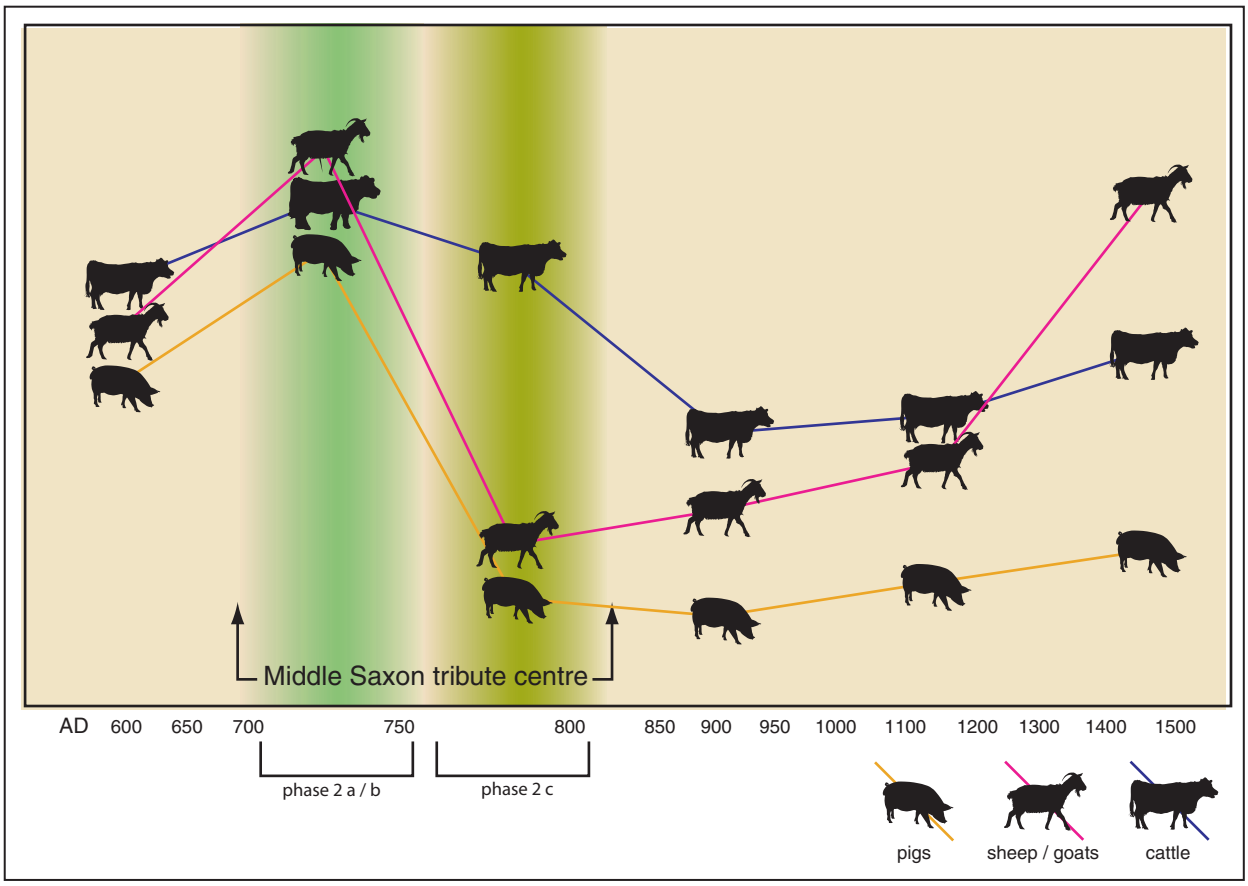

Fig. 4.30 Animal bone occurrence by species and phase

attributed to stress related trauma were also seen on several foot bones, a condition often associated with animals used for traction. There is some slight evidence – the presence of a number of neonatal bones – that cattle may have been exploited for small scale milk production, but these may just as easily have been the result of natural infant mortalities. It is only in Phase 6 that there is any evidence of definite industrial scale animal exploitation. This was a pit (9342) on Site 7, which produced a notable quantity of waste from horn working, although it was only partially excavated,

Sheep/goat also seem to have been primarily kept for meat production, but there is some evidence to suggest they had also been used for milk and wool. As with the cattle, some sheep/goat had been kept into adulthood, which would only have been for breeding and/or wool production. This is particularly evident in phases 2c, 5 and 6, where although the tooth wear evidence suggests that they had been killed at an optimum age for meat production, the fusion data shows a big decline in the number of unfused juvenile bones, suggesting a large part of the population had been kept into adulthood.

The age at death of pig is consistently young throughout all phases, which is not unexpected, as other than for breeding purposes there is little to be gained from keeping pigs into adulthood. There is an increase in the number of adult bones in the later medieval periods, as pig became increasingly domesticated and would have been bred closer to the site, and perhaps in the back yards of individual households, as opposed to roaming in the surrounding woodland in the earlier Saxon periods.

Horse is present but infrequent throughout all the phases, and primarily would have been kept for riding and light traction. Butchery marks on some of the horse bones are likely to represent the use of old animals for their hides, as food for animals and to a smaller extent maybe for the local population. While the consumption of horsemeat was officially banned by Pope Gregory III in AD 732, it is quite likely that horse meat – if available – would have been consumed when times were hard (Hollis 1946).

Dogs appear to have been present throughout the Saxon and medieval phases, which is not uncommon as they would have been kept as guard dogs and for hunting. The butchery of dogs is only evident from Phase 2b; two skulls appear to have been deliberately broken in a similar manner, possibly to extract the brain. However, it is unlikely that dog had been consumed regularly during any of the phases represented at Higham Ferrers. Pathological changes on an articulating dog skeleton from phase 2c are indicative of rickets. This disease

is uncommon in carnivores and was probably caused by a poor diet and a lack of vitamin D and by keeping the animal indoors – perhaps as a guard dog. Cats had also been present during phases 1, 2b and 5, and would have been tolerated for keeping down the numbers rodents around the site.

Domestic fowl were eaten consistently throughout all the periods from Higham Ferrers, with goose and duck also complementing the diet. These birds may have also provided eggs, and domestic fowl may have been used for cock fighting. Possible evidence for the hunting of red and roe deer is only seen in the earlier phases, although with such a small sample it is unlikely that deer would have contributed a great deal to the everyday diet of the local population. A single fallow deer bone was recovered from phase 5, suggesting that hunting had added little to the diet of the medieval population. The remaining wild species present, including rabbit, fox, badger and small rodents are likely to have been intrusive and not animals introduced to the site by the inhabitants.

The distribution of the bones varies throughout the different phases, with different types of feature favoured at different times. The majority of the bones from Phase 1 contexts were deposited in SFBs pits, with other pits as the second choice for disposal. The phase 2b enclosure ditches contained the majority of the bone, including a partial horse skeleton, partial dog skeleton and an almost complete cat. It is therefore likely that these ditches were used to dispose of unwanted animal carcasses. Phase 2c also saw the disposal of animal bone mainly in ditches, and primarily in ditch 7330. The material includes the two articulating dog skeletons, one of which had the rickets. These two skeletons were within the same context of the ditch, and may have been disposed at about the same time. Phase 3 saw an increase in the variety of features from which bone was recovered, and an increase in the use of pits for disposal. By phase 4 pits had become the most common place for disposing of bones, a trend which continued into phase 6.

The body part representation of all the domestic species indicates that the animals had been bred and slaughtered locally, with neonates of cattle, sheep/goat and pigs present throughout the various phases, and almost all skeletal elements represented for each phase. There are no obvious patterns in the distribution of body parts around the site (apart from the previously mentioned disposal of carcasses in the ditches), therefore no specific area of primary butchery can be identified. There is evidence that almost the entire carcasses of cattle had been used – the horn, the hide, the meat and marrow – but no specific sites of industrial activity can be detected until phase 6, where pit 9342, which contained a large number of cattle horn cores (MNI = 20), suggested a site where horn working may have taken place.

With regards to changes in husbandry through time on the site, cattle appear to been used fairly consistently for meat and traction, sheep/goat for meat but increasingly for wool production into the medieval period, and pigs consistently for meat, with more localised breeding in the medieval period. These patterns are to be expected from Saxon and medieval sites, but one of the main distinctions that can be noted is the variety and quantity of birds consumed during phase 2b. This phase produced a larger number and wider range of bird remains – both domestic and wild – compared to the other phases. There were domestic fowl, goose, mallard, teal, swan and grey partridge present. This is also the phase when the large oval enclosure ditch and associated structures were at their most developed. The site may have been established as a collection centre where animals could be housed before being moved on or slaughtered. Perhaps this increase in the number of bird bones consumed is a result of a more organised society, one where they are able to make more use of the birds around them, or perhaps it is simply that the birds were brought in by the people coming to the tribute centre with other livestock.

The transition from phase 2c to 3 saw a considerable drop in the total fragment counts of the main domestic species, perhaps an indication of the drop in the local population when the tribute centre went out of use. Whilst the animal bone evidence does not obviously suggest that Higham Ferrers was a high status site during any of the phases, there was clearly more livestock present, and more variety in the diet, during phase 2b.

FISH REMAINS *by Claire Ingrem*

Only contexts of Phases 1, 2b and 2c and 3 have produced any fish remains. A few bones belonging to small animals were amongst the recovered fish remains.

Methodology

The remains were examined at the Centre for Applied Archaeological Analyses (CAAA), University of Southampton following the standard methodology outlined on the CAAA website: (www.arch.soton.ac.uk/Research/CAAA/bones/Methodology.htm)

Data (Table 4.41)

Phase 1: 5th–6th century

Seven fragments of bone were recovered from contexts dated to this phase including two caudal vertebrae belonging to a medium sized (300-600 mm total length) eel (*Anguilla anguilla).* These came from SFB fill 6357 along with a fragment of jaw that was unidentifiable to taxa. A caudal vertebra belonging to a medium sized pike (*Esox lucius)* was

Table 4.41: Fish remains: Species representation according to phase (NISP)

Phase	*1*	*2b*	*2c*	*3*	*Total*
Esox lucius	1				1
Cyprinidae			1		1
Anguilla anguilla	2	1	2		5
?cyprinidae			1		1
Fish	1				1
Sm.mammal				1	1
Amphibian	1				1
Unidentifiable	2	1			3
Total	7	2	4	1	14

recovered from SFB fill 6058. SFB fills 6346 and 7037 produced a single undiagnostic fin spine and fin ray respectively. In addition, a single fragment belonging to an amphibian was recovered from context 6344.

Phase 2: Late 7th to early 9th century

Phase 2b – Deposits dated to the mid-late 8th century produced a single caudal vertebra belonging to a medium sized eel (context 6979).

Phase 2c – Deposits dated to the late 8th to early 9th century produced two eel vertebrae (contexts 6193, 7027), one from the anterior abdominal region and the other a caudal bone. In addition, a single anterior abdominal vertebra (context 7027) belonging to cyprinidae (carp-family) was recovered and a caudal vertebra probably also belonging to carp (context 6398).

Phase 3: mid 9th century to 11th century

A single rib belonging to a small mammal was the only small animal bone to be recovered from deposits dated to the mid 9th-11th century.

Discussion

Despite the small size of the sample it does provide evidence that the Saxon and medieval inhabitants at this site were consuming some fish. Eel are catadromous, spending part of their life cycle in freshwater environments and returning to the sea to spawn when they have reached adulthood (Wheeler, 1969). Eel probably would have been available in local rivers and lakes. Pike and cyprinidae are freshwater species (*ibid*), and like eel would have been available from local sources.

In light of the small number of fish bones recovered from the site, it is most likely that their remains represent the small scale exploitation of local fresh water sources. Fish remains are not generally present in large numbers on Saxon sites, but it is not unusual to find some evidence for fish consumption on sites of the period. Where the range of species encountered has limited, it is been interpreted as representing small scale local exploitation. This seems to be the case here. The presence of pike is interesting because it was considered something of a luxury with its consumption during the later Middle Ages restricted to those of high social standing (Hoffman, 1987).

CROP ECONOMY AND OTHER PLANT REMAINS *by Lisa Moffett*

Introduction

Very few Saxon settlements have yet been investigated archaeobotanically, and fewer still have been fully published. The settlements at Higham Ferrers span an unusually long period of time, from early Saxon to the later medieval, thus providing an unusually long view of a series of changing communities and the arable activities that took place around them.

Methodology

Samples were taken at the discretion of the excavator with advice from the author. Contexts with datable material which contained other occupation material were sampled and contexts which seemed of particular interest were targeted for sampling. Soil sample sizes were generally 40 litres, or less if the fill of the context was less. A total of 94 samples was collected from all of the sites, of which 42 were analysed.

