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## Excavation of the medieval waterfront at King Stable Street, Eton, Berkshire

*by Paul Blinkhorn and Greg Pugh*

*with contributions by*

*Kate Atherton, Greg Campbell, Bethan Charles, Nick Mitchell,  
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Oxford Archaeological Unit  
Occasional Paper Number 7

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August 2000

*Excavations at Eton King Stable Street*

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*Excavations at Eton King Stable Street*

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## SUMMARY

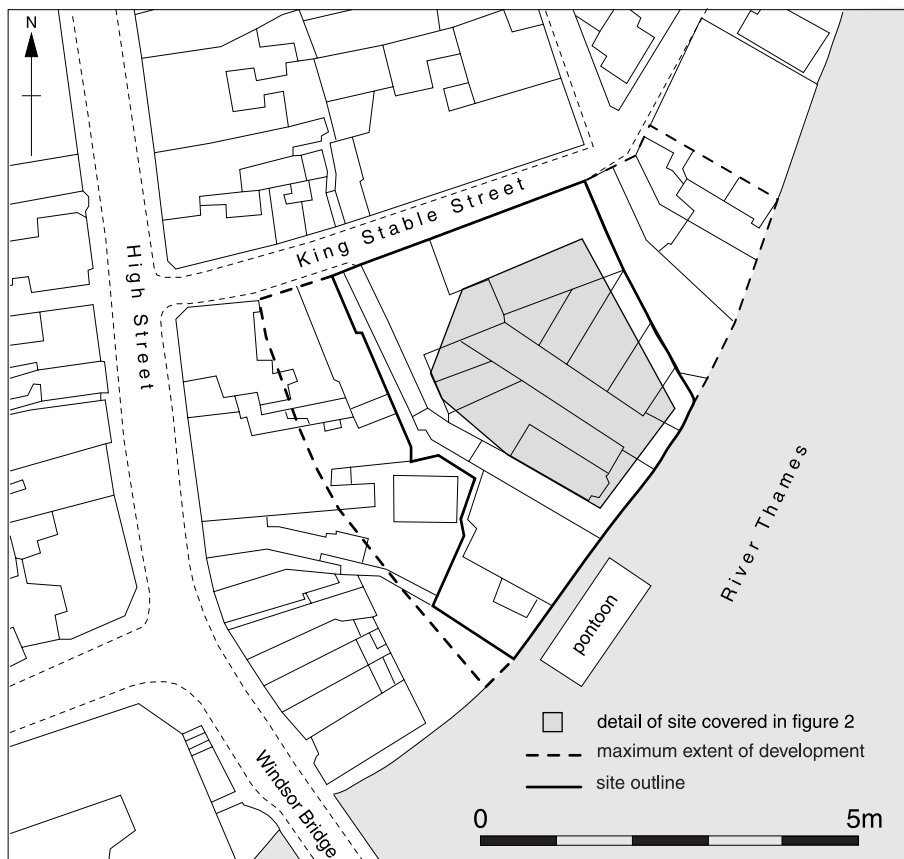
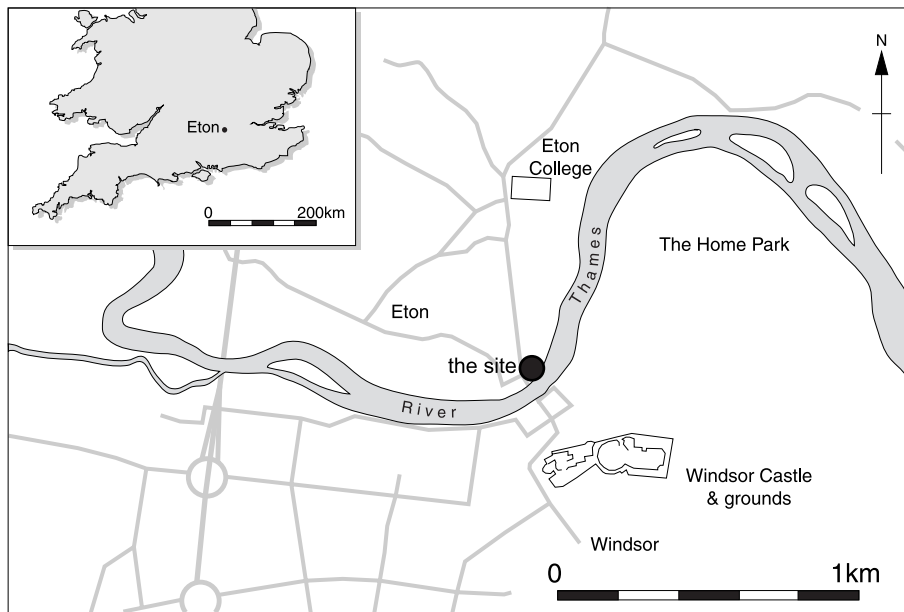
The Oxford Archaeological Unit (OAU) carried out an excavation in 1997 on a site alongside the north bank of the Thames in King Stable Street, Eton, Berkshire, on behalf of Eton College. The evidence indicated that the site probably served as a working area for properties fronting the approach (later High Street) to the north side of Windsor Bridge from the 12th century onwards. Evidence was also found of a succession of timber revetments constructed to consolidate the riverbank, although these were evidently lightweight constructions, and did not serve as major wharfage. Late medieval and post-medieval activity on the site was characterised by low intensity craft or industrial pursuits, prior to the development of the site in the 18th century and the construction of a malthouse.



*Plate 1. General view of the site looking south across the Thames to the Castle*



*Excavations at Eton King Stable Street*



**Figure 1. Site Location**

## PROJECT BACKGROUND

### Site Location (Figure 1)

The site comprised an area of approximately 0.2 ha. on the north bank of the River Thames immediately to the east of Windsor Bridge at NGR SU 9677 7732. The River Thames bounds the site to the south, with numbers 60-72 High Street to the west, King Stable Street to the north and no. 38 King Stable Street to the east. Before the excavation took place, the site was occupied by Eton Wharf House, a rowing clubhouse, and a timber yard, all of which were demolished in preparation for the development.

### Geology and Topography

The underlying geology is upper chalk overlain by river terrace gravel (Geological Survey Map, Sheet 269). The river terrace gravel is in turn overlain by a series of alluvial deposits comprising sandy silts overlain by sandy clays. The site lies at c 20 m OD and is separated from the River Thames by a modern brick, stone and concrete revetment.

### Historical Background

The historic core of Eton lies on the opposite bank of the Thames to the 12th century suburb of Windsor, which was known then as *Underore* (Astill 1978). Medieval Eton is thought to have extended from Windsor Bridge to Baldwin's Bridge, although archaeological support for this conjecture is wanting. The two stimuli for the development of Eton from the later medieval period would have been Windsor Bridge and the foundation of Eton College in 1440. Development would inevitably have concentrated along the straight road (later the High Street) which links the two.

The development site at King Stable Street lies on the east side of the High Street. The street appears to be named after the royal stables (for Windsor), which were probably situated in the open yard at the east end of the road. Curiously the stables lay in the parliamentary constituency of Windsor, although north of the river, and became a matter of Parliamentary Inquiry in the 19th century. The stables were referred to in 1512, and repairs were carried out in the 1570's, but it is not certain when they ceased to be used. The new mews were built in Windsor in 1770's (Balance 1983, 28, 59). According to previous historians of Windsor a medieval church was reputed to have stood on the site of the malthouse in King Stable Street, but there seems to be no basis for this statement (*ibid.*). The development site is an historic property of Eton College, and although not easily identifiable in the extensive college property records without prolonged investigation, the estate plans have been consulted for this report, and provide sufficient information about the later history of the property.

On William Colliers 1742 map of Eton (not illustrated) there are buildings on the south street frontage of King Stable Street at each end. (Eton Archives 51/135

reproduced in Balance 1983). The College plan book of 1777 includes a plan of Mr George Sexton's leasehold (see Figure 12), comprising most of the development site, on which was a malthouse, garden and a yard fronting onto the River Thames; on the west side was a house (fronting onto the High Street) with a yard and garden extending down to the river (Eton Archives Coll/EG2/14, '*Plans of the Several Tenements in Eton and Windsor belonging to...Eton College, Taken in 1777 by Richard Binfield*', map No.9). An undated plan of 'Eton Wharf' (not illustrated) which must date from the mid 19th century (Eton Archives 51/75) shows that the malthouse had been demolished and replaced by an office, house and cottage, with a large coal shed on the east side of the property and a wharf alongside the river. What had previously been the garden of the house on the west side is now marked as 'dock' next to a shed, although no water inlet is indicated. This plan must date from after 1858, since another plan marks the northern extension of the coalshed as being 'built since 1858' (Eton Archives 51/198). This revised layout is confirmed by the Ordnance Survey Sheet of 1869. Subsequently a sawmill and a builders yard occupied the site, and latterly a rowing clubhouse, Eton Wharf House.

### Previous Archaeological Work

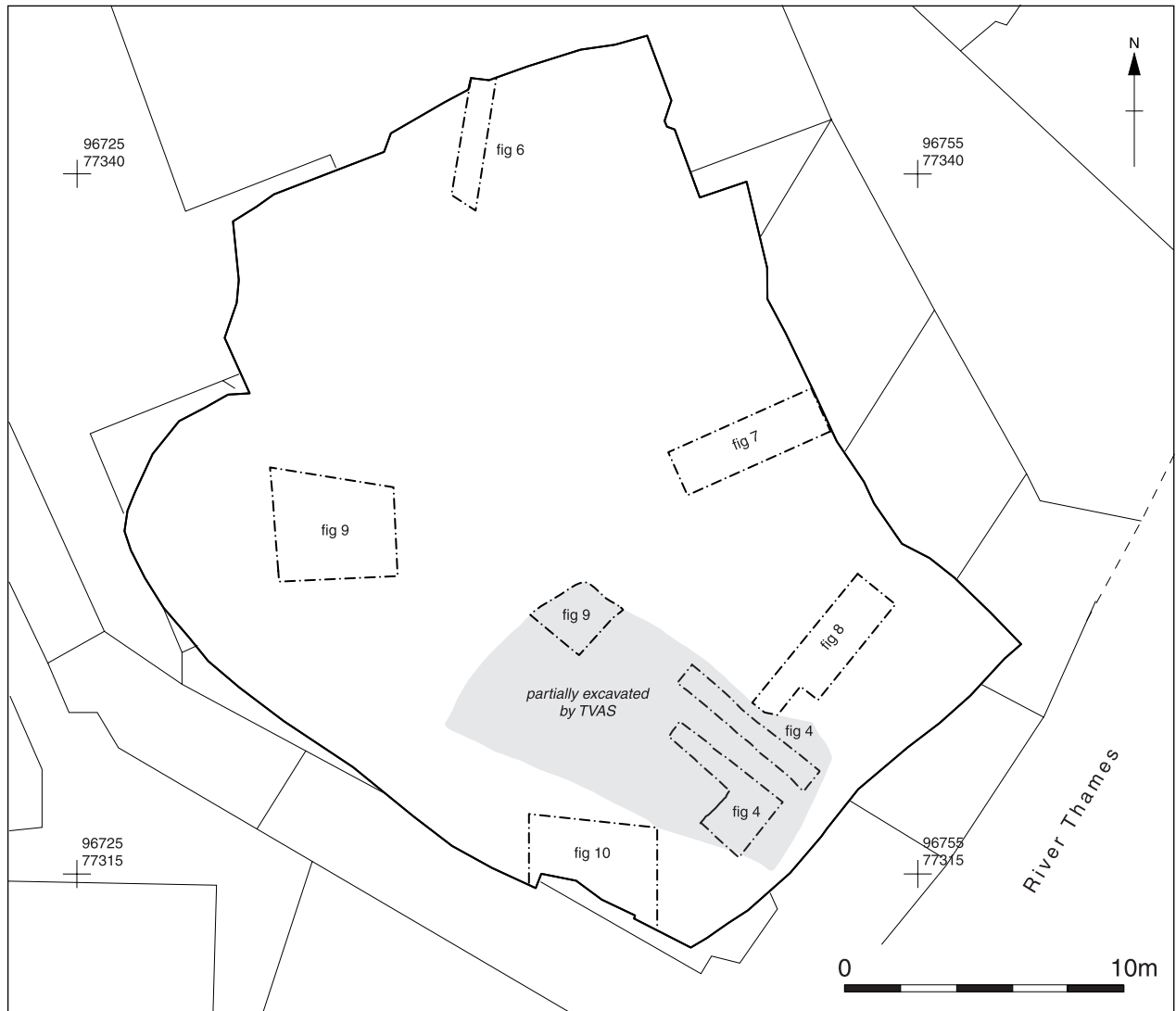
Excavations at the ABC cinema in Windsor in 1983 (Hawkes 1985) revealed that the area covered by the suburb of Windsor *Underore* was probably an island at some point in the post-glacial period. Subsequent work at Jennings Yard, Windsor (Hawkes and Heaton 1993), which is situated just west of Windsor Bridge on the south side of the river revealed evidence of a 12th -13th century waterside building within a moated enclosure, along with substantial artefactual assemblages, although the evidence suggests that the high status of the site was relatively short-lived.

### Background to the excavation

A Planning Application (No. 473433) to redevelop the site was submitted to the Royal Borough of Windsor and Maidenhead. Berkshire County Council's archaeological advisors, Babtie, supplied a brief for the pre-development mitigation. A desk-top study which indicated the archaeological potential of the site was produced by Willis Corroon Hinton Ltd.

### Summary of the TVAS evaluation

An archaeological evaluation of the development area was carried out by Thames Valley Archaeological Services (TVAS) at King Stable Street in the spring of 1997, and revealed deposits with a chronology which ranged from the early medieval to the late post-medieval periods. The evaluation concluded that the site contained archaeological remains relating to the medieval origins and development of Eton. The subsequent excavation fieldwork was carried out by the OAU from November 1997 to January 1998.



**Figure 2. Location of trenches / sondages**

**Excavation methodology (Figure 2)**

The approximate footprint of the proposed building was subject to excavation. A strip was left along the western boundary of the area for safety reasons and to accommodate spoil heaps and site accommodation. This area had already been determined (by the TVAS evaluation) to be truncated and heavily disturbed by modern activity. The upper deposits in the excavated area, comprising a make-up layer of recent backfill and disturbed material, were removed using a 360° tracked excavator, down to the uppermost significant archaeological horizon. Thereafter, all archaeological excavation was carried out by hand. The wet weather conditions and the propensity of the site to flooding severely hampered the investigation of deeper deposits. Extensive removal of large areas of stratified material was found to be impractical, and resort was made to a series of targeted box trenches, each of which could be pumped dry as necessary, to establish feature relationships and retrieve secure dating material and artefact/ecofact assemblages.

All identified pits and postholes were half-sectioned, and where possible a sample of each identified linear feature was excavated to establish its orientation, character and principal stratigraphic relationships. A site-specific environmental sampling strategy was employed, comprising bulk sampling of a minimum of 10 litres for flotation for charred plant remains. Bulk samples were also taken from waterlogged deposits for macroscopic plant remains. Mollusc samples from the waterfront deposits and column samples of the alluvium were also collected. All archaeological recording conformed to standard OAU practice (ed. Wilkinson 1992).

**ARCHAEOLOGICAL SUMMARY**

**Introduction**

The excavation area was overlain by made ground of varying thickness (0.5 m to 1.5 m), which was removed mechanically. All identified archaeological features were

medieval or later. A few redeposited finds were recovered which suggest some activity on the site in the 10th or 11th centuries. Most notable among these were a bone needle (SF 74) and an iron pin-shank from context 328 (see below). While it is possible that pre-medieval features may be buried beneath the thick layer of alluvium that was noted across most of the excavated area, no stratigraphic or artefactual evidence was found to support this. The alluvium was sampled to a depth of *c* 2.0 m below the medieval ground surface, but no evidence of archaeological activity was noted, although at no point was the base of the deposit reached.

The alluvium was covered by an accumulation of medieval and post-medieval deposits, heavily disturbed and truncated altogether in certain areas by post-medieval activity. In the area immediately north of the waterfront revetments (see Figure 3), the intensity of medieval pitting was such that the definition of intercutting features in plan was extremely difficult, owing to the similarity of their fills. The shallowness of

the surviving medieval features in the northern part of the site suggested that this area had been truncated in the recent past, and subsequently levelled up by the deposition of the consolidating layer, consisting of brick and chalk rubble, tile fragments and garden soil, providing a hard standing for the post-medieval and modern development of the site.

### THE PHASING

The medieval activity on the site was divided into five phases, based primarily on the chronology of the commoner ceramic types in association, where possible, with stratigraphic relationships. With the exception of the securely dated sequence of the revetments and the waterfront, the necessary excavation methodology (see above) rendered the stratigraphy of the rest of the site somewhat unreliable as a principal phasing framework.

However, it is recognised that over-reliance on pottery dating as a means of establishing the phasing of a site can carry the risk of understating the degree of

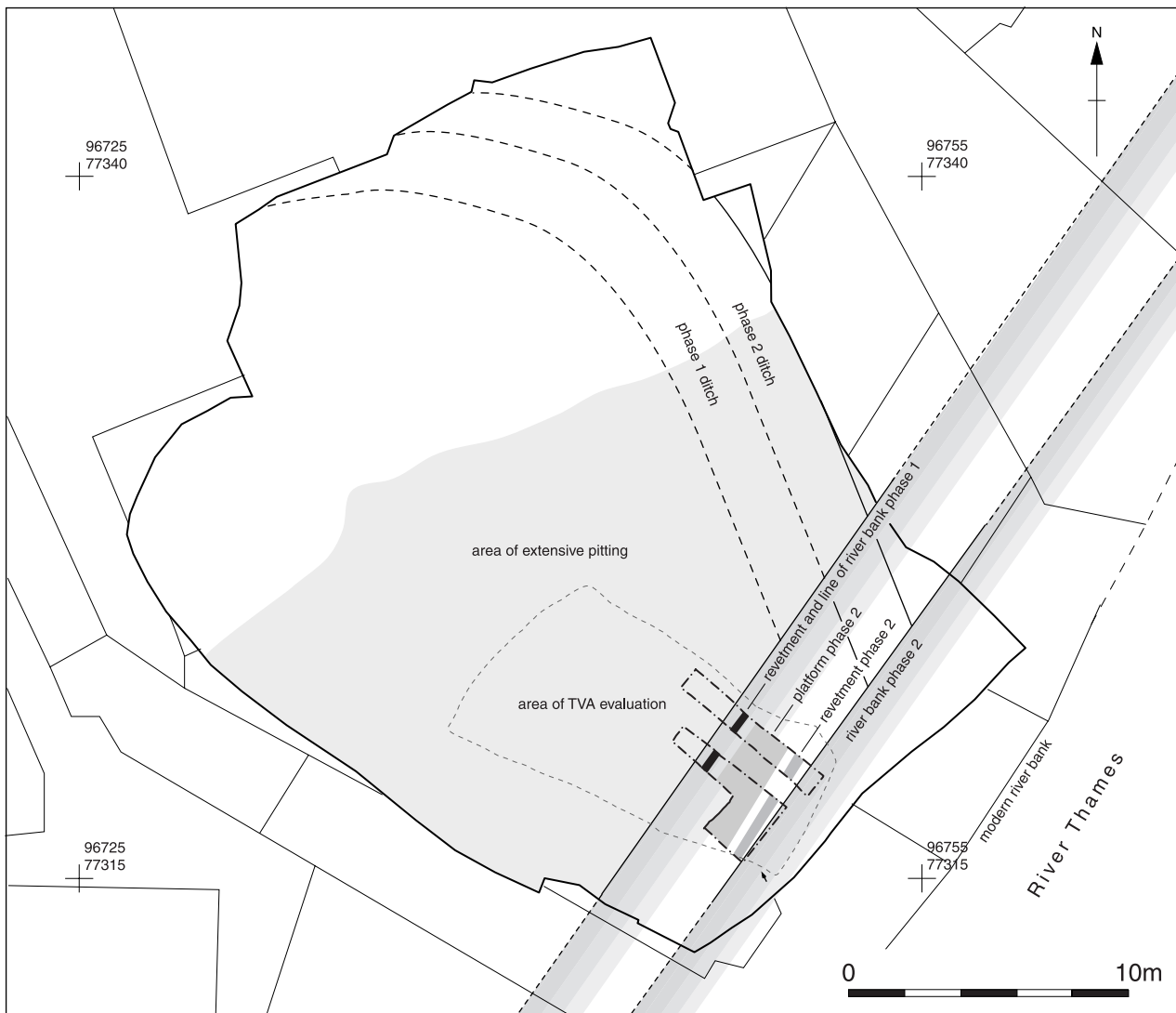
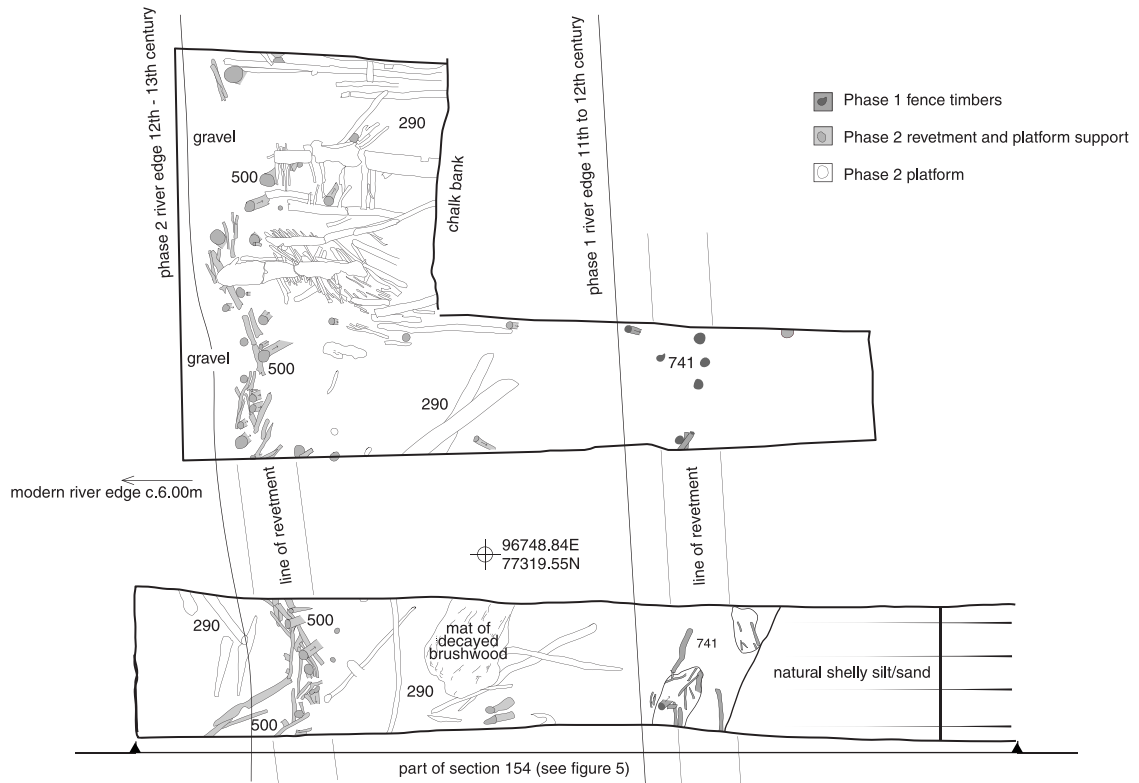