The samples were processed by water flotation in a flotation machine at Oxford Archaeology. The mesh size used to collect the flot was 250µ. The residue (non-floating material) was collected on a 1 mm sieve. The flots were dried and stored in polythene bags. Assessment of the flots for their potential for further analysis was carried out by Dominique de Moulins for sites 1, 2 and 3 (1996), and by the author for all the other sites.

Full analysis was carried out by the author on selected samples as recommended in the assessments. These samples were either fully sorted or a subsample was sorted if the full sample was large. Most of the sorting was carried out by staff at Oxford Archaeology, but a few samples were sorted by the author. Identification was carried out by the author using the modern reference material in the collection at the University of Birmingham and the author's own collection. The results of the analysis are given in Tables 4.42-46 below. The taxonomy follows Stace (1997).

Results

Phase 1 (Table 4.42)

Features sampled from the early Saxon settlement included mainly SFBs, pits and postholes. Most of

the samples produced a few fragments of grain, some of which was identifiable as barley or wheat, and a few weed seeds. On Site 1 in particular the amount of identifiable material seemed to be small, while Site 4 appeared to have more charred material.

Samples from five of the SFBs were analysed, from Sites 1 and 4. A posthole fill from one of the Site 1 SFBs was also analysed, and a pit fill from Site 4, although the latter was an isolated pit and may possibly belong to Phase 2a. Two other SFBs were sampled from Site 1 but the samples were very poor in charred plant remains and were not further analysed.

Context 1257 (SFB1256) (Site 1)

This sunken feature building had a fairly limited number of cereal grains, mainly barley with a few oat grains, and a couple of grass seeds. Like the other SFBs from this site the number of items in the sample was low. This is in contrast to the SFBs from Site 4 which show considerably more evidence of crops.

Context 6058 (SFB 6057) (Site 4)

This is the only sunken feature building from Site 4 where the main cereal is hulled barley, which is twice as abundant as wheat. There are only a few grains of oat and no rye, but flax seeds are also very abundant. Flax is grown today for fibre and oil, and the seeds are also used in cooking and often used to decorate the tops of loaves of bread. Different types are now used for fibre and oil and may well have been in the Saxon period. Unfortunately it is not possible to tell different types apart from the seeds alone. Flax is unlikely to become charred as a result of any processing or other activities related to its use, other than cooking. The number of seeds found could represent a small number of capsules, less than those found on one plant. It is possible that flax was used for cooking, including bread. A few capsules, however, may also have been part of general domestic debris which was swept into a fire. No capsule fragments were found but the seeds would probably survive better than the fairly light capsules.

A few large fragments of legumes were found which are in the size range for pea or bean, but they were poorly preserved and could also have been large-seeded wild legumes. A few fragments of hazelnut shell (*Corylus avellana*) are possible evidence for wild food.

A very few chaff fragments of glume wheat, probably spelt, were also present. These are possibly residual from an earlier period, but it is also possible that spelt continued in cultivation in this period.

Context 6346 (SFB 6345) (Site 4)

Wheat was more abundant than barley, with a small number of grains of oat and rye, and a single flax seed.

Context 6357 (SFB 6356) (Site 4)

Free-threshing wheat was the most abundant cereal, with some barley and flax present in roughly equal numbers. Some of the barley grains had germinated but there were too few barley grains overall to draw any conclusions about this.

Context 6631 (SFB 6630) (Site 4)

Free-threshing wheat is also the main cereal in this sample, with a small amount of barley and oat, and a very few grains of rye. There was no sign that any of the grains had germinated and there were no flax seeds or other non-cereal crops found.

A small number of free-threshing wheat rachis nodes were found, including a few identified as bread wheat (*Triticum aestivum*) and two that appear to be a free-threshing tetraploid type (*Triticum turgidum/durum*). Tetraploid wheat rachises were found from a couple of other samples at Higham Ferrers (see below) and were dated to Phase 3, but generally this wheat in known in England mainly in medieval contexts. The presence of tetraploid wheat in this SFB in the 5th-6th centuries raises a suspicion that some material may be intrusive. Further radio-carbon dates from other sites are needed to clarify this issue.

This sample had the highest percentage of weeds, (over 20% of the assemblage) but it is doubtful if this is greatly significant since many of the seeds are of stinking mayweed (*Anthemis cotula*), a plant which can produce many seeds on a single flowerhead.

A single stone of sloe (*Prunus spinosa*) hints at possible collection of some wild food, though it could also have been burned if the thorny branches of sloe were used for a fire.

Context 7037 (Pit 7038) (Site 4)

In this pit hulled barley and free-threshing wheat seem to be present in roughly equal amounts. There are only a few grains of oat and rye, and there are no other crops. This sample had poorer preservation than some of the others, with nearly half of the cereal grains being unidentifiable.

Context 1300 (SFB 1266) (Site 1)

A small posthole on the northern edge of SFB 1266 had no cereal remains though it did have a single large-seeded legume, too poorly preserved to be further identified, which might or might not have been cultivated. The other plants, apart from a fragment of hazelnut shell (*Corylus avellana*), were all weedy species which could have grown in almost any type of disturbed ground, including crop fields, gardens, waste ground or waysides.

Context 1309 (Pit 1308) (Site 1)

This pit produced cereal grains, mainly of hulled barley, but also including some oat and wheat. A single glume base was found which could have been residual. There were a few weeds, but apart from the cereals, the main component of the samples was buds, probably of a tree or shrub. The

Table 4.42: Charred plant remains: Phase 1

Context no	*1257*	*1300*	*1309*	*6058*	*6346*	*6357*	*6631*	*7037*	
Sample no	*10*	*47*	*29*	*118*	*100/101*	*103*	*107*	*112*	
Phase	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	
Sample size (litres)	40	40	50						
Total flot size (mls)	75	50	300	250	180	210	80	148	
Amount analysed (mls)	100%	100%	60	125	55	210	40	124	
Items per litre	1	<1	4						
Feature	sfb	post hole	pit	sfb	sfb	sfb	sfb	pit fill	
Crop species									***Common name***
Triticum dicoccum/spelta spikelet forks				2					emmer/spelt
Triticum dicoccum/spelta glume bases			1						emmer/spelt
Triticum spelta L rachises				1					spelt
Triticum spelta glume bases					2				spelt
Triticum turgidum/durum rachises							2		rivet/macaroni wheat
Triticum aestivum L. rachises							5		bread wheat
Triticum cf *aestivum* L. rachises				3					? bread wheat
Triticum sp(p) free-threshing rachises							13	1	free-threshing wheat
Triticum sp(p) free-threshing				2	20	19	163	50	free-threshing wheat
Triticum sp(p)			2	19	30	14			wheat
Triticum sp(p) germinated				1					wheat sprouted
Triticum/Secale						1	8		wheat/rye
Secale cereale L					3		7	4	rye
Hordeum vulgare L rachises								1	barley
Hordeum vulgare L hulled, twisted				5		1			hulled barley
Hordeum vulgare L hulled, straight				2					hulled barley
Hordeum vulgare L hulled	4		8	37	9	6			hulled barley
Hordeum vulgare L hulled germinated					1	3			hulled barley sprouted
Hordeum vulgare L	8		12	3	16	5	17	44	barley
Hordeum vulgare L germinated						4			barley sprouted
Avena sp.	3		5	8	4		29	5	oat
Avena sp. germinated						1			oat sprouted
Avena/large Poaceae					2	1	10		oat/large grass
Cereal indet.	19		11	32	33	31	115	94	cereal
Cereal coleoptiles							1		cereal sprouts
Cereal/large Poaceae culm nodes					2			1	cereal/large grass
large *Vicia/Lathyrus/Pisum*		1		3					vetch/vetchling/bean/pea
Linum usitatissimum L				78	1	21			flax
Wild species									***Common name***
Urtica urens L		1			1	1			small nettle
Corylus avellana L (nutshell fragments)		1		3	2				hazel
Chenopodium sp		2	3	5			9	-	fat hen/goosefoot
Chenopodiaceae						1	9	3	goosefoot family
Chenopodiaceae/Caryophyllaceae		1							goosefoot family/pink family
Stellaria media type						1			chickweed
Spergula arvensis L				9	1	2			corn spurrey
Persicaria maculosa Gray			1						redshank
Fallopia convolvulus (L) A Löve					1		3		black-bindweed
Rumex sp		1	1					2	dock
Malvaceae							1		mallow family
Potentilla sp							1		cinquefoil
Prunus spinosa L							1		sloe
Prunus spinosa/Crataegus thorns					1				sloe/hawthorn
Prunus sp							1		sloe/bullace/damson
Vicia sativa L					1cf		1		vetch

Table 4.42 (continued): Charred plant remains: Phase 1

Context no	*1257*	*1300*	*1309*	*6058*	*6346*	*6357*	*6631*	*7037*	
Sample no	*10*	*47*	*29*	*118*	*100/101*	*103*	*107*	*112*	
Phase	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	
small-medium *Vicia/Lathyrus*					4	2	11		vetch/tare/vetchling
Melilotus/Medicago/Trifolium/Lotus		1	1		2	3			melilot/medick/clover/ bird's foot trefoil
Bupleurum rotundifolium L		1							thorow-wax
Daucus carota L						1			wild carrot
Hyoscyamus niger L		1						1	henbane
Plantago major L.					1				greater plantain
Plantago lanceolata type			1						ribwort plantain
Euphrasia/Odontites					4	2	4		eyebright/red bartsia
Galium cf *aparine*						2			cleavers
Galium sp								1	cleavers/bedstraw
Centaurea sp							1		knapweed/cornflower
Anthemis cotula L				13	12	1	37	5	stinking mayweed
Juncus sp								1	rush
Eleocharis palustris/uniglumis						1			spikerush
Carex sp								1	sedge
Poa annua L.					9				annual meadow grass
Bromus hordeaceus/secalinus					1		2		soft/rye brome
Phleum pratense L					7		5		timothy
Poaceae indet	2	1	3		7	4	14	4	unidentified grasses
cf *Claviceps purpurea*			1				1		? ergot
? tree/shrub buds			24						? tree/shrub buds
root/rhizome fragments			2						root/rhizome fragments
Unidentified	3				7		8	2	unidentified seeds & other fragments
Total items	39	11	76	226	183	128	479	220	

buds were damaged by charring and identification was not possible.

Discussion

Given that none of the sunken feature buildings has any evidence to suggest a laid or trampled floor in the base of the pit (Hardy Chapter 3 above and Chapter 5 below) it is possible that most of the charred material is redeposited material derived from backfill after the buildings went out of use. This is not certain since charred plant remains are small and could drop through cracks between the boards of a wooden floor laid over the pit. Over some time it is possible that significant amounts of charred material could accumulate in this way.

The presence of fairly abundant amounts of cereal remains in some of the SFBs is an interesting contrast to the results from SFBs sampled at Barrow Hills (Moffett 2007). There, 30 SFBs were sampled, including 15 sampled only by small 'control' samples to see if further work was worthwhile. Most of the SFBs (including all which were 'control' sampled) produced very small amounts of charred plant remains and all were sparse in cereals. The two buildings which did produce more material had mainly wild plants including weeds of disturbed ground, but also including plants of damp or wet ground, and grassland plants (Moffett 2007). These could have been derived from building materials, bedding, fodder, or even represent handfuls of plants collected and dried for tinder to start fires. Cereals must have been consumed by the inhabitants but there are only a few remains of free-threshing wheat, hulled barley, oats (though this may have been a weed) and field bean to suggest this. A few remains of glume wheats were assumed to be residual from the earlier prehistoric settlement at the site. The buildings need not all have been domestic (and only a few were in use at the same time) but it almost seems at Barrow Hills as if cereal related activities, such as parching or cooking, were taking place elsewhere, or the occupants were disposing of any waste without burning it.

The evidence from the sunken feature buildings at Higham Ferrers, however, at least at Site 4, very much suggest that crops were being used nearby, if not actually in the buildings. Free-threshing wheat, which was probably bread wheat, seems to have been the most common cereal, or at least the one most often exposed to fire. Barley and flax, however are the main crops in context 6058 (SFB 6057), suggesting possibly a different activity or use. Like

Barrow Hills there is a trace of glume wheat, spelt in this case, but so little that it seems unlikely this represents a contemporary crop. Rye is present, and may have been grown as a crop in its own right, but it is poorly represented. Cultivated and wild oats are indistinguishable from each other using just the grains. Very large oat grains might suggest cultivated oats, but the grains in these samples were all of a size which could have been either. Wild oats are often very successful weeds of cereals and may in any case have been tolerated by Saxon farmers who probably had different views from modern farmers concerning what they valued in their crop fields, especially if the weeds were edible.