Figure 3. Phase plan of boundary ditch and river bank revetments

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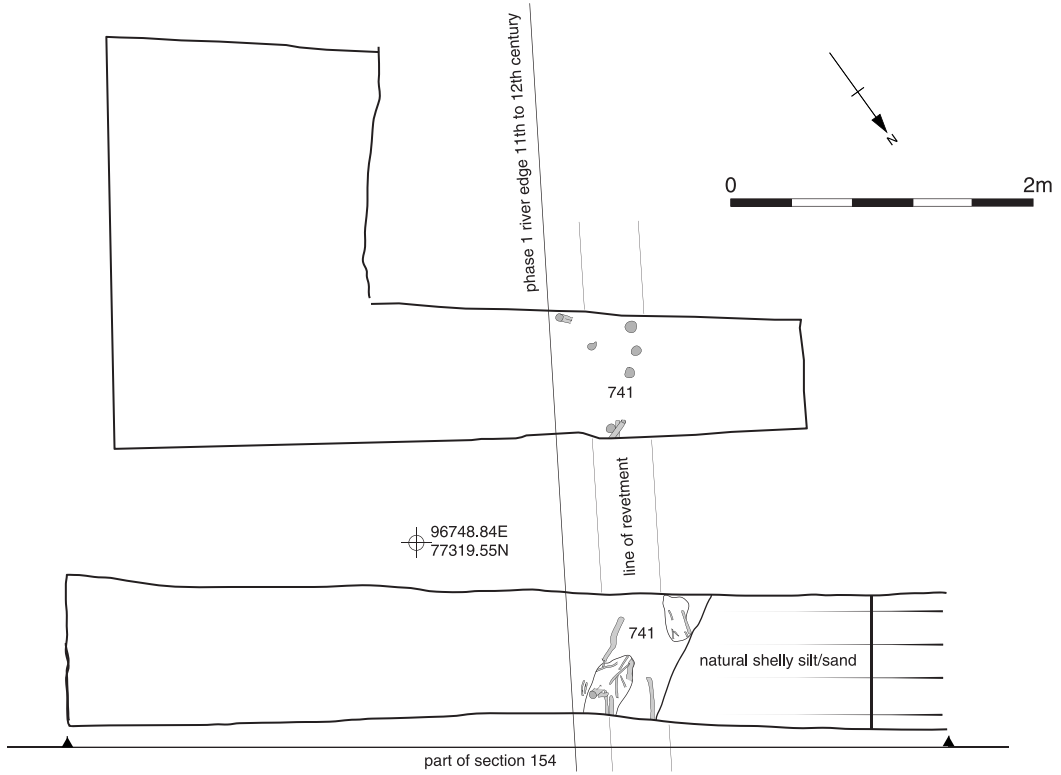


Plan showing all phases of river revetment

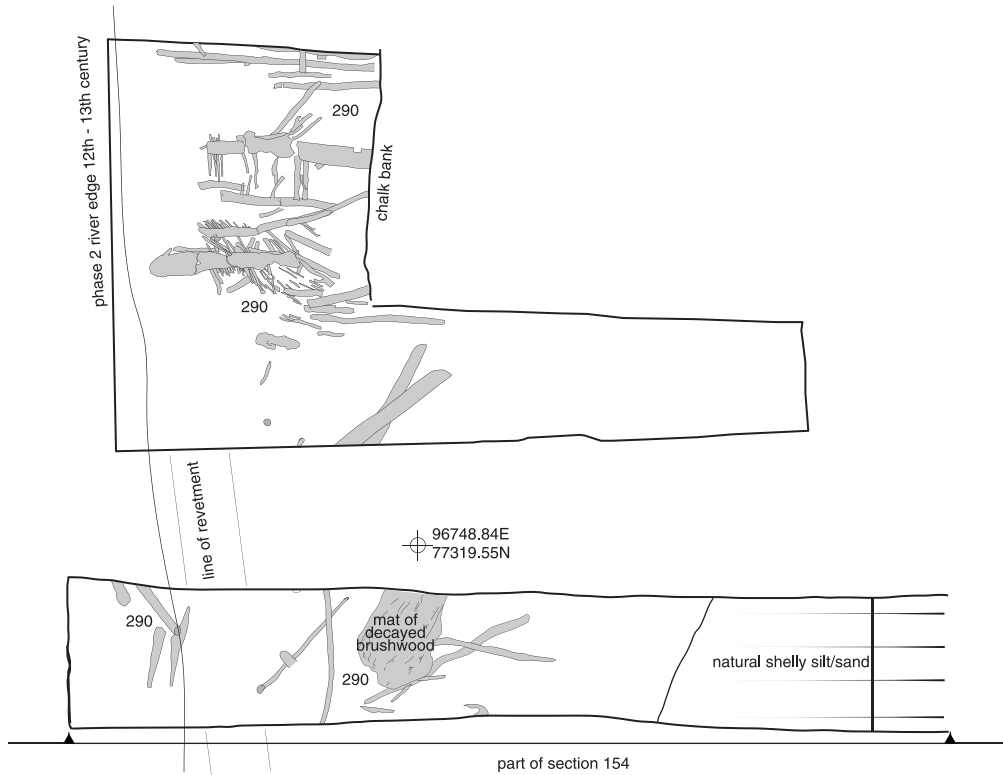


Plan showing phase 2 river edge revetment 12th to 13th century

**Figure 4. Detailed plans of riverbank revetments 11th - 14th century**

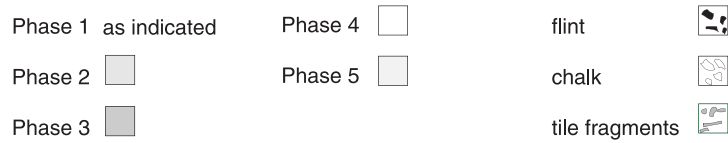
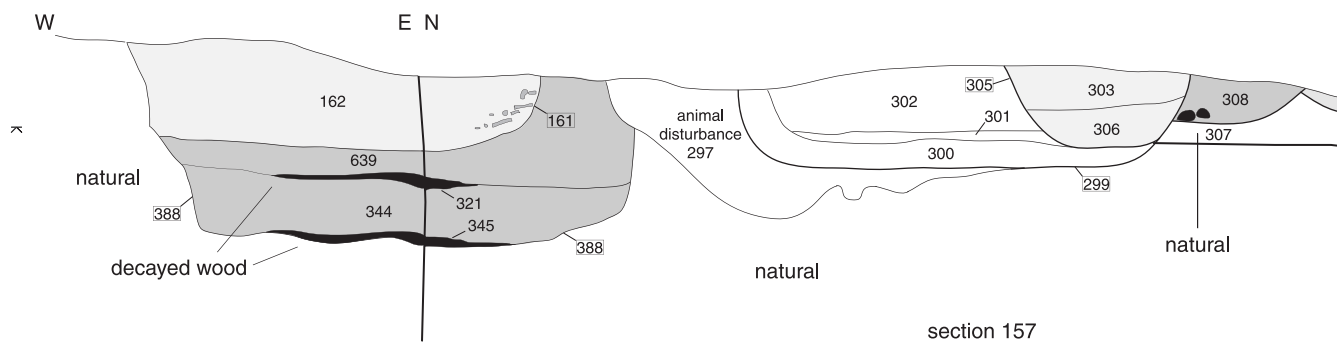