The composition of the cereal assemblages from contexts 6058, 6346, 6357, 6631 and 7037 (from the buildings 6057, 6345, 6356, 6630, and pit 7038 respectively) suggest a processed and fairly clean crop product ready for consumption rather than any of the waste products of crop processing. Weed seeds vary in abundance from 29% of the assemblage in 6346 to 9% in 7037 and the greatest abundance of chaff was 4% in 6631. Chaff fragments and most weed seeds do not survive charring as well as cereal grains, however, and may be underrepresented. The presence of flax seeds also suggests possible domestic activities. Flax seeds are oily and also do not survive as well as cereal grains, yet in two of the samples flax is relatively abundant. The crops may have become burned as a result of minor spillages when handling, either directly when being prepared, or when being swept into a hearth afterwards. Roasting of cereals can be done to improve the ease with which they can be ground in a quern to flour or meal, and this may also have added some flavour. Hulled barley, (and hulled oat also), if they are to be used for human consumption, need to be either loosely milled, or parched and then pounded to remove the enclosing lemma and palea, a process known as hummeling (Fenton 1978). It is also possible that whole grains, and flax, were used to decorate loaves of bread just as they still are with granary and seed loaves today.

Phase 2 (Table 4.43)

Samples from this phase were taken from the enclosure ditch, the features associated with the buildings and the stone built malting kiln. Some of the samples from the ditch and the building features were relatively poor in charred plant remains and not analysed. In all 18 samples were analysed. There were no samples from Phase 2a.

Enclosure ditch

A fill from the enclosure extension ditch 15218 (Site 8) and a primary fill 15221 (Site 8) from the Phase 2b enclosure ditch both produced similar results. A rather sparse assemblage of cereal remains and weed seeds suggests no more than a few residual charred remains being deposited along with the rest of the fills.

However, a substantial amount of cereal remains was deposited in the enclosure ditch to the north of Site 3. This evaluation fill (451) may possibly have been an earlier midden deposit that was redeposited into the ditch. The cereal grains were mostly wheat, though there was also some barley. A few rachis remains suggest that the free-threshing wheat was bread wheat, but there are also a small number of remains of spelt or glume wheat chaff. These are likely to be residual from the Iron Age use of the area, though there is some evidence at a few other sites for continuing spelt cultivation in the Saxon period (Green 1979a, Murphy 1985). Weed seeds were a small part of this assemblage (6%) and most were a small-seeded legume which could not be identified but was similar to medick or clover. These plants can grow as weeds, but also have a value as forage and fodder. The crop assemblage resembles the remains of crops processed to the stage where they could be put in storage or prepared for consumption. If this deposit was a midden in origin it is likely that it was a domestic one.

The fills of the final phase of enclosure ditch in Phase 2c also produced plant assemblages which varied from small amounts of residual material with one or two items per litre to deposits with higher amounts of residual material or possible dumps of waste. One of the fills with greater amounts of material was evaluation context 564, which, in addition to free-threshing wheat and hulled barley, had a very few grains and chaff fragments of rye (*Secale cereale*). A single thorn of sloe or hawthorn (*Prunus spinosa/Crataegus* sp.) may be derived from fuel and suggests the local presence of one of these hedgerow/woodland edge species. There were also a few fragments of hazel nut (*Corylus avellana*) shell. Context 6050 (Site 4) was very similar in composition and abundance of material.

A possible dump of material (context 15428) with a still greater abundance of cereal remains also had primarily rye, rather than wheat or barley, and is the only context from the site where rye is the most abundant cereal. There were also some large legumes which may have been pea, though only two could be identified as such. This context (15428, Site 8) was comparable to context 451 in abundance of remains and may also have been a dump of domestic waste.

Features associated with the buildings

Two posthole fills from the building 7023 produced moderate amounts of free-threshing wheat with little in the way of other cereals, apart from a few grains of barley, and only a few weeds.

One postpipe fill (2154; posthole 2151, Building 2664, Figure 3.19), and one posthole fill (2644; posthole 2642, Building 2666, Figure 3.25) both produced more abundant charred remains than any of the fills from the enclosure ditch, or indeed from the two posthole fills analysed from building 7023. In both of these samples barley is the main cereal,

and in one of them (2154) there are some grains that have germinated, though this could be the result of poor storage. There are also some large legumes, especially in context 2644, and some oat and rye, especially in context 2154. A small amount of free-threshing wheat is also present, but these postpipe assemblages are clearly different from the posthole assemblages from building 7023. There is little, however, to suggest a different use or status between building 2666 and building 2664.

A further posthole (6617 Site 4) from a barn or storage building produced a substantial assemblage of mainly barley, some of it sprouted. Other grains may also have sprouted but charring has made it impossible to be certain. Many of the grains are distorted, however, and it is possible that many more had germinated than could be identified as such. As with the postpipe 2154 it is possible that these sprouted grains could have resulted from grain spoiling during storage, possibly adding weight to the interpretation of these as storage buildings. The grain would still need to have been exposed to fire to become charred, however, so some form of waste disposal of the damaged grain by burning would have to have been carried out. Burning would destroy pests that might contaminate future stored crops. Alternatively it is possible that some form of malt roasting was being carried out, but there was no evidence for any form of nearby malting kiln. (The malting oven on Site 5 (see below) was almost 200 metres away.)

A sample from a beamslot fill (9060, Site 6) of Building 9184 compared more closely with the postholes from building 7023. Here again there was only a moderate amount of material, and wheat was the main cereal, although there were also a few large legumes including a possible bean.

Malting oven (Table 4.44)

Several samples were taken from various parts of the Phase 2c stone-built malting oven (Site 5). Three samples (4014, 4015 and 307) came from the floor of the oven chamber, one (4037) from the bottom of the flue, and two (4042 and 4043) from near the bottom of the wall inside the oven chamber. The latter two were not analysed as they produced only small amounts of material.

The three samples from the floor of the oven were all very abundant in grain and were also very similar in composition. Barley represented about 90% of identifiable grains in all three samples. Oats were a small percentage in 4014 and 4015, and wheat was also a small percentage in 4015 and 307. It is clear, however, that these were minor contaminents. The barley was probably all hulled, and there were some twisted grains, which are characteristic of 6-row barley. In theory a population of all 2-row barley would have only straight grains and a population of all 6-row barley would have twisted and straight grains present in a ratio of 2 twisted grains to 1 straight. A mix of the two would be identifiable by a higher ratio of straight grains. The barley in these samples was too distorted to identify many grains as twisted or straight, however, so it remains possible that there was a mix of both types.

Roughly one quarter to one half of the barley could be identified as sprouted. Some of the wheat and oat grains had also germinated. Sprouting is not always easily detectable in charred grain. In some cases a distinct furrow is formed down the dorsal side of the grain but in grain that has only just germinated this may not be apparent. Charring often causes the embryos and the sprouts (coleoptiles) to detach from the grain and also often causes the sprouts to break, thus making it impossible to determine how long they were. Detached cereal sprouts were fairly abundant in these samples, but could not be counted because they were broken. It seems fairly clear, however, that the oven was indeed used for malting, and there is no evidence for any other use.

Malt is made from grain which has been germinated and allowed to grow just enough for the enzymes to begin the process of converting the starch to sugar. This process is called chitting. Once the grain has been chitted the process is arrested by lightly roasting the grain enough to kill the sprouts but not enough to damage the enzymes which will continue the process of converting starch into sugar during brewing. The malted grains are then crushed or ground and the malt can then be stored until required for brewing. Grain being chitted needs to be turned regularly to ensure even germination. In theory malted grain would have sprouts of roughly equal length, but in practice the maltsters may not always have been fussy about evenness of germination. The whole sprouts that were present in these assemblages seemed to vary in length and some of the barley grains (though only a few) were highly shrunken as if the germination process had gone too far.

Any cereal can be used to make malt but barley was favoured at least partly because the low nitrogen content improves the keeping qualities of the ale, though flavour may also have been a factor. Medieval assemblages of grain interpreted as malt seem to have often been of mixed cereals, however, and not necessarily barley. One example is the malting kiln at Oversley Castle, Warwickshire, which contained a mix mainly of oat and wheat with a little rye and practically no barley (Moffett 1997). This was actually a fairly low-status settlement associated with the castle and it may be that malt was made from whatever grain was to hand. The purity of the possible barley malt at Higham Ferrers suggests that either a high-quality product of the right flavour may have been desired, or that the other cereals had other uses.

The number of weed seeds is fairly low, between 3% and 11%, suggesting the crop was probably fairly well-cleaned before malting. The most common seeds were cabbage/turnip/mustard/charlock (*Brassica/Sinapis*) and stinking mayweed. Stinking

Table 4.43: Charred plant remains Phase 2

Context no	*451*	*2154*	*2644*	*6617*	*6901*	*6917*	*15218*
Sample no	*50*	*64*	*60*	*106*	*122*	*121*	*801*
Phase	*2b*	*2b*	*2b*	*4*	*2b*	*2b*	*2b*
Sample size (litres)	40	10	10	10	10	10	40
Total flot size (mls)	200	60	600	60	4	8	145
Amount analysed	25%	100%	140 ml	50%	100%	100%	100%
Items per litre	28	67	62	74	5	5	<1
Feature	deposit in enclosure ditch	postpipe Building 2665	postpipe Building 2666	barn/store house posthole	posthole fill Building 7023	posthole fill Building 7023	fill of enclosure extension ditch
min = item partly or completely mineral-replaced							
Crop species							
Triticum dicoccum/spelta glume bases	2						
Triticum cf. *spelta* glume bases	1						
Triticum spelta/aestivum basal or sub-basal rachises	1						
Triticum aestivum L. rachises	3						
Triticum sp(p) free-threshing rachises	4	4	1				
Triticum sp(p) free-threshing	83	12	2		13	12	1
Triticum sp(p) rachises	2						
Triticum sp(p) glume bases	3						
Triticum sp(p)	62		1	6	4	28	2
Triticum/Secale							1
Secale cereale L rachises							
Secale cereale L		24	4	2	1	1	
Secale/Hordeum rachises							
Hordeum vulgare L rachises	2	1	4				
Hordeum vulgare L hulled, twisted		17		3			
Hordeum vulgare L hulled, straight		7					
Hordeum vulgare L hulled		213	44	121	1	2	2
Hordeum vulgare L hulled germinated		13		16			
Hordeum vulgare L	20			112	1	4	1
Hordeum vulgare L germinated	4			7			
Avena sp.		46	7	13	2	1	
Avena sp. germinated		14					
Avena/large Poaceae	1						
Avenae panicle nodes			1				
Cereal indet.	67	35	16	76	18		
Vicia faba L							
Pisum sativum L							
large *Vicia/Lathyrus/Pisum*	5	2	26				
Wild species							
Ranunculus acris/repens/bulbosus							1
Urtica urens L							
Corylus avellana L (nutshell fragments)							
Chenopodium sp				1	1		
Chenopodiaceae		187	7	7			2
Stellaria media type		1		1			
Agrostemma githago L		13	2	1			
Agrostemma githago L calyx tips							
Silene sp							
Polygonum aviculare L.		1		1			

15221	*564*	*6050*	*6193*	*6621*	*9060*	*15149*	*15428*	
804	*5*	*153*	*127*	*109*	*502*	*803*	*810*	
2b	*2c*	*2c*	*2c*	*2c*	*2c*	*2c*	*2c*	
40	40	40	40	30	40	40	10	
65	150	30	30	18	32	18	60	
100%	50%	100%	100%	100%	100%	100%	100%	
<1	6	7	2	2	4	1	35	
primary fill of enclosure ditch	middle fill of final enclosure ditch	fill of final enclosure ditch	fill of final enclosure ditch	fill of final enclosure ditch	beam slot fill of barn/storehouse	middle fill of final enclosure ditch	fill of final enclosure ditch	
								Common name
								emmer/spelt
								spelt
								spelt/bread wheat
		3			1		3	bread wheat
	4	1					1	free-threshing wheat
1	26	28	2	7	13		57	free-threshing wheat
	2							wheat
		2						wheat
2	8	84	13	17	21	10	22	wheat
	3	2	1		3		13	wheat/rye
	2	1					18	rye
	3	3			1		146	rye
			2					rye/barley
		3	2					barley
		1						hulled barley
								hulled barley
1		7		1			1	hulled barley
								hulled barley sprouted
	6	16	4	3	4		4	barley
			1					barley sprouted
2	3	5	1	1	3			oat
								oat sprouted
2					9	2		oat/large grass
								oat tribe
	28	71	13	20	39	3	42	cereal
					1cf			bean
							2	pea
					3	2	25	vetch/vetchling/bean/pea
								Common name
								buttercup
					1cf			small nettle
	5	1	1				1	hazel
		1						fat hen/goosefoot
					10			goosefoot family
								chickweed
	2		1					corncockle
	1							corncockle
		1						campion/catchfly
	1							knotgrass

Table 4.43 (continued): Charred plant remains Phase 2

Context no	*451*	*2154*	*2644*	*6617*	*6901*	*6917*	*15218*
Sample no	*50*	*64*	*60*	*106*	*122*	*121*	*801*
Phase	*2b*	*2b*	*2b*	*4*	*2b*	*2b*	*2b*
Fallopia convolvulus (L) A Löve		5	1	4			
Rumex actosella L				2			
Rumex sp	2	4	2	2			
cf Polygonaceae							
Brassica/Sinapis		1			1		
Potentilla sp							
Prunus spinosa/Crataegus thorns							
Vicia hirsuta (L) Gray				1			
Vicia sativa L							
small-medium *Vicia/Lathyrus*		2	2	1			
Melilotus/Medicago/Trifolium/Lotus	33			2			
Daucus carota L							
Apiaceae		2					
Hyoscyamus niger L							
Lithospermum arvense L.	2						
Galeopsis sp				1			
Plantago major L				1			
Plantago lanceolata type	2						
Euphrasia/Odontites							
Galium cf *aparine*				1			
Galium sp	1	6					
Lapsana communis L		1					
Anthemis cotula L	2	35	17	6	2	1	2
Asteraceae indet				2		1	
Juncus sp				1			
Eleocharis palustris/uniglumis							2
Carex sp							4
cf *Lolium temulentum* L							
Cynosurus cristatus L				1			
Bromus hordeaceus/secalinus	1						
Phleum pratense L				4			
Poaceae culm nodes	1	1					
Poaceae indet	5	17	2		3		2
Unidentified fragments		7	4				2
insect case							
Total items	309	671	143	396	47	50	22

mayweed is usually found on heavy soils, and, as noted above, it produces many seeds per head.