Plan showing phase 1 river edge revetment 11th to 12th century

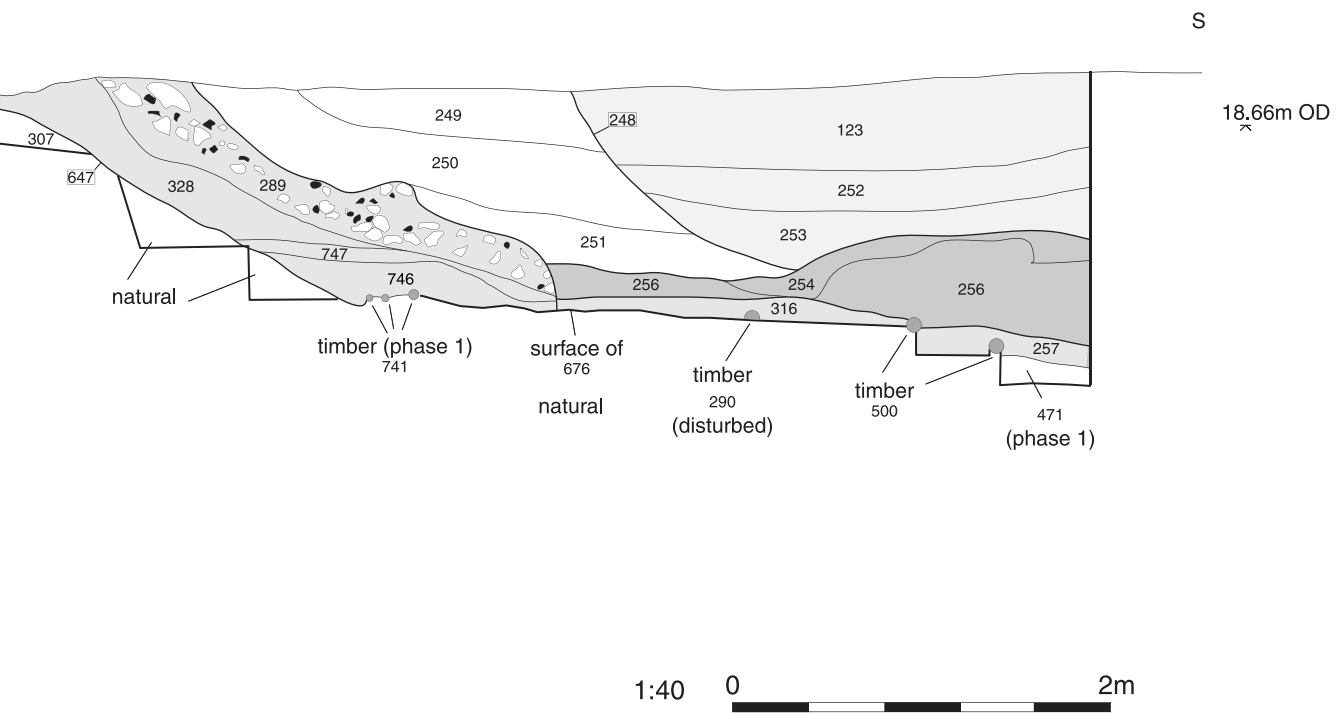


Plan showing phase 2 river edge revetment platform 12th to 13th century

*Excavations at Eton King Stable Street*



**Figure 5. Section through timber revetments, river bank and later activity including tanning pit 388**





artefactual intrusion/residuality. Therefore the phasing of the medieval features behind the waterfront should be considered with a degree of caution.

Phase 1	11th/12th century
Phase 2	Late 12th - mid 13th century
Phase 3	Mid 13th - 15th century
Phase 4	15th - early 16th century
Phase 5	Post-medieval - modern

The following section summarises the archaeological development of the excavated area. Fully detailed context descriptions can be found in archive.

**Phase 1: 11th/12th century**

***The Waterfront***

At the southern end of the site, the alluvium sloped sharply downwards, dropping some 1.6 m over a horizontal distance of 2.0 m. The slope ran parallel to the modern line of the river, and it would appear that the river's edge was at the foot of this bank during the 11th or 12th centuries, as a wattle and stake revetment (632/741) was constructed along its line, presumably as a defence against erosion (see Figures 4 & 5). The structure was revealed on the surface of layer 676, which produced 11th -12th century pottery. (See Mitchell, below for a detailed description of the revetment).

***Ditch***

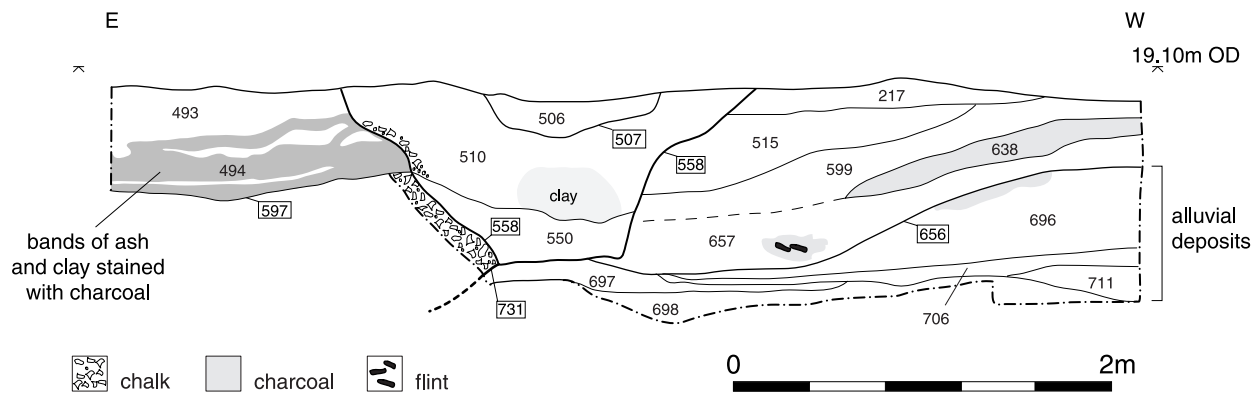
The construction of the first phase of riverside revetment appears to have broadly corresponded with the cutting of a substantial ditch, which ran across the northern edge of the site and then turned south along the eastern edge of the excavated area, towards the river bank (see Figure 3). Three separate sondages were excavated along the line of the feature, and although later features had caused considerable disturbance, particularly in the area close to the river bank, the original feature was still detectable. The northern sondage (see Figure 6) revealed that the original cut [744] was truncated by a recut along its eastern side, but the surviving portion suggests that the original feature was approximately 4.0 m - 4.5 m wide with a 'V'-shaped profile, becoming steeper towards its base. It was not possible to fully excavate the feature due to flooding, but auger borings indicated that it was at least 2.5 m deep. It contained at least four fills, including deposits 466 and 472, which contained 11th/12th century pottery (see Fig.13 - MS4, MS5 and Fig.14 - SG2, LON1).

The lower deposits of the ditch were waterlogged, and produced a relatively large amount of preserved plant material, in particular many Common and Stinging Nettle seeds. Molluscan analysis indicated a fairly wet meadow environment. One of the upper fills of the ditch (638) produced extremely large quantities (c 85% of the sample) of carbonized oats, along with



***Plate 2. Phase 2 platform timbers with overlying chalk bank - looking north***





**Figure 7. Boundary ditch - central sondage: section**

much smaller amounts of barley, wheat and cultivated legumes (see Pelling, below). In the central sondage (Fig. 7) the primary cut of the ditch was not identified, but a sequence of deposits were exposed which by their profile shape and character in section, would be consistent with upper accumulated or dumped fills of a large ditch. Pottery from some of these deposits (700, 698, 696 and 657) suggests that they were deposited in the late 12th century.

The position of the southern sondage was such as to be almost certainly beyond the edge of the bank in Phase 1.

#### Phase 2 Late 12th - Mid 13th century

##### Waterfront

During the later 12th or 13th century, the revetment was extended some 2.5 m to the south, and a timber platform (290) constructed, with its southern edge retained by a fence line (500) (see Figures 4 & 5). The platform consisted of three layers of roundwood branches, pegged at intervals into the bank, and the fence consisted of wattles woven around stakes driven into the bank (see Mitchell, below for a detailed description of the structure). A corollary of this rebuilt revetment was the consolidation of the natural alluvium slope by a series of dumps (see Figure 5). The phase 1 revetment was sealed beneath 746, a loose deposit containing large numbers (*c* 40%) of mollusc shells, indicative of a dredging dump or strand line sediments (see Robinson below), and pottery of the late 12th century (see Fig 13 - MS1). Further deposits included a fossil soil horizon (747) and a further silty clay deposit (328), which produced mid-late 12th century pottery (Fig. 13 - SS1). These were overlain by a consolidating dump of chalk rubble and flint in a silty matrix (289) that can be dated to the late 12th or 13th centuries on stratigraphic grounds (see Plate 2).

Directly over the platform 290 was a rich organic layer (316), which produced a horseshoe (SF25) and some late 12th century pottery (see Fig. 13 - LON2) This layer could represent the decayed upper surface of the platform.

##### Ditches

Ditch 744 was recut as ditch 745 (Fig. 6). The new cut followed the line of the outside (eastern) edge of the original feature. It was of broadly similar dimensions in plan, but slightly shallower, and had a slightly rounded, 'U-shaped' profile. The lower excavated fills of the ditch (669, 671) were waterlogged and again rich in organic material. They did not produce any pottery, but did yield four preserved leather fragments, including the near-complete sole of a medieval turnshoe (see Fig. 15 - SF 90).

The recut ditch was also identified in the middle sondage (Fig. 7), surviving as a heavily truncated cut [731], and possibly in the southern sondage (Fig. 8) as cut 564.

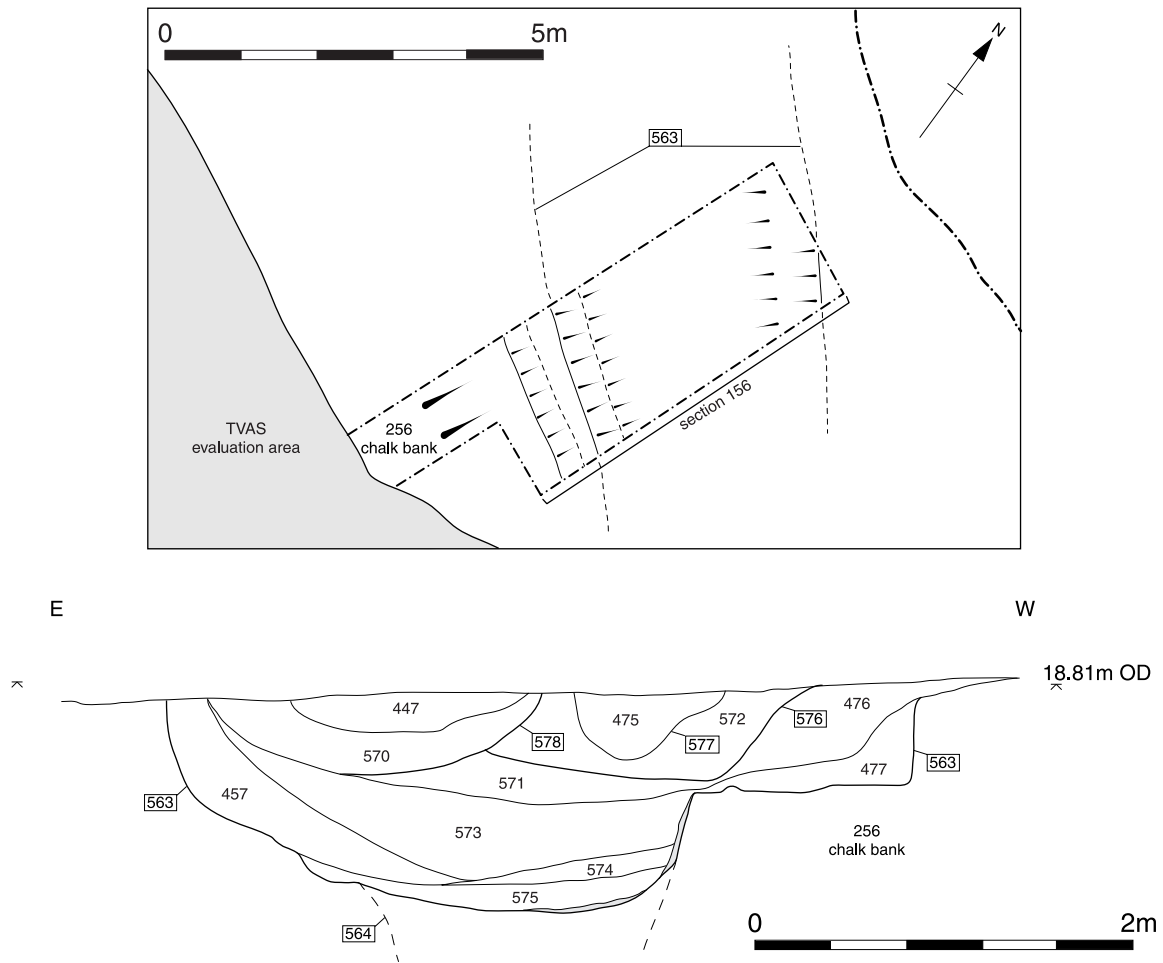
##### Miscellaneous Pits

From the selective sondages, and the re-examination of TVAS evaluation trench No.5, it was evident that the area immediately behind the waterfront had been subject to intensive disturbance from pit digging, both in this phase and in subsequent periods. Figure 2 shows the broad extent of that activity in plan. It is not proposed to describe these features in detail here; the full records are available in the archive.

#### Phase 3 Mid 13th - 15th century

##### Waterfront

Structure 500 appears to have been replaced at sometime in the middle of the 13th century. The timber platform was covered by a chalk rubble and gravel bank (256). The eastern edge of the bank was possibly represented by the sloping face of chalk seen in the southern sondage (see Fig. 8). The southern edge of the bank lay outside the area of excavation, and was truncated by later features, but the surviving earthwork was at least 2 m wide and 0.5m high. It produced a small assemblage of mid-late 12th century pottery, but all the sherds were relatively small, and are likely to be residual. A layer of



**Figure 8. Boundary ditch - southern sondage: plan and section**

silty alluvium (255), which produced a small quantity of mid 13th century pottery, was noted in the hollow between the chalk bank and the rubble layers overlying the alluvium escarpment and possibly represents an inundation of the bank.

The bank was overlain by a probable topsoil horizon (254), which did not produce any datable artefacts, but partly overlay the flood deposit 255, indicating that the chalk and gravel bank was in use by the middle of the 13th century.

### **Ditches**

The large north-south ditch appears to have been filled in during this phase. In the northern sondage, the upper fills of cut 745 were ultimately covered by a deposit (175) of compacted crushed and nodular layer chalk and flint nodules (Fig. 6). This consolidation layer of chalk was also revealed in the central sondage where it was overlaid by an accumulation of ash in a silt matrix (494) (see Fig. 7).

In the southern sondage (Fig. 8), the depth of floodwater precluded the full investigation of the deeper deposits, although there was some evidence for a

possible Phase 2 ditch backfilled in Phase 3, in the form of a cut [564] below the truncating post-medieval feature [563].

### **Tanning Pits**

Three features produced evidence that suggested they once had wooden linings, which is consistent with tanning pits. Pit 388 was located in the north-eastern corner of TVAS evaluation trench No. 5 (see Fig 2). It was cut through the alluvium to the north of the old river bank, and had been heavily truncated by a post-medieval/modern feature (161), but appears to have been rectangular in plan with near vertical sides. The surviving portion was c 1.5 m long and 0.8 m wide, and survived to a depth of 0.4 m. The bottom of the feature was covered with a layer (345) of soft, dark brown decayed organic material approximately 0.02 m thick, which did not produce any datable artefacts. Above this was layer of silty clay (344) containing late 13th century pottery. Layer 344 was sealed by another small deposit of decayed wood (321), also approximately 0.02 m thick.

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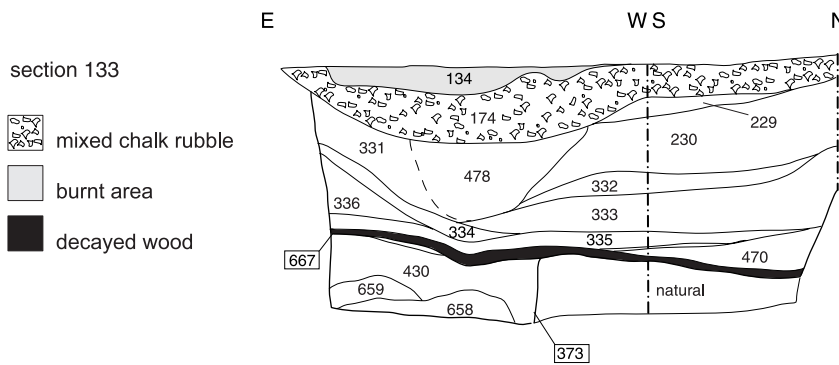
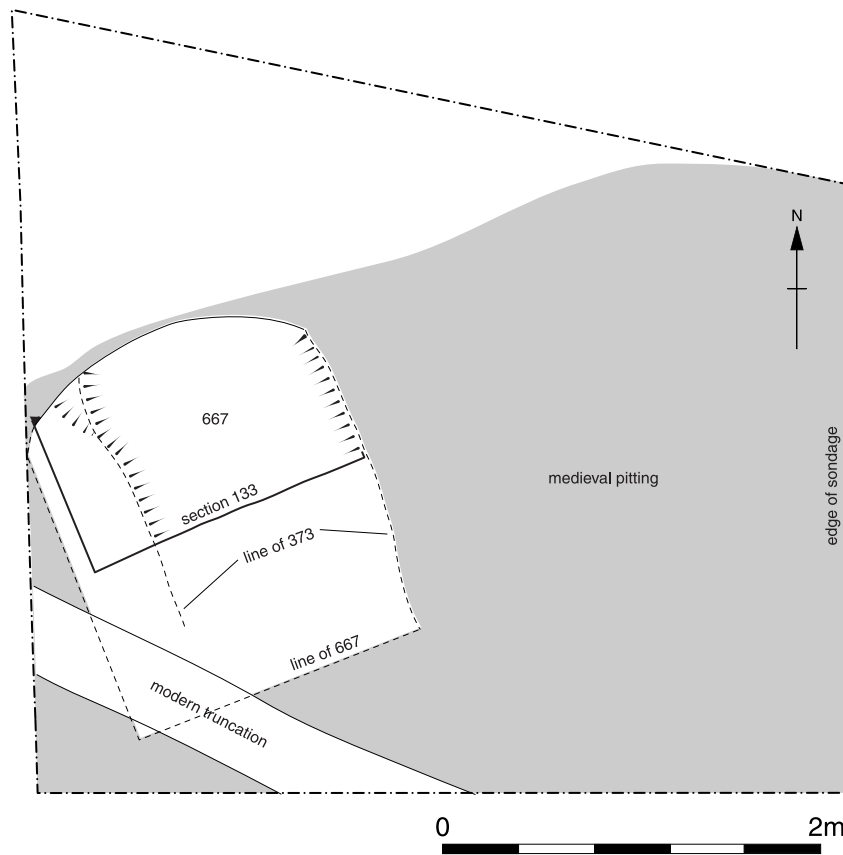
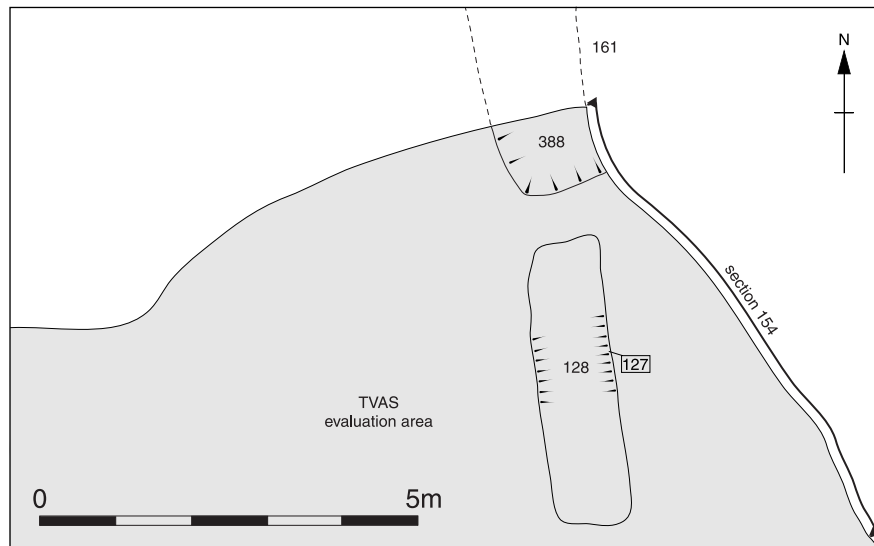
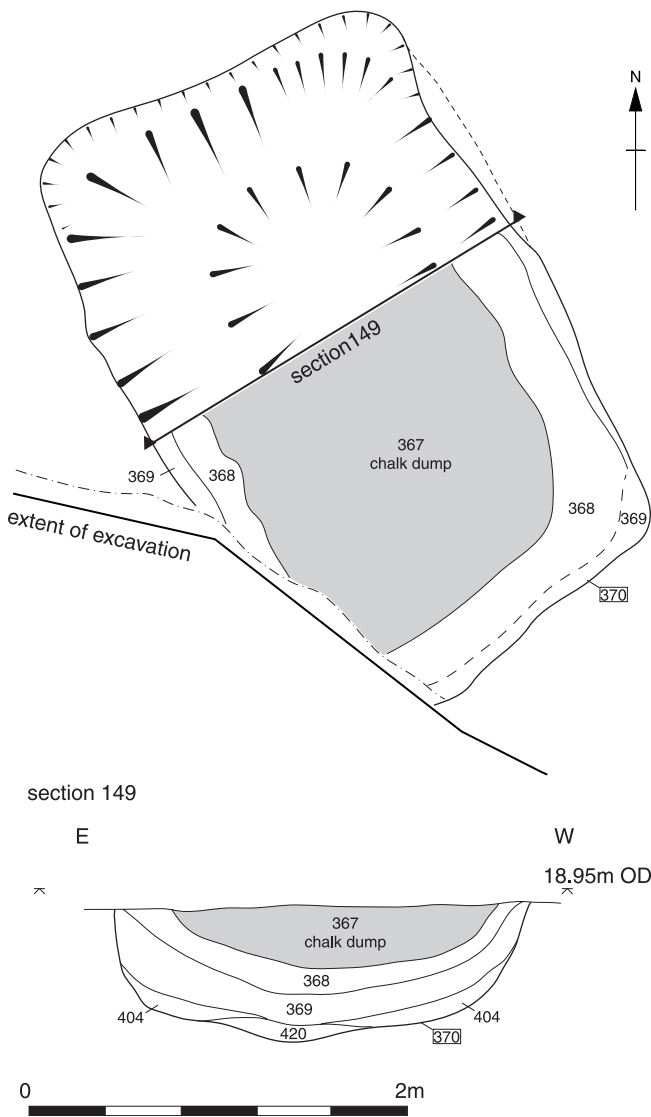