The flue sample is different from the oven chamber samples. There was less abundance of grain in the flue and the grain is mainly wheat, not barley. There was no sign that this wheat had sprouted. The flue samples also had many tiny pieces of silicified cereal chaff, some of it identifiable as wheat, with just a few awn fragments of barley. The pieces were too tiny and fragile to pick out of the sample, and counting them would be meaningless anyway as they were so fragmentary. They indicate, however that an abundance of wheat chaff was burned in the flue. This chaff appeared to be glume, lemma and awn fragments with no charred or silicified rachis remains or culm nodes. This may represent the light chaff by-product of winnowing the crop after it is threshed. This light chaff is very papery and would burn very quickly once it was alight. It would need to be used in very large quantities to be useful as fuel and would need to be continually replenished. It would be very impractical by itself as fuel for the malting kiln. However, light chaff would be very useful as tinder for starting fires. Since this chaff would mostly burn away in a fire it is almost certain that it is very under-repre-

15221	*564*	*6050*	*6193*	*6621*	*9060*	*15149*	*15428*	
804	*5*	*153*	*127*	*109*	*502*	*803*	*810*	
2b	*2c*	*2c*	*2c*	*2c*	*2c*	*2c*	*2c*	
							2	black-bindweed
								sheep's sorrel
1	3				1		1	dock
		4	26					knotweed family
								cabbage/turnip/
								mustard/ charlock
					1			cinquefoil
	1							sloe/hawthorn
								hairy tare
1min				1				vetch
3	2			1	2		1	vetch/tare/vetchling
		1			2	9	1	melilot/medick/clover/
								bird's foot trefoil
						3		wild carrot
								carrot family
		1						henbane
								field gromwell
								hempnettle
					1			greater plantain
								ribwort plantain
					9	1	1	eyebright/red bartsia
	1							cleavers
1					2	3	2	cleavers/bedstraw
								nipplewort
2	5	19	1		15		1	stinking mayweed
								daisy family
								rush
		1						spikerush
			1					sedge
	1							? darnel
								crested dog's tail
		1			1			soft/rye brome
					5			timothy
								grass stem nodes
2	5	3	1		8	1	1	unidentified grasses
1	7	3		1		5		unidentified seeds & other
1min								
18	119	263	70	52	154	39	345	

sented relative to the charred grains in the sample. Probably charred wheat grains were only a minor component of what originally was burned, and are present because a few grains were collected along with the chaff when it was gathered up.

The malting oven appears to have been deliberately destroyed rather than abandoned. The former is perhaps more likely since a stone built oven represents a considerable investment of resources. The preservation of the grain is fairly uniform in all the samples and this suggests it represents material from a single burning event rather than an accumulation from several firings.

Discussion

All of the assemblages from the enclosure ditch and the buildings have in common the fact that their composition is primarily cereal grain, most often wheat, but sometimes barley and in one case rye. Weed seeds are relatively few and this suggests that these grain assemblages are cleaned, or nearly cleaned, grain which has been processed and is ready for use or storage. There is no indication of any crop processing from any of these samples, though it should be borne in mind that grains survive charring significantly better than weed seeds or chaff and could be over-represented

Table 4.44: Charred plant remains Phase 2c malting oven

Context no	*307*	*4014*	*4015*	*4037*	
Sample no	*1*	*4*	*3*	*6*	
Phase	*2c*	*2c*	*2c*	*2c*	
Sample size (litres)	10	30	10	10	
Total flot size (mls)	500	3120	1170	90	
Amount analysed (mls)	105	180	73	100%	
Items per litre	146	96	177	25	
Feature	malting kiln	malting kiln	malting kiln	malting kiln	
Crop species					***Common name***
Triticum sp(p) free-threshing	14	6	40	18	free-threshing wheat
Triticum sp(p) silicified chaff fragments				many	wheat
Triticum sp(p)	24	12	12	104	wheat
Triticum sp(p) germinated			3		wheat sprouted
Triticum/Secale				2	wheat/rye
Secale cereale L	3		3	3	rye
Hordeum vulgare L hulled, twisted	49	45	43		hulled barley
Hordeum vulgare L hulled, straight	5		20		hulled barley
Hordeum vulgare L hulled	456	575	486		hulled barley
Hordeum vulgare L hulled germinated	153	285	136		hulled barley sprouted
Hordeum vulgare L	382	1455	444	20	barley
Hordeum vulgare L germinated	38		20		barley sprouted
Avena sp.	20	58	35	3	oat
Avena sp. germinated	32	39	60		oat sprouted
Avena/large Poaceae	20	2		5	oat/large grass
Cereal indet.	196	330	270	82	cereal
Cereal coleoptiles	100+	100+	100+		cereal sprouts
Linum usitatissimum L	1				flax
Wild species					***Common name***
Chenopodiaceae	6	10	5		goosefoot family
Stellaria media type			2	1	chickweed
Agrostemma githago L			2		corncockle
Polygonum aviculare L.	1				knotgrass
Fallopia convolvulus (L) A Löve		1			black-bindweed
Rumex sp		2			dock
Brassica/Sinapis	18	26	48		cabbage/turnip/mustard/ charlock
Vicia hirsuta (L) Gray			1		hairy tare
small-medium *Vicia/Lathyrus*	3	5	14		vetch/tare/vetchling
Plantago lanceolata type			1		ribwort plantain
Euphrasia/Odontites	3	3	15	2	eyebright/red bartsia
Galium sp	1				cleavers/bedstraw
Centaurea sp	1		1		knapweed/cornflower
Anthemis cotula L	22	27	70	4	stinking mayweed
Asteraceae indet		2	1		daisy family
Carex sp			1		sedge
Cynosurus cristatus L		1			crested dog's tail
Bromus hordeaceus/secalinus	5	1	7	1	soft/rye brome
Phleum pratense L		1			timothy
Poaceae indet	7		13	2	unidentified grasses
Unidentified		7	19	1	unidentified seeds & other fragments
Total items	1460	2893	1772	248	

relative to chaff and weeds. As in the previous phase, it is possible that the charred grain results mainly from domestic activities such as grain roasting, or simply disposing of rubbish in a fire. However, since some of the most abundant samples came from postholes of buildings possibly used for storage, it is worth considering whether some other non-domestic activity has resulted in charred grain. A threshed and cleaned crop product for storage would differ hardly at all from one being used for domestic consumption, apart, perhaps, from some final hand cleaning to remove the last weed seeds, bits of grit and other contaminants. The difficulty is how a few remains of a stored crop would be exposed to fire, since there is no evidence for any disaster or burning of grain on a large scale. One can only speculate that the remains of old crops might sometimes have been burned, especially if they were mouldy or infested with pests. Grain weevil holes can be seen in charred grain, but many others kinds of spoilage cannot.

The flue sample from the malting kiln is the only one that indicates a crop processing product other than cleaned grain. It is unlikely that light chaff would be transported in bulk quantities very far from where it was produced. It may be, therefore, that some crop processing was taking place on or near the site. Smaller quantities of light chaff might have been brought to the site from elsewhere for other purposes, such as packing material for breakable objects. Since we cannot know how much of this highly combustible material may have been burned away it is impossible to say how large an amount was used.

Phase 3 (Table 4.45)

Samples from fills (7027 and 7077) two hearths (7026 and 7076) from Site 4 and the fill (15305) from the Site 8 SFB 15300 were analysed, as well as the fill (2605) from the child's grave (2604), a fill (2006) of pit 2009, two postpipes from possible fence posts (2291 and 2356) and fill (2004) of paddock gully (2010) from Site 2.

Gully fill (Site 2)

The fill (2004) of gully 2010 had mainly free-threshing wheat, with some barley, a few oats, a couple of grains of rye, and some large-seeded legumes that were not well-preserved enough to identify. This sample also produced some rachis fragments of rivet/macaroni wheat (*Triticum turgidum/durum*) and of bread wheat (*Triticum aestivum* s.l.). Rivet/macaroni wheat has been found on a number of medieval sites in southern Britain (Moffett 1991) and is also found in smoke-blackened thatch of late medieval and post-medieval houses (Letts 1999). Pre-Conquest remains have been more doubtful, but late Saxon rivet/macaroni is present at West Cotton, though it cannot yet be dated more precisely than 950-1100 AD (G. Campbell 1994 and forthcoming). A very few fragments of rivet/macaroni wheat rachis were found at Stratton in Bedfordshire, from a context loosely dated as 9th-11th centuries (Moffett and Smith in prep). Possible rivet wheat (*Triticum* cf. *turgidum*) occurs in a very small amount in a Saxo-Norman pit at West Walton (Murphy 1993). The rivet/macaroni wheat from Higham Ferrers was radiocarbon dated by AMS to cal AD 770-100 (1150+/-45 BP) (OxA-10126). This is the first radiocarbon dated evidence of pre-Conquest rivet/macaroni wheat in England. Rivet and macaroni wheat are generally not distinguishable from their rachis remains, but in England rivet wheat is the more likely crop as it is known from post-medieval records and is also more tolerant of the climate.

There were also a couple of large-seeded legumes in the sample and a single seed of opium poppy (*Papaver somniferum*). It appeared that some of the seeds were mineralised.

The sample from 2004 was large and could not be fully analysed in the time available, but because of the diverse nature of the material it was decided to scan the remaining unsorted fraction of the sample for the presence of other species and in hopes of finding an identifiable specimen of the large-seeded legume. The items identified in this process were not individually counted but are indicated as present in the sample by an asterisk in Table 4.45.

The results added some 18 taxa to the list of species from the gully fill and identified one seed of a large-seeded legume as a large-seeded type of common vetch (*Vicia sativa*). The large-seeded wild subspecies of common vetch (*Vicia sativa* ssp. *segetalis*) grows in grassy places and disturbed ground, and could easily grow as a crop weed. The cultivated subspecies (*Vicia sativa* ssp. *sativa*) has on average somewhat larger seeds. Unfortunately the two subspecies overlap in size and only with well-preserved material at the extreme ends of the size ranges is it possible to tell the two apart. The material from Higham Ferrers is too poorly preserved to be accurately measurable, but appears on the whole to be more within the size range for ssp. *segetalis*, though this does not wholly rule out a small-seeded variety of ssp. *sativa*.

Pit fill (Site 2)

Opium poppy and the *V. sativa*-sized legumes were not found in the fill (2006) of pit 2009, but otherwise the assemblage is fairly similar to 2004. The amount of material is less, though the relative richness of the sample is unknown as the size of the soil sample was unrecorded.