Figure 9. Tanning pits: Plans of 388 and 128 and plan and section of 667



**Figure 10. late medieval pit 370 - plan and section**

Pit 667 was situated a few metres to the north-west (see Fig 9) and possibly represented the re-cutting and enlargement of an earlier pit [373]. The surviving portion of 667 suggests that it was originally rectangular, measuring at least 1.8 m wide, with a maximum depth of 1.06 m. The lowest fill (337) had a maximum thickness of 0.08 m and appears to have been largely composed of decayed wood. It contained a small assemblage of tile fragments and animal bone. The pottery from the upper accumulated fills (332, 333, 334, 335 and 336) suggests that the pit was possibly in use in the late 13th century and was backfilled before the 15th century at the latest, by dumped fills (229, 230, 331, 478). Finally the top of the pit was consolidated with a dump of chalky material (174).

The third pit [127], was located immediately south of pit 388. The pit was sub-rectangular, measuring 1.04 m by 3.75 m, and survived to a depth of 0.4 m. It contained four fills. The lowest, 271 and 272 were two thin (10 mm) layers of decayed wood. None of the

overlying deposits produced any datable artefacts except for the final fill of the feature (128) which contained a small sherd of Tudor Green pottery with a *terminus post quem* of the late 14th century.

#### Phase 4 15th -16th century

##### Waterfront

The area between the chalk bank and the reinforced alluvium escarpment was filled with three deposits during this phase. The lowest layer (251) comprised fairly clean alluvium which had been contaminated with charcoal from the layer above (250), and probably represents another inundation by the Thames. Layer 250 covered the reinforced alluvium scarp and butted up to the chalk and gravel bank. It produced pottery of the early-mid 13th century. Stratigraphically, the layer must be later than this, and the pottery is presumably redeposited. The uppermost layer, 249, produced 15th century pottery. A large rectangular pit [370] was cut into the medieval chalk bank (289) in the south-west corner of the site (Fig. 10). The lower fills (420, 404, 369, 368) were silty clays, overlaid finally by a consolidating dump of chalk and clay (367). Fill 369 produced imported pottery (see Fig. 14 - NS1) and two late medieval buckles (SFs 29, 30).

##### The Ditch

The possible re-cutting of the north-south ditch was identified in the central sondage (Fig. 7), in the form of a steep-sided, flat-bottomed cut [558]. The lower fill (550) produced pottery, brick and tile fragments of a 15th/16th century date, and the upper fill (510) contained articulated part-skeletons of three dogs. The possible continuation of this ditch was identified in the southern sondage as cut [563], which appeared to respect the chalk bank to the west (256). It contained a series of fills, all of which were aceramic apart from 447, a primary erosion deposit which covered the step and contained three sherds of 15th century pottery. The main body of the feature had five fills, none of which produced any datable artefacts.

#### Phase 5 Post-medieval- modern

The latest phase of activity revealed on the site was characterised by a large area (*c* 75 sq m) of dumped chalk (146), up to 0.15 m in depth, which formed a sub-rectangular platform over the western part of the excavation area. A NW-SE oriented brick footing (157) was also revealed north of the east end of the chalk surface. An 'L' shaped alignment of 11 square and rectangular postholes were situated immediately to the east of the chalk platform, partly surrounding a shallow linear feature [161], a brick-lined well (648) and a tile-lined pit (291) possibly a soakaway. The common alignment and juxtaposition of these features would appear to suggest some contemporaneity and association of function.



**Figure 11. Post-medieval archaeological features, in relation to the footprint of the 18th century malthouse and mid-19th century plot boundaries**

Two probably contemporary pits (not illustrated) were situated c 4.0 m north-west of 291. The fill (264) of pit 263 contained a large assemblage of tiles very similar to those in the structure of 291, and a high concentration of charred oat grain (see Pelling, below). The fill (266) of pit 265 produced a quantity of animal bone, a 16th century dress pin (SF 21), and a piece of pierced cattle rib, of indeterminate function.

## INTERPRETATION AND DISCUSSION

### Site Development

There is no record of any settlement at Windsor or Eton in Domesday Book, but there is an increase in the number of surviving references to a suburb of Windsor called *Underore* from the 12th century onwards (Astill 1978, 59-63), which appears to have grown up at the base of the castle cliff on the south side of the river, and was centred on the quays and a ford which was probably on or near the line of the present bridge (ibid. fig. 19).

Less is known about the history of Eton before the 13th century, but it appears from the little documentary evidence available, and from this excavation, that the first significant post-Roman activity in the vicinity of King Stable Street occurred at the time of or shortly after the construction of Windsor Castle, which began c AD 1070 (Astill 1978, 59).

### Environment

A fall in the river level during the early medieval period is highly likely. Ayers and Murphy (1983, 55) cite evidence that there was a drop in the water-table in Norwich during the Saxo-Norman period, and excavations at Kingston-upon-Thames have shown that the modern river level is now higher than during the medieval period, although this is at least in part due to the presence of downstream locks (Potter 1991, 143). There is much evidence that the period c AD1150-1300 was a time of a climatic optimum, and that temperatures were perhaps, on average, one degree centigrade higher than

now (Steane 1984, 174-6). The Thames is said to have been so low on occasions in 1114, 1158 and 1214 that it could be crossed at London on foot, even by children (Stratton 1978, 18-21).

The beginnings of settled activity in this area of the northern bank appear to correspond with the development of settlement around the castle on the south bank in the late 11th century. The thread of continuity running through the first medieval phases of activity on the site is the consolidation of the riverbank by means of wooden revetments, later supplanted by a chalk rubble bank. As Mitchell argues (below) the revetments would have been strong enough to allow small boats to tie up, but were most unlikely to have been intended as proper wharfage. Other waterfront sites, such as Trig Lane in London (Milne 1991) and Kingston-upon-Thames (Potter 1991) were of a far sturdier plank and post construction, usually with external 'rubbing posts' with ship's timbers sometimes having been re-used in their construction (*ibid.*). Wattle-and-stake bank revetments are however known from the river Trent in Nottinghamshire (Salisbury 1991, fig. 11.14) and Lincoln (Chitwood 1991, fig 21.3), with the latter thought to be of 11th century date.

Each of the successive medieval waterfront revetments at King Stable Street is located further out into the river. This is very common phenomenon (*cf* Good et al. 1991), and while it may have been encouraged by a falling river level, the site is located on the inside of a bend in the Thames and would quite possibly have been liable to silting, and so the extension of the revetments to the south may have been an effort to consolidate and reclaim such deposits. Certainly, the deposits sealing the first phase timber structure are not the results of flooding, but more likely dredging, suggesting that material from the river was used to reclaim land at the water's edge.

The chalk bank that replaced the wooden revetment (see Plate 1) in the late 13th century may represent an attempt to hold back rising river levels, and prevent the flooding of land already reclaimed. The climate is known to have deteriorated during the 14th century, with a succession of cool wet summers causing crop failures and raised river levels throughout Europe (Steane 1984, 175). Certainly, a layer of clean alluvium, 255, was noted in the hollow between the chalk bank (256) and the rubble layers overlying the alluvium escarpment. This seems very likely to represent an inundation, and produced a small assemblage of pottery datable to the mid-13th century or later. A similar inundation was noted at Jennings Yard, Windsor (Hawkes and Heaton 1993, 20) and is dated to sitephase 2b (mid 12th to early 13th century), although the excavators note that the artefactual evidence is not conclusive (*ibid.*).

The ongoing consolidation of the riverbank was augmented by successive phases of a large drainage ditch, running along the north side of the site and turning south to discharge into the river. By such means was this area delineated, presumably as a plot extending back from the High Street frontage. This northern

boundary to the area ultimately evolved into the line of King Stable Street itself by the 14th/15th century.

The ditch could also have served to confine any livestock corralled on the site. The nitrogen-rich environment of the ditches, reflected in the large quantities of nettle seeds in the samples taken from the ditch fills, could be the result of accumulation of manure in the area from such livestock. Another cause for the character of the ditch fills could be human waste, if the ditch is presumed to continue to the west and the frontages lining the High Street. Although the evidence does not suggest a purpose-built sewer, it could well have served as such.