Postpipes

The postpipe (2291) produced abundant grains of hulled barley with only a few grains of oat and wheat and no chaff remains. About a third of the items in the sample were weed seeds, mainly the goosefoot family (Chenopodiaceae), *Brassica/Sinapis* and stinking mayweed. The other postpipe (2356)

Table 4.45: Charred plant remains Phases 3 & 4

Context no	*2004*	*2006*	*2356*	*2605*	*2291*	*7027*
Sample no	*56*	*14*	*61*	*57*	*24*	*110*
Phase	*3*	*3*	*3*	*3*	*3*	*3*
Sample size (litres)	40	?	20	10	10	40
Total flot size (mls)	110	40	10	50	75	50
Amount analysed (mls)	20	19	100%	100%	26%	100%
Items per litre	109	?	11.5	18.5	161	1
Feature	gully	pit	post pipe	child grave	post pipe	domestic
*=present in unsorted part of sample; min=mineral-replaced	lower fill					hearth
Crop species						
Triticum turgidum/durum rachises	5					
Triticum cf turgidum/durum rachises	1	1				
Triticum turgidum/durum glume bases	2					
Triticum spelta/aestivum rachises	1	1				
Triticum aestivum L. rachises	12			1cf		
Triticum sp(p) free-threshing rachises	27	3				
Triticum sp(p) free-threshing	140	15	20			4
Triticum sp(p) rachises	8	1				
Triticum sp(p)	35	7	15	19	2	6
Triticum sp(p) germinated						
Triticum/Secale		1		1		
Secale cereale L rachises	2	9				
Secale cereale L	*	6	7	9		
Secale/Hordeum rachises		3				
Hordeum vulgare L 6-row rachises	1					
Hordeum vulgare L rachises	6	4				
Hordeum vulgare L hulled, twisted			4		4	
Hordeum vulgare L hulled, straight					4	
Hordeum vulgare L hulled	4	8	30	17	154	
Hordeum vulgare L hulled germinated					1	
Hordeum vulgare L cf naked				1		
Hordeum vulgare L	57	9	14	19		3
Hordeum vulgare L germinated						
Avena sp.	10	2	11	8	9	1
Avena sp. germinated						
Avena/large Poaceae	22		4			
Avenae panicle nodes	1					
Cereal indet.	148	59	36	55	121	15
Cereal/large Poaceae culm nodes	2					
large *Vicia/Lathyrus/Pisum*	2		1	3	2	
Papaver somniferum L	1					
Ficus carica L						
Linum usitatissimum L						
Wild species						
Ranunculus acris/repens/bulbosus	1					
Corylus avellana L (nutshell fragments)	*			1		
Chenopodium sp		1	20			
Chenopodiaceae	7				69	
Stellaria media type	1					
Stellaria palustris/graminea	*					
Agrostemma githago L	*min	3	5	2	1	
Agrostemma githago L calyx tips	*	1				
Silene sp	2					
Polygonum aviculare L.	*		1			
Fallopia convolvulus (L) A Löve		1		3	2	
Rumex actosella L	*			1		

7077	*15305*	*15494*	*15556*	*15557*	
115	*809*	*811*	*813*	*812*	
3	*3*	*4*	*4*	*4*	
10	40	40	40	40	
18	30	160	30	150	
100%	100%	50%	100%	50%	
7	5	20	7	12	
domestic hearth	sfb fill	oven base deposit	lower pit fill	rubbish pit fill	
					Common name
			1		rivet/macaroni wheat
					?rivet/macaroni wheat
					rivet/macaroni wheat
					spelt/bread wheat
					bread wheat
		1			free-threshing wheat
	20	50	23		free-threshing wheat
					wheat
2	52	81	37	2	wheat
		1	1		wheat sprouted
	2	7			wheat/rye
					rye
	2	24	3	3	rye
					rye/barley
					6-row barley
					barley
					hulled barley
					hulled barley
	4	4	11	49	hulled barley
		8	20		hulled barley sprouted
					? naked barley
1	23	12	43	99	barley
		2			barley sprouted
	6	23	12	6	oat
		16			oat sprouted
	2		4		oat/large grass
					oat tribe
2	68	39	20	44	cereal
					cereal/large grass
	1		1		bean/vetch/vetchling/pea
	1min				opium poppy
		1min			fig
	3				flax
					Common name
					buttercup
					hazel
				4	fat hen/goosefoot
18	1	7	7		goosefoot family
					chickweed
			2		marsh/lesser stitchwort
		18		1	corncockle
					corncockle
					campion/catchfly
					knotgrass
				1	black-bindweed
2					sheep's sorrel

Table 4.45 (continued): Charred plant remains Phases 3 & 4

Context no	*2004*	*2006*	*2356*	*2605*	*2291*	*7027*
Sample no	*56*	*14*	*61*	*57*	*24*	*110*
Phase	*3*	*3*	*3*	*3*	*3*	*3*
Rumex sp	6	3		2	5	1
cf Polygonaceae				1		
Malvaceae						
Brassica rapa/nigra			17			
Brassica/Sinapis	*min	1			22	
Cruciferae						
Lysimachia/Anagallis			3			1
Rubus sp	*					
cf *Rosa* sp			1			
Agrimonia eupatoria L						
Crataegus sp						
Vicia hirsuta (L) Gray	*					
Vicia tetresperma (L) Schreber	1					
Vicia sativa L	*					
small-medium *Vicia/Lathyrus*	48	1	3	6		1
Melilotus/Medicago/Trifolium/Lotus	13	3				1
Euphorbia helioscopa	*					
Conium maculatum L						
Bupleurum rotundifolium L	6		1cf			
Daucus carota L			2			1cf
Apiaceae	1			1		
Hyoscyamus niger L						
Lithospermum arvense L.	*min					
Ballota nigra/Marrubium vulgare						
Galeopsis sp		1cf				
Plantago major L	6				1	
Plantago lanceolata type	*		1cf			
Euphrasia/Odontites	20		1	1	1	
Galium cf *aparine*	6			1	1	
Galium sp	12	2				
Sambucus nigra L	*min					
Valerianella dentata (L) Pollich	*					
Centaurea cyanus L						
Centaurea sp	*					
Lapsana communis L	*					
Anthemis cotula L	67	18	11	18	31	6
Tripleurospermum sp						
Asteraceae indet	1					
Eleocharis palustris/uniglumis	1					
Carex spp	3					3
Cynosurus cristatus L						
Poa annua L	*			4		
Bromus hordeaceus/secalinus		4	1			
Phleum pratense L	35	6	1	2		
Poaceae culm nodes	*			1		
Poaceae indet	42	18	10	5	3	2
Sparganium sp						
cf *Claviceps purpurea*	*					
Unidentified	16	2	11	3	3	
Total items	782	193	229	184	436	44

7077	*15305*	*15494*	*15556*	*15557*	
115	*809*	*811*	*813*	*812*	
3	*3*	*4*	*4*	*4*	
1	3		3	2	dock
					knotweed family
				1	mallow family
					wild turnip/black mustard
2	8	11			cabbage/turnip/mustard/ charlock
				1	cabbage family
5	1				loosestrife/pimpernel
					bramble/raspberry
					? rose
			1		agrimony
1cf					hawthorn
					hairy tare
					smooth tare
					vetch
2	1	2	9	1	vetch/tare/vetchling
5	1		1	3	melilot/medick/clover/ bird's foot trefoil
	1				sun spurge
		4			hemlock
					thorow-wasx
		1cf			wild carrot
					carrot family
	2				henbane
					field gromwell
				1	black horehound/white horehound
					hempnettle
					greater plantain
			1		ribwort plantain
		6	21	4	eyebright/red bartsia
					cleavers
	1	57	2	1	cleavers/bedstraw
					elder
					cornsalad
			1cf		cornflower
					knapweed/cornflower
					nipplewort
2	4	3	22	7	stinking mayweed
			1		mayweed
					daisy family
1			1		spikerush
7		2	2	1	sedge
				3	crested dog's tail
1			6	4	annual meadow grass
	1	8			soft/rye brome
	2			2	timothy
					grass stem nodes
6	3	9	23	1	unidentified grasses
		1			bur-reed
					? ergot
12	3	3	6	4	unidentified seeds & other fragments
69	215	399	284	245	

has less abundant remains, though still more than would be expected as 'background' residual material. This sample appeared to be a rather mixed deposit of barley and wheat with a few grains of oats and rye.

Child's grave (2604)

The child's grave also had a very similar mix of cereals. It possible that wheat and barley were being grown as a maslin (mixed crop), but it is also possible that the material in these deposits has been reworked from several sources.

SFB (15300)

The sunken feature building infill (15305), like the sampled contexts from Site 2, had a mixed assemblage of wheat and barley, but only half as many weeds (15%). There were also a few flax seeds, a large legume, and a mineralised seed of opium poppy. It did not have a great abundance of charred plant remains and it is probable that these were associated with the disuse of the building, although the assemblage does appear to be domestic waste.

Hearths (within Building 6811)

The fills (7027 and 7077) of two domestic hearths (7026 and 7076) both had relatively few remains, and there were more weeds, especially in 7077 which had mostly weed seeds. The weed species were the same as those in the more cereal-dominated assemblages, though fewer because the assemblages were small. It is possible that these represent a final domestic stage of hand crop-cleaning before use, but the assemblages are too small for much interpretation.

Discussion

Weed seeds seem to be just under a third of the items in all of these samples from Site 2, which is more than the samples from Phase 2 and suggests a possible change of crop-related activities or methods from the previous phase. The Phase 3 samples generally seem to be rather weedier than those from both Phases 1 and 2, though where assemblages are small it is difficult to compare the percentages of weeds. Chaff remains are very few at all periods and this suggests that there may not have been much burning of the straw and chaff products of crop processing. These products are rarely found on sites at any period, however, as the fragments of free-threshing cereal chaff are more likely to burn away while grains and weed seeds sink to the lower, oxygen-poor bottom and are thus charred rather than destroyed (Boardman and Jones 1990). Thus weed seeds might be the only remaining evidence for the presence of these crop processing products. Increased numbers of weeds might result from burning crop processing waste, but might also be the result of less meticulous husbandry. Chaff and straw have many uses and it may also be that they were kept carefully from fire, except when deliberately used for tinder or fuel.

Phase 4 (Table 4.45)

A deposit (15494) from the base of an oven (15493), and fills (15556 and 15557) from two pits, all from Site 8, were analysed.

Oven

The fill of the oven (15493) produced fairly abundant remains. Free-threshing wheat was the most abundant. Rye, oats and barley were present roughly equally and made up about a third of the identified grain between them. A few of the grains had sprouted but they may have spoiled in storage. There was also a single mineralised fig seed (*Ficus carica*).

Pit fills

Both of these pits were near areas of occupation and contained moderate amounts of charred plant remains. Like some of the samples from Phase 3, wheat and barley were present as a mix in 15566 and about a third of identifiable seeds were weed seeds. There were somewhat fewer weed seeds in 15557 and nearly all of the grain in it was barley, with no sign of sprouted grains.

Discussion

There is nothing in the archaeobotanical remains to distinguish the medieval Phase 4 from the late Saxon Phase 3, although such an assertion is qualified, with only three samples deriving from Phase 4 activity.

Phase 5 (Table 4.46)

The sampling from this phase mainly reflected the activities centred on the pottery industry. Two samples were analysed from ash lenses in the Site 6 pot kiln (9075 and 9099). Another sample was analysed from the floor of the potter's workshop (9212). Samples were also analysed from a quarry pit fill (15199), a shallow rubbish pit (15255) and an oven base (15380), all from Site 8.

Kiln 1

Both ash lenses had very similar assemblages, and were roughly half cultivated legumes and half arable weed seeds. The weeds were the same as those found with the cereal crops of previous periods. There were scarcely any cereal grains in these samples, however, and instead the crops were bean (*Vicia faba*), pea (*Pisum sativum*) and vetch (*Vicia sativa*). There was also a single, rather doubtfully identified, legume that could have been a lentil (*Lens culinaris*). The beans were all a small-seeded and sometimes rather rounded type like the 'Celtic' bean (*Vicia faba* var *minuta*). The vetch was large seeded and probably cultivated (*Vicia sativa* ssp *sativa*), but the large seeded wild type (*Vicia sativa* ssp *segetalis*) overlaps in size with cultivated vetch, and with relatively few identifiable charred seeds it was not possible to be completely certain.

Use of cultivated vetch as a fodder crop is documented for the medieval period (Campbell 1988) and some medieval archaeobotanical remains have been found (e.g. Moffett 1995), though perhaps the earliest unequivocal archaeobotanical example of cultivated *Vicia sativa* ssp. *sativa* is from the early 12th century at West Cotton (Campbell forthcoming). Vetch was probably not used for human consumption, except, perhaps in times of famine; it is possibly toxic to humans in large quantities (Ressler 1962).

Legumes are relatively rare in charred assemblages as they seem to be less often exposed to fire than cereals. They are often difficult to identify with confidence in charred material as they tend to lose the testa (seed coat) during charring and with it the hilum, which is usually necessary for identification. Distinguishing peas from beans can be particularly difficult with the small-seeded beans of the medieval and earlier periods which are about the same size as peas and not always very different in shape. Most of the legumes not be identified, but of those that were, beans appeared to be the most common. Some of the beans were very small and may have been under-developed beans from the ends of the pods.

The weediness of the assemblages suggests that perhaps these assemblages are the remains of legume threshing waste used to start the fire the in pottery kiln. Although no pod remains were found, it is likely that these would survive relatively poorly in a fire as they are light and also large enough to stay in the upper, aerobic, part of the fire.

Workshop floor (9212)

The assemblage from the workshop floor probably also derives from legume threshing waste. There were a few more peas than beans, though most of the legumes could not be identified. There were also a few more cereal remains, including a few chaff fragments, but cereals were still not a significant part of this assemblage.

Quarry pit fill (15199 – fill of 15197)

The quarry pit fill produced few remains, and most of these appeared to be weed seeds. There were a few vetch seeds, and there were also a number of seeds which could only be identified as vetch or vetchling (*Vicia/Lathyrus*) which may have been cultivated vetch but which could also have been several species of wild legumes and were therefore placed (but possibly erroneously) under wild species in the Table 4.46. In any case the material in the quarry sample appears to show only a minor amount of residual material from the fill.

Rubbish pit (15255 – fill of 15254)

The rubbish pit was different from all the other analysed samples from this phase in that it had no cultivated legumes and appeared to be mainly wheat grains and weed seeds. This may be domestic waste similar to that seen in Phases 3 and 4. The small number of chaff fragments in this sample suggests that both rivet wheat and bread wheat were being consumed, but it is not possible to say in what proportion as the two wheats cannot be distinguished from the grains.

Oven base (15380)

Cereals were insignificant in this sample and legumes were again the main crops. Vetch, bean and pea were all found, and also some lentils, though only a few could be securely identified. Some of the peas were very small, suggesting that they, like the beans in the pottery kiln, were underdeveloped and may have come from the ends of the pods. Lentil does poorly in Britain as a seed crop for human consumption as it needs heat and sunshine for the seed to set well and ripen. However, there are post-medieval documentary records of lentil being grown as a fodder crop (Plot 1705). Small numbers of lentils are occasionally found in medieval deposits (e.g. Moffett 1995) and late Saxon lentils were found at Yarnton (Stevens 2004).

The most striking aspect of this assemblage was the number of wild species, and in particular the number of small-seeded legumes which could have been a number of plants such as melilot, medick, clover or bird's foot trefoil (*Melilotus/Medicago/Trifolium/Lotus*). A few seeds of black medick (*Medicago lupulina*) were identified, but there was substantial variation in shape, and to a certain extent in size, among the small-seeded legumes, so it is probable that they are not all one species such as black medick. These small-seeded legumes account for approximately half the seeds of wild species in the sample. They are so abundant that it does lead one to wonder if perhaps, like the vetch and lentil, they also represent a leguminous forage or fodder crop.

Although most of the wild species are plants that can grow as weeds in many kinds of disturbed habitats as well as arable ground, there are also some which are more typical of calcareous grassland, such as greater knapweed (*Centaurea* cf *scabiosa*), hawkweed oxtongue (*Picris hieracioides*) and wild carrot (*Daucus carota*). There are more grass seeds than the other samples, though unfortunately the grasses are not distinctive enough to identify. Grasses grow in a variety of habitats besides grassland, so this is not a good indicator by itself, but taken with the herbaceous grassland species it does suggest that some of the non-cultivated species may derive from a different source than the segetal species such as corncockle (*Agrostemma githago*) and stinking mayweed. Perhaps the grassland plants were growing with the small-seeded legumes in a managed meadow which may have been cropped for hay. One can only speculate that handfuls of hay, as well as possibly legume threshing waste, may have been used to light the oven.

Table 4.46 Charred plant remains Phase 5

Context no	*9075*	*9099*	*9212*	*15199*	*15255*	*15380*	
Sample no	*509*	*508*	*503*	*800*	*806*	*808*	
Phase	*5*	*5*	*5*	*5*	*5*	*5*	
Sample size (litres)	10	10	10	10	20	40	
Total flot size (mls)	75	70	160	10	35	200	
Amount analysed	100%	100%	100%	100%	100%	50%	
Items per litre	20	19	32	4	12	68	
Feature	ash lens in pot kiln	ash lens in pot kiln	potters workshop floor	quarry pit fill	fill of shallow rubbish pit	oven base	
min=mineral-replaced							
Crop species							***Common name***
Triticum turgidum/durum rachises			1		1		rivet/macaroni wheat
Triticum cf turgidum/durum rachises					1		? rivet/macaroni wheat
Triticum aestivum L. rachises					1		bread wheat
Triticum sp(p) free-threshing rachises			3				free-threshing wheat
Triticum sp(p) free-threshing			4		6		free-threshing wheat
Triticum sp(p)	1		3		66	7	wheat
Triticum/Secale					2		wheat/rye
Hordeum vulgare L hulled					3		hulled barley
Hordeum vulgare L					5	5	barley
Avena sp.		1	3		5	1	oat
Avena/large Poaceae					4	1	oat/large grass
Cereal indet.		4	11	1	64	9	cereal
Vicia sativa L cf ssp *sativa*	6		6	3		11	cultivated? vetch
Vicia faba L	23	24	17			4	bean
Lens culinaris Medik						6	lentil
? *Lens culinaris* Medik	1					21	? lentil
Pisum sativum L	3	3	14			9	pea
cf *Pisum sativum* L	4	8	12				?pea
large *Vicia/Lathyrus/Pisum*	80	59	149	1		165	vetch/vetchling/bean/pea
Wild species							***Common name***
Ranunculus acris/repens/bulbosus						1	buttercup
Papaver sp (not *P. somniferum*)						14	poppy
Urtica dioica L						7	common nettle
Chenopodiaceae	10	8	4	2	9	22	goosefoot family
Chenopodiaceae/Caryophyllaceae							goosefoot family/pink family
Stellaria media type					1		chickweed
Agrostemma githago L						1	corncockle
Silene latifolia ssp *alba* (Mill) Greuter&Burdet						9	white campion
Silene sp						1	campion/catchfly
Polygonum aviculare L.		1			1	2	knotgrass
Rumex actosella L							sheep's sorrel
Rumex sp	21	37	59	3	1	65	dock
Malva sylvestris L						2	common mallow
cf small *Malva* sp						1	mallow
Malvaceae				1		5	mallow family
Brassica/Sinapis	1					3	cabbage/turnip/mustard/ charlock
Vicia/Lathyrus	1	1		22	9		vetch/tare/vetchling
Medicago lupulina L						7	black medick
Melilotus/Medicago/Trifolium/Lotus	20	14	4	1	1	523	melilot/medick/clover/ bird's foot trefoil
Conium maculatum L						3	hemlock
Daucus carota L						59	wild carrot
Apiaceae						57	carrot family
*Lithospermum arvens*e L.	1	1	1			18	field gromwell

Table 4.46 (continued) Charred plant remains Phase 5

Context no	*9075*	*9099*	*9212*	*15199*	*15255*	*15380*	
Sample no	*509*	*508*	*503*	*800*	*806*	*808*	
Phase	*5*	*5*	*5*	*5*	*5*	*5*	
Galeopsis sp			1				hempnettle
Plantago major L						15	greater plantain
Plantago lanceolata type			1				ribwort plantain
Euphrasia/Odontites				1	14	56	eyebright/red bartsia
Galium cf *aparine*	7					5	cleavers
Galium sp	4						cleavers/bedstraw
Sambucus nigra L						2	elder
Centaurea cf scabiosa L						5	greater knapweed
Centaurea sp						7	knapweed/cornflower
Lapsana communis L	1				1	10	nipplewort
cf *Leontodon autumnalis* L						1	autumn hawkbit
Picris hieracioides L						9	hawkweed oxtongue
Anthemis cotula L	11	13	8	4	29	17	stinking mayweed
Tripleurospermum sp						9	mayweed
Asteraceae indet		9	1			19	daisy family
Asteraceae indet flower head fragments						2	daisy family
Carex sp(p)	1		2			2	sedge(s)
cf *Lolium temulentum* L						4	? darnel
Poa annua L						3	annual meadow grass
? *Glyceria* sp						2	sweet-grass
Bromus hordeaceus/secalinus			1		1		soft/rye brome
Phleum pratense L		2			3		timothy
Poaceae indet			2		11	66	unidentified grasses
? tree/shrub buds			4				bud
Unidentified	7	2	8		2	52	unidentified seeds & other fragments
Total	203	187	319	39	241	1325	

Discussion

If the threshing waste from the legume crops was being used as tinder then it is likely that this was because it was available in some abundance. Threshing waste from several crops was probably combined, and may even have been stored as a useful product in its own right. It is likely that peas and beans would have been for human consumption but vetch and lentil are more likely to have been fodder crops. The relative paucity of domestic cereal remains familiar from the earlier periods is likely to be due to the changing use of the site. Domestic rubbish is probably still present, however, from the evidence of the rubbish pit. Rivet/macaroni wheat, bread wheat, barley and oat were all represented in the pit, and appear in small numbers in the other samples so it is likely that these crops were also in use on site.

Conclusion

The difference between the charred assemblages from Site 2 and Site 4 in Phase 1 is greater than the difference between Site 4 Phase 1 and the assemblages of Phase 2. Differences in activities are likely to be more significant in the resulting composition of cereal assemblages than mere chronological differences, especially when the same crops are involved throughout. These activities, however, are not always easy to define as the same crop product may become burned in a domestic fire due to activities relating to food preparation, or may have been the remains of a grain store burned as waste. The amount of charred material in the samples (except in the malting kiln) generally suggests burning due to minor accidents or rubbish disposal.

Bread wheat, rye, hulled barley, oat and flax were all cultivated throughout the Saxon period here, and peas and beans, though only a few of the legume seeds from the Saxon period could be identified. A single mineral-replaced seed of opium poppy was found in the late Saxon sunken feature building. Opium poppy was also found in the late Saxon/early medieval period at West Cotton (Campbell forthcoming).

The range of weed species from Phase 1 onwards included plants such as corncockle, thorow-wax and stinking mayweed which are often very typical of medieval cornfield assemblages. Some of the weed seeds may have been derived from hand cleaning of crops before final preparation for

consumption. Many of the larger and heavier seeds, such as cleavers, corncockle and dock would be difficult to completely remove in processing. Some of the smaller seeds such as stinking mayweed, fat hen/goosefoot, and wild turnip/black mustard, can remain enclosed in capsules or attached to seed heads which may also have been difficult to remove except by hand cleaning. Such cleanings might easily be disposed of in a domestic hearth. Grain may have been burned as a result of minor spillages being swept into a hearth. There may also have been small accidents if grain was roasted prior to hand milling or as part of the process of preparing it for consumption. De Moulins (2006) suggests for the medieval period that weed seeds and some cereal grains may have dropped onto domestic floors from the roof thatch and then been swept into the hearth, and this is also a possibility here. There is an increase in the prevalence of weeds from Phase 3, which may suggest a change of husbandry practice, such as less efficient weeding, or less thorough crop processing. It may possibly also suggest that crop processing waste was being burned, of which only the weeds have survived.

Rivet or macaroni wheat appears in Phase 3 and seems from the radiocarbon date to indeed be pre-Conquest. The fragments of rivet/macaroni wheat rachis found in the Phase 1 sunken feature building were not radiocarbon dated and should probably be regarded as intrusive until further evidence shows otherwise.

The later medieval period, Phase 5 shows a complete change of emphasis from cereals to legumes, but this too, is likely to be a function of site activities rather than representing a major change in diet. As suggested above it seems likely from the weediness of the samples that legume threshing waste was burned in the pottery kilns. Probably this was legume waste rather than cereal waste simply because of availability, which does suggest that the economy of the site had changed. Legume crops were often grown in rotation with cereal crops because *Rhizobium* bacteria in the soil can fix atmospheric nitrogen if they can colonise legume roots (Davis *et al* 1992) and thus improve the fertility of the soil. This fertility-improving feature of legumes has been known to farmers for millennia. Vetch, lentil, and possibly some mix of small-seeded legumes may also have been grown for fodder, and could been part of a system of greater intensification of land use.

CHARCOALS *by Gill Thompson and Robert Francis*

Aims

The primary aims of this analysis have been to identify patterns of wood use and charcoal deposition at Higham Ferrers, both chronologically and spatially. The samples selected for analysis were chosen to span the five phases of occupation at the site, and to include a variety of types of deposit, including:

- charcoal from two hearths and three pits (possibly domestic fuel and refuse)
- sweepings on the floor of a pottery-making workshop
- the ashy residues recovered from the bottom of a ceramic kiln
- charcoal from a malting oven

Overall charcoal assemblage (Tables 4.47-4.48)

Thirteen samples were submitted for analysis and fragments from nine of these were identified (Table 4.49). These samples had been recovered by flotation and, except for sample 810, the flots had previously been sorted for other charred plant macroremains.