### Economic development

The general artefactual and ecofactual evidence, coupled with the lack of major structures, suggests that the King Stable Street site was intermittently the site of non-intensive craft work in the medieval period. With no riverside building, as was the case at Jennings Yard on the south bank of the river, there was no real focus for any high status activity. Indeed, it appears from the excavations at Jennings Yard that by the mid 13th century the building had been demolished (Hawkes and Heaton 1993, 91-93). Possible reasons suggested by the authors for this include the effect of the civil unrest and sieges suffered by the town in the early 13th century, or the shifting of the economic focus towards the road frontages rather than the river frontages, stimulated by the repair of Windsor Bridge in 1236.

Leather-working and tanning appear to have been taking place at the King Stable Street site in the 14th/15th century. A small quantity of leather off-cuts and shoe sole fragments were found in the lower deposits of the ditch, indicating that leather-working was taking place in the vicinity before it was backfilled (it is noticeable that the illustrated sole (Fig. 15) appears to be heavily worn, and therefore should strictly be seen as evidence of shoe repair). Other evidence for small scale leather-working taking place at the site is provided by the three probable tanning pits, each of which showed evidence of wooden linings. Excavation of a late medieval-early post-medieval tannery at The Green, Northampton showed that two distinct types of pit were utilized, one rectangular in plan ('roughs') and the other circular ('vats'). Pit 127 was of a very similar size to two of the three tanning troughs at The Green (Shaw 1996, fig. 7A). The other two pits at Eton were too badly truncated to determine their original shape with any confidence.

Archaeological evidence of tanning and leather-working is often found at medieval waterfronts, as a nearby supply of water was essential for the tanning process. Examples of the close relationship between running water and leather working are those discovered in Norwich (Ayers and Murphy 1983; Ayres 1991) and Bristol (Jones 1991). Further support for such activity having taken place at King Stable Street comes from the animal bone assemblage, which is of a similar character to those found at tannery sites. Animal skins are known to have had the horns and feet still attached when



purchased from skinners, with the bones removed during processing by the tanners. At Eton, foot bones of sheep were somewhat over-represented, although horn cores were few in number. Furthermore, the majority of the animal bones came from mature animals, which could be seen as an indication that the animals were butchered for their skins, rather than their flesh. Overall the evidence from the site favours a fairly modest level of production of leather, certainly not on a scale that could be termed 'industrial'. Across the river, a number of shoe fragments were also noted at Jennings Yard, but all the identifiable fragments were mid/late 16th century in date (Mold 1993, 62).

In general the activities taking place on the site at the end of the medieval period should be seen in the context of its location and probable association with the properties fronting onto High Street. The archaeological record indicates a lull in human activity at this time; the latest version of the drainage ditch as revealed in the southern sondage [563] produced virtually no finds from its fill. However the presence of horses on the site is suggested by the very large quantities of oats recorded in the fills of the boundary ditch, which could represent waste animal fodder. Several horseshoes were also recovered, along with horseshoe nails and pieces of tack. Plots behind roadside inns were often used for the stabling or corralling of horses, as, for example at the Christopher Inn on the High Street which was noted in a

1605 survey as having barns and stabling for horses to the rear of the property (VCH 3 1925, 263-4).

### Post-Medieval activity

The chalk platform and series of rectangular postholes are evidence of a more intensive use of the site in the post-medieval period, as the site was progressively levelled up and the river bank consolidated further to permit construction of buildings. The postholes and the nearby well and soakaway appear to be associated with the malthouse shown on the 1777 survey map (see Figure 11 and 12).

The mid 19th century redevelopment of the site clearly entailed the wholesale clearance of buildings and levelling of the site, as is indicated by the truncation of medieval deposits in the northern part of the site and the depth of the overlying modern make-up layer.

### Conclusion

From the evidence of the excavation it appears that this area on the north bank has, since the 12th century, been the site of a variety of low-intensity activities. The results from Jennings Yard, which are modestly echoed in those from this site, suggest that the high point for the focus of economic and social attention on the river and its

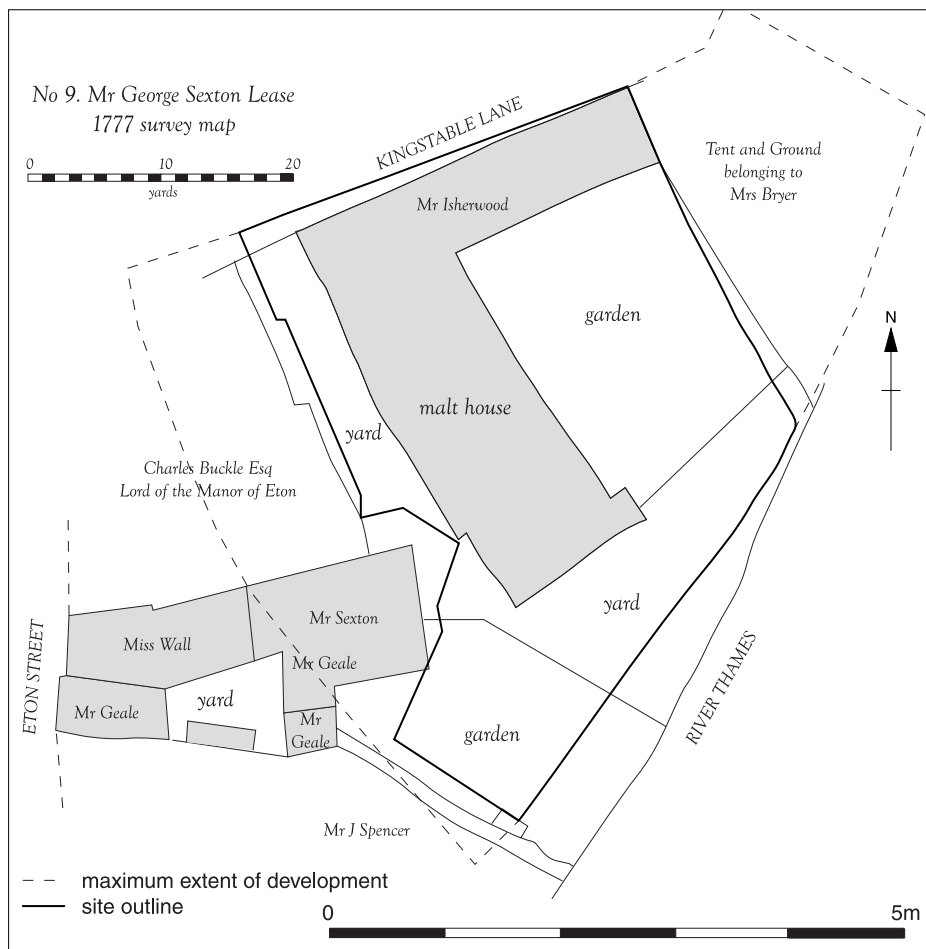


Figure 12. Survey map of the area in 1777, reproduced from the Eton Archives Collection/EG2/14. map No 9.

banks was in the 13th century. The founding of Eton College in the 15th century, and the stimulus provided to the economic development of Eton, came too late; the axis along which development thereafter flourished was the road, not the river. The river banks were relegated to sites of marginal activity, a situation which persisted until the 18th century.

## ARTEFACTUAL EVIDENCE

### The Pottery by Paul Blinkhorn

#### Introduction

The pottery assemblage from King Stable Street, Eton comprised 1,040 sherds with a total weight of 21,422 g. The minimum number of vessels (MNV) was 11.35. All the material was post-Roman, with the exception of a single residual sherd of Iron Age pottery (20 g) from context 119. The pottery occurrence by number and weight of sherds per context by fabric type is detailed in the archive.

It is worth noting that a significant proportion of the medieval pottery from the site, particularly the earlier wares, are the same types as those in use in the City of London at that time. Consequently, the equivalent Museum of London Archaeological Service (MoLAS) pottery fabric codes and chronologies have been used where appropriate (Vince 1985). The italicised alphabetic codes used in the tables (below) are specific to this site. The presence of such large quantities of London pottery at Eton is no surprise. Such vessels are known to have been traded up the Thames at least as far as Henley (Vince 1985, 77).

In addition, six sherds of medieval imported continental wares were present. These were mainly fragments of a small number of Seine Valley glazed jugs and a single sherd of a semi-stoneware vessel, possibly of Normandy type. The only English imported medieval wares found at the site were three sherds (146 g) of Brill/Boarstall ware (cf. Mellor 1994), a single sherd of Developed Stamford Ware (Kilmurry 1980), and 25 sherds (374 g) of a sandy glazed ware typical of the south midlands, such as Oxford fabric OXY (Mellor 1994) or Newbury 'C' ware. This is typical of the range of English imports found in London during the medieval period (Vince 1985, 74-77)

The late and post-medieval fabrics from the site are all common finds throughout southern England, comprising a mixture of English wares, such as Border Ware, Cistercian Ware, Red Earthenwares and Tudor Green types, as well as imported German Stonewares such as Raeren, Frechen and Westerwald. Regional wares, such as Late Medieval Oxidized Ware, also became more common at Eton during that period.

Generally, the range of medieval and later pottery types is comparable with contemporary assemblages at Jennings Yard, Windsor (Mephem 1993).

## Fabrics

The fabric types were as follows:

### F1:

Sparse shell platelets up to 2 mm, sparse subrounded grey quartz up to 1 mm, rare angular red ironstone up to 1 mm. Early medieval. 52 sherds, 1,081 g. MNV = 1.12.

### F2:

Dense sub-rounded white and clear quartz up to 0.5 mm. Local ware? 11th-12thC? Glazed and unglazed. 374 sherds, 2940 g. MNV = 2.39.

### F3:

Sandy glazed ware of similar type to many of the industries found throughout the south midlands, such as Medieval Oxford ware (Mellor, 1994). Hard grey sandy fabric with moderate to dense sub-rounded clear, black and red quartz up to 1 mm, 25 sherds, 374 g. MNV = 0.13.

### F4: *Shelly Limestone Ware (SHEL):*

Rare sub-rounded pink and grey quartz up to 1 mm, rare limestone ooliths and sub-rounded calcareous fragments up to 2 mm, rounded glauconite up to 3 mm. Early medieval. 11 sherds, 255 g. MNV = 0.10.

### F5: *London-type Ware (LOND):*

Late 12th-late 14th century. 107 sherds, 2,079 g. MNV = 1.45.

### F6: *Kingston-type Ware (KING):*

1250-1450. 86 sherds, 1,336 g. MNV = 0.66.