The charcoal assemblages were initially assessed in terms of their size, degree of fragmentation and their concentration in relation to the quantity of deposit which had been processed by flotation. This was achieved by weighing the total charcoal sample, sieving it into four fractions: >8 mm, 4-8 mm, 2-4 mm and <2 mm, then weighing each fraction (Table 4.48).

Samples 3, 801 and 808, from contexts 4015, 15218 and 15322 respectively, were weighed in total, but not subdivided because it had been decided not to identify the material from these contexts. This was because contexts 15218 and 15322 were ditch fills of uncertain taphonomy; context 4015 (the malting oven) was represented by two charcoal samples (3 and 5) and sample 5 comprised significantly more material than sample 3. Sample 502, from context 9060 which was from a beam slot for a building, was not sub-divided nor analysed as it was a very small sample.

Samples 110 and 115, from contexts 7027 and 7077 respectively, were analysed, but not subdivided by size as the assemblages contained very few fragments, as indicated in Table 4.48.

The samples ranged in weight from less than 3g up to nearly 250g. Two of the largest samples were from pits (6344 and 7236) and another significant sample weighing more than 100g came from the malting oven. This material from the malting oven was also the most concentrated deposit, as its concentration index was significantly higher than all the other deposits. This was probably due to the large quantities of charred grain in the assemblage.

If the weight of each size fraction is considered in terms of its proportion for the overall sample, it is clear that some charcoal assemblages have a fairly equitable distribution of large, medium-sized and small fractions. These include the burnt lens 15428 and pits 6344 and 6979. However, the charcoal recovered from pit 7236 may have had a different taphonomy, as there is much more comminuted material in the <2 mm size class. The charcoals in the layers 9212 and 9099 have been broken up, and the samples include relatively few large pieces of charcoal, and relatively large fractions of unidentifiable small fragments in the <2 mm size class.

Charcoal Identification

Methodology

The fragments to be identified were selected from each of the three identifiable size fractions mentioned earlier: >8 mm, 4-8 mm and 2-4 mm, in order to check whether there had been differential fragmentation, with certain types of wood being better represented in the smaller or larger size categories.

Cumulative subsampling of groups of 30 fragments was carried out in order to characterise the taxonomic diversity of the assemblage. Initially, 30 fragments were randomly selected, comprising up to ten from each of the size fractions. The number of taxa represented (excluding 'Indeterminate') was calculated and a further 30 fragments were analysed, cumulatively calculating the number of taxa present, until the number had stabilised and no new charcoal types were added to the list. There were some instances where fewer than ten fragments were available for analysis and in these instances, all the material was examined.

Standard methods of specimen preparation (Leney & Casteel 1975) were followed, fracturing individual fragments in three planes and viewing the wood anatomy using a Leica MZ11 low power stereomicroscope at x10-40 and an epi-illuminating Olympus BX41m microscope at magnifications of x100-500. The wood anatomy was compared with published sources (Schweingruber 1982; Hather 2000) and with the modern charcoal reference collection from the Department of Archaeological Sciences at Bradford.

The taxonomic diversity is recorded in Table 4.49 and the proportions of the various taxa are presented in Table 4.50. This presents the total number of fragments analysed and their proportion within the whole assemblage. Equal weight is given to large, medium and small fragments.

The figures in the table are for the number of taxa (excluding Indeterminates) found in each cumulative subsample, i.e. subsample 1 is up to 30 fragments, subsample 2 is up to 60 fragments, subsample 3 is up to 90 fragments etc.

Discussion

The samples analysed varied in their taxonomic composition, from just one taxon to at least six taxa (plus indeterminate fragments). Five of the nine samples analysed were dominated by oak (*Quercus* sp.), and oak was indeed dominant overall, occurring in all nine contexts. It is noteworthy that the three pit samples were each dominated by a single taxon. All three pit samples were predominantly oak, with pits 6344 and 7236 being exclusively oak and the phase 2b pit, 6929, being almost entirely oak, with a single fragment of *Prunus*. This is consistent with the charcoals from individual fires being deposited quickly in the pits, without subsequent mixing with debris from other fires. Another sample dominated by oak was from the malting oven (context 4015) where the charcoal might possibly have been produced by the fire used to heat the grain. This sample, though, also included a small proportion of hazel and maple. The other contexts with mainly oak charcoal were the burnt lens within the ditch (context 15428) (77% oak) and the hearth context 7077 (60%). By contrast, the most diverse assemblages were from hearth context 7027, with six taxa identified, layer 9212 with five taxa, and layer 9099 with only four.

Samples 503 (debris over workshop floor, context 9212) and 508 (ash layer from base of pottery kiln flue, context 9099) comprised mostly roundwood of

Table 4.47: Catalogue of charcoal samples

Site	*Sample no.*	*Context no.*	*Feature no.*	*Feature type*	*Revised Phase*	*Notes*
4	102	6344	6343	pit	1: 5th-6th c	one of a series of pits close to SFBs
4	110	7027	6811	hearth	2c: late 8th - e 9th c	hearth in posthole building
4	115	7077	6811	hearth	2c: late 8th - e 9th c	hearth in posthole building
4	117	6979	7023	pit	2b: mid 8th - late 8th c	pit close by posthole building
4	120	7236	7235	pit	3: mid 9th - 11th c	also contained slag, animal bone, burnt stone, fired clay
5	3	4015	4010	malting oven	2c: late 8th - e 9th c	deposit from within chamber
5	5	4015	4010	malting oven	2c: late 8th - e 9th c	deposit from within chamber
6	502	9060	9184	gully	2c: late 8th - e 9th c	beam slot of building
6	503	9212	9008	layer	5: late 14th - late 15th c	debris over workshop floor
6	508	9099	9200	layer	5: late 14th - late 15th c	ash layer from base of pottery kiln flue
8	801	15218	15165	ditch fill	2b: mid 8th - late 8th c	enclosure ditch extension
8	808	15322	15323	ditch fill	5: late 14th - late 15th c	shallow ditch
8	810	15428	15190	burnt lens in ditch	2c: late 8th - e 9th c	from final variant of enclosure ditch

Shading indicates that material was identified.

Table 4.48: Weight data for charcoals

Phase	*1*	*2b*	*2b*	*2c*	*2c*	*2c*	*2c*	*2c*
Feature type	*Pit*	*Pit*	*Ditch fill*	*Malting oven*	*Malting oven*	*Hearth*	*Hearth*	*Burnt lens in ditch*
Sample no.	102	117	801	3	5	110	115	810
Context no.	6344	6979	15218	4015	4015	7027	7077	15428
Feature no.	6344	7023	15165	4010	4010	6811	6811	15190
Volume of soil processed (litres)	40	16	40	9	10	40	10	5
Weight of >8mm fraction (grammes)	52.4	20.4			0.4			5.0
Weight of 4-8mm fraction (grammes)	58.3	21.2			4.4			3.0
Weight of 2-4mm fraction (grammes)	60.6	26.5			27.7			2.0
Weight of <2mm fraction (grammes)	72.4	28.6			86.8			4.0
Total weight of sample (grammes)	243.7	96.7	14.8	18.2	119.3	3.3	2.7	14.0
Charcoal concentration (grammes of charcoal per litre of soil floated)	6.091	6.04	0.37	2.02	11.93	0.082	0.27	2.74

Table 4.49: Charcoal: Sample diversity: cumulative sub-sampling data

Phase	*1*	*2b*	*2c*	*2c*	*2c*	*2c*	*3*	*5*	*5*
Feature type	*Pit*	*Pit*	*Malting oven*	*Hearth*	*Hearth*	*Burnt lens in ditch*	*Pit*	*Layer*	*Layer*
Sample no.	102	117	5	110	115	810	120	503	508
Context no.	6344	6979	4015	7027	7077	15428	7236	9212	9099
Feature no.	6343	7023	4010	6811	6811	15190	7235	9008	9200
Subsample									
1	1	2	2	3	2	2	1	4	4
2		2	3	5	3	3		5	4
3			3	6	3	3		5	
4				6					

Table 4.50: Charcoal: Taxonomic composition of the assemblages

Revised phase	*1*	*2b*	*2c*	*2c*	*2c*	*2c*	*3*	*5*	*5*
Feature type	*Pit*	*Pit*	*Malting oven*	*Hearth*	*Hearth*	*Burnt lens in ditch*	*Pit*	*Layer*	*Layer*
Sample no.	102	117	5	110	115	810	120	503	508
Context no.	6344	6979	4015	7027	7077	15428	7236	9212	9099
Feature no.	6343	7023	4010	6811	6811	15190	7235	9008	9200
Acer			1 (1.53%)	16 (40%)					
Betula								1 (1.44%)	
Corylus			6 (9.23%)	2 (5%)	2 (6.6%)	2 (3.50%)			
Fraxinus								1 (1.44%)	1 (3.22%)
Pomoideae				9 (22.5%)				30 (43.47%)	10 (32.25%)
Prunus		1 (1.66%)		2 (5%)	10 (33.3%)	7 (12.28%)		27 (39.13%)	13 (41.93%)
Quercus	30 (100%)	59 (98.33%)	57 (87.69%)	9 (22.5%)	18 (60%)	44 (77.19%)	30 (100%)	7 (10.14%)	1 (3.22%)
Salix / Populus				1 (2.5%)					
Indeterminate			1 (1.53%)	1 (2.5%)		4 (7.01%)		3 (4.33%)	6 (19.35%)
Total no. of fragments analysed	30	60	65	40	30	57	30	69	31

2c Gully	*3 Pit*	*5 Ditch fill*	*5 Layer*	*5 Layer*
502	120	808	503	508
9060	7236	15322	9212	9099
9184	7235	15323	9008	9200
40	40	18	10	10
	9.8		2.8	0.4
	22.4		5.5	0.9
	62.0		6.5	2.0
	103.0		19.2	9.5
6.5	197.2	27.2	34	12.8
0.16	4.93	1.51	3.35	1.25

a diameter generally between 1-9 mm. The small size of these twigs suggests that the charcoal is more likely to be the debris from kindling or fuel wood rather than burnt structural material. This young wood proved hard to fracture and identify. Context 9212 (debris over the workshop floor) also contained small quantities of charred thorns, c.3–4 mm in length. Context 9212 included charcoals from *Prunus* and the Pomoideae. The *Prunus* may be that of *Prunus spinosa*, which has thorns, and there are also two thorned taxa within the Pomoideae sub family: *Crataegus* sp and *Malus sylvestris*. Unfortunately due to the small size of these fragments it was impossible to identify the Prunus fragments to species, and the Pomoideae are renowned for the difficulty of separating the species on the basis of their wood anatomy (Gale and Cutler, 2000, 183).

RADIOCARBON AND ARCHAEOMAGNETIC DATING RESULTS *(Figs 4.31)*

Radiocarbon dating

A total of six radiocarbon dates were obtained from the various sites.

Phase 2c Human bone
Wk 12318 (University of Waikato, New Zealand)
Sample ID HFKML 01 Cxt 6678
Description Left Calcaneus bone from human skeleton
NZA 13004
d13C (o/oo) -19.7 +/- 0.2 ‰
%
Radiocarbon age 1216 +/- 41 BP
delta-14C -127.6 +/- 4.2 ‰
DELTA- 14C (o/oo) -140.5 +/- 4.4 ‰
Per-cent modern 86.0 +/-0.4
Calibrated Age: 68.2% confidence interval (1 sigma)
770 AD to 890 AD
Calibrated Age: 95.4% confidence interval (2 sigma)
680AD (93.2%) 900AD
920AD (2.2%) 940AD

Phase 2c Human jawbone
R 28471/1 (Rafter Radiocarbon Laboratory, Institute of Geological and Nuclear Sciences Ltd, New Zealand)
Sample ID HFKML01 <355>
Description: Human bone
NZA 19399
d13C (o/oo) -19.51
Radiocarbon age 1235 +/- 35 BP
delta-14C (o/oo) -138.5 +/- 3.8
DELTA-14C -148.1 +/- 3.8
Per-cent modern 85.19 +/- 0.38
CALIBRATED AGE in terms of confidence intervals (Smoothing parameter: 1)
2 sigma interval is 683 AD to 889 AD 1267 BP to 1061 BP (98.2% of area)
1 sigma interval is 718 AD to 746 AD 1232 BP to 1204 BP (17.0% of area)
plus 767 AD to 823 AD 1183 BP to 1127 BP (34.8% of area)
plus 839 AD to 865 AD 1111 BP to 1085 BP (13.2% of area)

Phase 2c Human Jawbone
R 28471/2 (Rafter Radiocarbon Laboratory, Institute of Geological and Nuclear Sciences Ltd, New Zealand)
Sample ID HFKML01 <356>
Description: Human bone
NZA 19400
d13C (o/oo) -19.67
Radiocarbon age 1344 +/- 40 BP
delta-14C (o/oo) -150.4 +/- 4.2
DELTA-14C -159.6 +/- 4.2
Per-cent modern 84.04 +/- 0.42
CALIBRATED AGE in terms of confidence intervals (Smoothing parameter: 1)
2 sigma interval is 641 AD to 725 AD 1309 BP to 1225 BP (76.9% of area)
plus 739 AD to 770 AD 1211 BP to 1180 BP (14.5% of area)
1 sigma interval is 656 AD to 690 AD 1294 BP to 1260 BP (47.7% of area)

Phase 2c Malting oven grain
R 26416 (Rafter Radiocarbon Laboratory, Institute of Geological and Nuclear Sciences Ltd, New Zealand)
Sample ID <1> 307 HFKML00
Description Charred cereal grain – *Hordeum Vulgare*
NZA 13004
d13C (o/oo) -22.75
Radiocarbon age 1196 +/- 85 BP
delta-14C -139.7 +/- 9.2
DELTA- 14C (o/oo) 143.6 +/- 9.1
Per-cent modern 85.64 +/- 0.91
Calibrated Age: 68% confidence interval (1 sigma)
710 AD to 963 AD
Calibrated Age: 95% confidence interval (2 sigma)
662 AD to 1014 AD

Phase 3 Human bone (child burial)
OxA -10125
Sample ID HSF99/79/16
Description Human bone
d13C (o/oo) -18.9 ‰
Radiocarbon age 1095 +/- 45 BP
Calibrated Age: 95.0% confidence interval (2 sigma)
780 AD to 1030

Phase 3 Rivet wheat *(Triticum turgidum)* rachis
OxA -10126
Sample ID HFKM95
Description *Triticum turgidum* rachis
d13C (o/oo) -26.1 ‰
Radiocarbon age 1150 +/- 45 BP
Calibrated Age: 95.0% confidence interval (2 sigma)
770 AD to 1000 AD

Age, delta-14C, DELTA-14C and absolute per cent Modern are as defined by Stuiver and Polach Radiocarbon 19: 355-363 (1977).
1998 Atmospheric delta 14C and radiocarbon ages from: Stuiver, M., Reimer, P.J., Bard,E., Beck, J.W., Burr, G.S., Hughen, K.A., Kromer, B., McCormac, F.G., v.d. Plicht, J., and Spurk,M. 1998, Radiocarbon 40(3):1041-1083

Archaeomagnetic dating *by Paul Linford*

Introduction

During the excavation of Site 6, in 2002, the exposure of a well-preserved late medieval pottery kiln provided an opportunity to conduct a programme of archaeomagnetic analysis, to produce absolute dating to set beside both the typological date ranges of the pottery, and historical references to pottery production in Higham Ferrers.

Methodology

The feature was given the CfA archaeomagnetic feature code HF. Samples were collected from it using the disc method (see Appendix 3, section 1a) and orientated to magnetic north using a compass. Subsequently the International Geomagnetic Reference Field (IGRF 2000) was used to establish that magnetic north was 3.2° west of true north at the site on the date when the samples were taken and the sample orientations were corrected accordingly. Twenty-three samples were collected from the pedestal and wall lining of the kiln as indicated in the sketch plan shown in Figure 2 (Samples 01 and 09 fragmented on extraction, the number 15 was not used as a sample identifier). All but two of the samples were of very well fired clay: those from the pedestal (samples numbers <=18) were yellow/grey in colouration; those from the wall lining (sample numbers > 20) were a more orange colour. The two exceptions, 19 and 20, were discovered on cleaning in the laboratory, to be of a whitish stone that had been incorporated into the wall lining.

The natural remanent magnetisation (NRM) measured in archaeomagnetic samples is assumed to be caused by thermoremanent magnetisation (TRM) created at the time when the feature of which they were part was last fired. However, a secondary component acquired in later geomag-

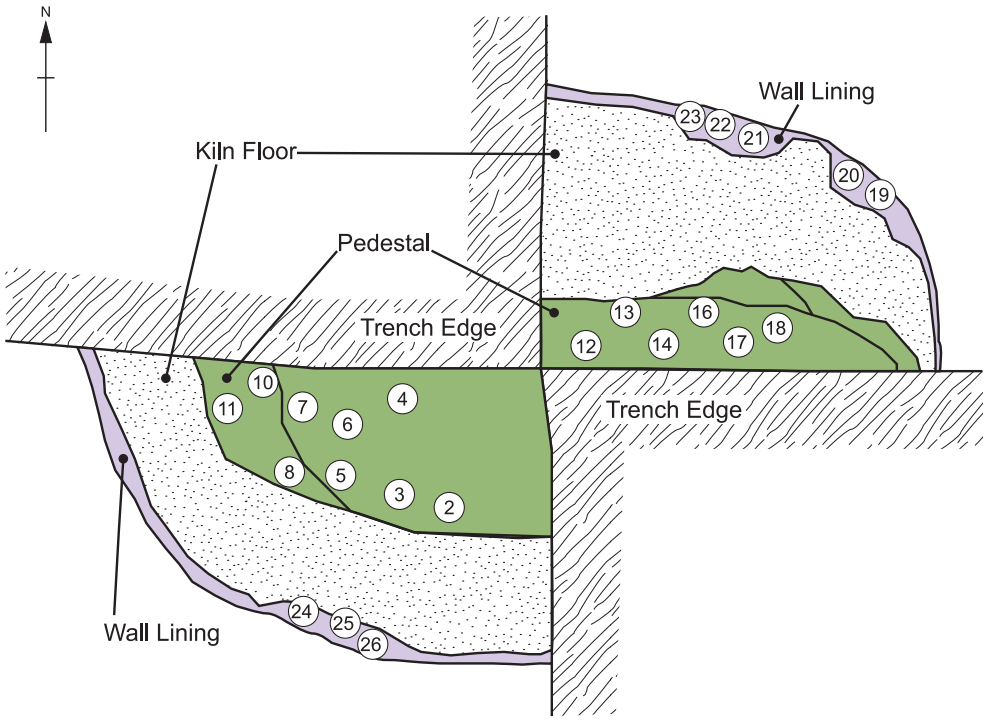

Fig. 4.31 Site 6: Sketch plan of Kiln 1 showing the locations of the archaeomagnetic samples

netic fields can also be present, caused by diagenesis or partial reheating. Additionally, the primary TRM may be overprinted by a viscous component, depending on the grain size distribution within the magnetic material. These secondary components are usually of lower stability than the primary TRM and can thus be removed by partial demagnetisation of the samples.

A typical strategy used in archaeomagnetic analysis of a feature is first to measure the NRM field recorded in all the samples. Then a number of representative samples are selected for pilot partial demagnetisation depending upon their material composition and NRM characteristics. Partial demagnetisation involves exposing the sample to an alternating magnetic field of fixed peak strength then measuring the resulting changes in its magnetisation. This procedure is repeated with increasing peak field strengths to build up a complete picture of the coercivity spectrum of the sample. The equipment used for these measurements is described in section 2 of the appendix.

After inspection of the coercivity spectra of the pilot samples, optimum field strength is selected where it is judged that the maximum amount of secondary magnetisation has been removed, whilst preserving the majority of the primary magnetisation. The remaining samples are then partially demagnetised using this optimum peak alternating field strength. In some cases the set of samples can be partitioned into groups with different material composition or magnetic characteristics. When this occurs several different field strengths may be used, each one judged to be the optimum for a particular group.

Plate 4.6 Kiln 1 during archaeomagnetic sampling, viewed from the west. The quadrant containing samples 01-11(see Fig. 4.31) is visible in the centre of the picture

A mean TRM direction is calculated from the sample measurements made after partial demagnetisation at their optimum field strength. Some samples may be excluded from this calculation if their TRM directions are so anomalous as to make them statistical outliers from the overall TRM distribution. A "magnetic refraction" correction is often applied to the sample mean TRM direction to compensate for distortion of the earth's magnetic field due to the geometry of the magnetic fabric of the feature itself. Then the mean is adjusted according to the location of the feature relative to a notional central point in the UK (Meriden), so that it can be compared with UK archaeomagnetic calibration data to produce a date of last firing for the feature. Notes concerning the mean calculation and subsequent calibration can be found in sections 3 and 4 of the appendix.

This measurement and calibration strategy was applied to the analysis of the samples from Higham Ferrers. All the samples used to calculate the mean TRM direction were taken from the pedestal, a horizontal surface, so a magnetic refraction correction of 2.4o was added to this mean's inclination before calibration.

Results

Sample NRM measurements and measurements after partial demagnetisation are recorded in Table Appendix 3.1. (Table and Figure numbers refer to Tables and Figures in Appendix 3 below). Figure Appendix 3.1 depicts the distribution of the sample TRM directions before and after partial demagnetisation. Table Appendix 3.2 records the pilot demagnetisation measurements made on samples 03, 14 and 25 whilst Figures Appendix 3.2-3.4 illustrate these results graphically.

The maximum stability of the TRM in each pilot sample was estimated using the method of Tarling and Symons (1967). The maximum stability parameters and ranges over which they persist are listed for each sample in Table Appendix 3.3. In this method, any sample with a maximum stability parameter greater than 2 is judged to record a stable TRM direction and a parameter value over 5 suggests extreme stability. The figures in Table Appendix 3.3 indicate that the magnetisations of all the pilot demagnetisation samples are extremely stable.

However, it can be seen from Table Appendix 3.1 that the stone samples, 19 and 20, have extremely low magnetisation intensities and highly anomalous

directions. These results indicate that the stone did not contain a suitable magnetic mineralogy to acquire a stable remanent magnetisation. These two samples were thus excluded from further analysis.

It is also clear from Figure Appendix 3.1 a, that the other samples that came from the kiln wall lining (sample numbers > 20) all have steeper inclinations than those taken from the pedestal, which cluster to form the main grouping. Furthermore, inspection of the pilot demagnetisation results from sample 25 (see Figure Appendix 3.4), suggests that this effect is not due to perturbation by low stability viscous remanence. Such anomalous steepening of the inclinations of samples taken from strongly magnetised features has been noted previously. Samples taken from the walls of kilns have been found to have inclinations often several degrees steeper than those of samples taken from the floors of the same kilns. The phenomenon is not well understood but it has been suggested that it is due either to magnetic refraction caused by the shape of the structure (Aitken and Hawley, 1971; Schurr et al. 1984), or to the magnetisation of those parts of the feature that cool first distorting the magnetic field through the feature (Tarling *et al*, 1986). Owing to this uncertainty, the remaining kiln wall lining samples were omitted from the present analysis, directed towards dating the Higham Ferrers kiln, but have been retained for possible future research into the phenomenon of magnetic distortion.

Inspection of the most stable ranges of the pilot samples in Table Appendix 3.3 suggested that the optimum field strength for partial demagnetisation of the remaining samples (all from the kiln pedestal) was 5mT. The results of measurements made after applying this demagnetising field are tabulated in Table Appendix 3.1 and depicted in Figure Appendix 3.1 b.

The mean TRM vector for the feature was calculated from the measurements made on the 15 pedestal samples after this 5mT partial demagnetisation:

At site: Dec = 2.3º Inc = 56.5º α_{95} = 2.0º k = 372.8
At Meriden: Dec = 2.0º Inc = 56.6º

Figure Appendix 3.5 shows the comparison of the mean TRM vector with the UK archaeomagnetic calibration curve depicted on a Bauer plot. The date of the last firing of the kiln deduced from it is:

1395 AD to 1425 AD at the 63% confidence level.
1385 AD to 1435 AD at the 95% confidence level.

Conclusions

Archaeomagnetic analysis of the Higham Ferrers kiln has shown it to be well fired but with some magnetic distortion to the remanence directions of the samples taken from the wall lining. However, after rejecting these samples, it was still possible to obtain a mean TRM vector of good precision using the 15 samples taken from the central pedestal of the structure. From this mean TRM it was possible to deduce an archaeomagnetic date for the last firing of the kiln, indicating that this event occurred in the early part of the 15th century AD. This date suggests that the kiln analysed in this report is not the one referred to in the documentary evidence and that Late Medieval Reduced Ware production at Higham Ferrers might thus have begun earlier than previously supposed.

Archaeomagnetic Date Summary

Archaeomagnetic ID:
HF
Feature:
Late medieval clay lined pottery kiln
Location:
Longitude 0.6oW, Latitude 52.3oN
Number of Samples (taken/used in mean):
23/15
AF Demagnetisation Applied:
5mT
Distortion Correction Applied:
+2.4º
Declination (at Meriden):
2.3º (2.0º)
Inclination (at Meriden):
56.5º (56.6º)
Alpha-95:
2.0º
k:
372.8
Date range (63% confidence):
1395 to 1425 AD
Date range (95% confidence):
1385 to 1435 AD
Independent date estimate:
1350 AD to 1550 AD (for pottery typology)