### F7: *Early Medieval Shelly Ware (EMSH):*

11th-12th century. 27 sherds, 1,983 g. MNV = 1.06.

### F8: *Coarse London-type Ware (LCOAR):*

Late 12th-13th century. 7 sherds, 449 g. MNV = 0.

### F9: *Early Medieval Sand and Shell Ware (EMSS):*

Moderate to dense shell platelets up to 2 mm. Sparse to moderate rounded red and black ironstone up to 1 mm. Rare pink grog up to 3 mm, sparse to moderate subrounded quartz up to 1 mm. Glazed and unglazed. Early 11th-late 12th century. 150 sherds, 2,211 g. MNV = 0.71.

### F10: *Late Medieval Oxidized Ware:*

15th-16th century. South midlands?? Brick red fabric with dense rounded white, pink and black sub-rounded quartz up to 1 mm, giving a harsh surface. 22 sherds, 744 g. MNV = 0.22.

### F11: *South Hertfordshire Grey ware (SHER):*

12th-14th century. 31 sherds, 644g. MNV = 0.70.

*Developed Stamford Ware (DSTAM):*

Green-glazed, fine white ware. Late 12th-13th century. 1 sherd, 2 g. MNV = 0.

*Brill/Boarstall Ware (BRILL):*

Fine sandy ware, usually pink or buff fabric (Mellor 1994). Early 13th-16th century. 3 sherds, 146 g. MNV = 0.

*Seine Valley Wares (FRIMP):*

Fine, white fabric with few visible inclusions, vertical applied strip in body clay, and a bright green copper glaze. 13th-15th century. 5 sherds, 85 g. MNV = 0.

*Tudor Green Ware (TUDG):*

Off-white fabric with salmon/buff streaks and core. Occasional sub-rounded red ironstone up to 1 mm and sparse to moderate sub-angular white quartz up to 0.5mm. The ware is dated from c 1380 to the mid-15th century on the basis of evidence from Trig Lane and other London sites (Pearce and Vince 1988, 16). 8 sherds, 21 g. MNV = 0.08.

*Dutch Redware (DUTR):*

15th century. 4 sherds, 194 g. MNV = 0.15.

*Cistercian Ware (CIST):*

Hard brick-red fabric with few visible inclusions. Glossy black, dark green or brown glaze. c 1475-1550. 1 sherd, 5 g. MNV = 0.05.

*German Stonewares (GSTON):*

1480+. 21 sherds, 535 g. MNV = 1.00

*Border Ware (BORD):*

16th century +. 16 sherds, 397 g. MNV = 0.37.

*Red Earthenware (REDE):*

Brick-red sandy fabric, often with an internal green glaze. 16th century +? 54 sherds, 1,692 g. MNV = 0.96.

*Midland Blackware (MBLK):*

Post-Medieval Ware c AD 1550-1700. Hard. brick-red fabric with sparse to moderate quartz up to 0.5 mm. Glossy black glaze, usually on both surfaces. Distributed throughout the south midlands of England. Manufactured in a range of utilitarian forms. 3 sherds, 189 g. MNV = 0.

The provenance of fabric 1 is uncertain, but the petrology suggests that it may be a fabric version of EMSH (F7). There is far less shell in the fabric, but it has a very similar chronology (see Tables 2 and 3).

Fabric 2 seems likely to be of local manufacture. It is not petrologically distinctive when compared with other quartz-tempered fabrics from the south midlands and London region, and part of the assemblage may comprise wares from less local sources, such as the London Early Medieval Sandy Ware (EMS). The group also contains sherds with diagonal combed decoration, which may be the so-called 'M40' ware (Hinton 1973, 181-3), found in small quantities in London, and

probably made at Denham in Buckinghamshire (Vince 1985, 37-9).

However, the majority of the sherds of this type at Eton are undecorated, and there are also glazed wares in a very similar fabric which cannot easily be paralleled. They can be distinguished from other contemporary glazed wares such as London Ware and the south midlands sandy wares (OXY, Newbury 'C') by the fact that the quartz grains are larger and more densely concentrated. These glazed wares first appear during site phase 2 (c late 12th-mid 13th century), and increase as a significant proportion of the assemblage during phase 3 (AD1250-1450). In the capital, London ware fell from use during the mid-late 14th century (Vince 1985, fig. 23). The occurrence of F2 at this site (Table 3) suggests that it had a similar chronology. The ware may be that produced at the kilns at Camley Gardens, Maidenhead, which was noted in contexts of 12th century date at Jennings Yard, Windsor, and is thought to have been produced as late as the 14th or even 15th centuries (Mephams 1993, 43). The Late Medieval Oxidized Ware is worthy of comment. Such pottery is found throughout the south midlands, and several kiln sites are known in Northamptonshire and Buckinghamshire. The presence of the ware at Eton perhaps indicates an increasing contact with the hinterland of the town during the later medieval period.

## Chronology

Activity at the site was divided into five main medieval and post-medieval ceramic phases, based on the presence of major wares, as follows:

Phase 1: 11th - late 12th century. Early medieval 'coarsewares' only.

Phase 2: Late 12th - mid 13th century. London wares.

Phase 3: Mid 13th - mid 15th century. Kingston ware.

Phase 4: Mid 15th - mid 16th century. Cistercian ware, Late medieval Oxidized ware.

Phase 5: Mid 16th - 17th century: Red Earthenwares, Border wares, Midland Blackwares

The pottery occurrence by number and weight of sherds and MNV per fabric type per site phase is shown in Table 1, and the fabrics types as a percentage of each site phase assemblage by MNV is shown in Table 2 (below).

Generally, the occurrence of the pottery conforms to a pattern suggested by the known chronology of the non-local wares, with some redeposition of the medieval types during ceramic phases 4 and 5, as a result of the pitting of the site during those periods. There are, however, a few exceptions. Dutch Redwares do not appear to be arriving at this site until the 15th century. All the Eton assemblage is stratified along with Tudor Green, German Stoneware or Red Earthenwares, suggesting a date of the end of the 14th century at the absolute earliest. In London, Dutch Redwares are first noted in assemblages dated to the late 13th century (Vince 1985, fig. 52), although they continue to occur throughout the medieval and early post-medieval periods (ibid. 58). The consistently large mean sherd

weight of this pottery type at Eton suggests that the material was not residual, and the fact it does not occur until ceramic phase 4 may simply be a result of the vagaries of pottery supply.

The mean sherd weights of the pottery (Table 4) indicates that the medieval groups were not subject to great deal of disturbance before redeposition, as the mean weights do not change significantly through time. However, as the medieval assemblage is largely fragmentary, with few reconstructable vessels, it is perhaps more likely that the stratified medieval pottery was initially subject to a degree of transportation before deposition.

### Vessel Function

The data in Table 5 indicates a pattern of vessel use at the site which is typical of the medieval period, with jars forming the bulk of the assemblage in the earliest medieval phases, and jugs and bowls becoming more common with time.

By Phase 5, the early post-medieval period, a wider range of vessels was in use, as is usually the case in pottery assemblages of the period. However, in this case, the vessels are mainly drinking vessels such as mugs, tygs and cups. Most were body or base fragments, however, and hence do not appear in Table 5. Bowls also appeared relatively numerous (eg Fig. 14 - RE1), and a Westerwald mineral-water bottle occurred in a 17th century context. However, the assemblage did not contain any of the vessels associated with the late medieval table or kitchen, such as chafing dishes or dripping dishes, indicating that there was no domestic activity at the site at that time. This corresponds with the interpretation that the site was a tannery during the late medieval period, and then largely waste ground in the 16th and 17th centuries. Nearby public houses could easily have been the source of the drinking vessels, or they could have been used by workers at this site.

### Discussion

This assemblage, despite being relatively small in size, represents one of the largest groups of medieval pottery recovered from a single excavation in Eton, as very little archaeological work has been carried out in the town in recent years (Hall 1996, 6). The group is certainly one of the most westerly finds of London-type ware known from the Thames corridor, apart from small groups of material from Henley and Newbury (Pearce et al. 1985, figs. 1-3).

The presence of the imported medieval wares at this site is certainly noteworthy, although its significance should not be overstated. Imported pottery such as this is very rare outside the ports of entry, although its presence in the hinterland cannot be taken as a sign of site status (cf. Brown 1997). Its presence at King Stable Street is not an indicator that the site was of high-status, as has been previously suggested (Timby 1997, 13); it merely shows that Eton itself was within the distribution area of pottery commonly found in the capital. In London, such wares are more common than imported

English wares (Vince 1985, 84) and so its presence at Eton merely reflects the consumer choices available at London, the supply centre.

### ILLUSTRATIONS.

#### FIGURE 13:

##### *Medieval Sparse Shelly Ware (F1)*

- SS1: Context 675 and 676. Rim and body from a jar. Brick-red fabric with a grey core. Sooting on lower body and rim.

##### *Early Medieval Sandy Ware (F2)*

- MS1: Context 674. Jar rim. Uniform black fabric, patches of thick black residue on inner surface.

- MS2: Contexts 466 and 472. Bodysherds from ?storage jar. Grey fabric with purplish-brown surfaces.

- MS3: Context 331. Decorated bodysherd from jar. Grey fabric with variegated brick-red and dark grey outer surface.

- MS4: Context 472. Body sherd from large globular pitcher. Pale grey fabric with copper-spotted pale green glaze on the outer surface.

- MS5: Context 466. Rim and base from large ?storage jar. Pale grey fabric with browner surfaces.

##### *Shelly Limestone Ware (F4)*

- CS1: Context 319. Jar rim. Brown fabric with grey core.

##### *Early Medieval Shelly Ware (F7)*

- SH1: Context 328. Jar rim. Dark grey fabric with reddish-brown margins.

- SH2: Context 383. Near-complete jar. Dark grey fabric with brownish-purple inner surface. Outer body is thickly encrusted with soot.

##### *Coarse London Ware (F8)*

- CL1: Context 319. Sherd from shoulder of a jug. Dark grey fabric, patchy purplish-green fabric exterior glaze with a few splashes on the inner surface.

##### *Early Medieval Sand and Shell Ware (F9)*

- ES1: Context 383. Sherd from the shoulder of a jar. Uniform dark grey fabric

#### FIGURE 14:

##### *South Herts Greyware (F11)*

- SG1: Context 255. Jug handle and rim. Uniform grey fabric. Sooting on handle and rim.

- SG2: Context 472. Jug handle and rim. Grey fabric with slightly browner surfaces.

##### *London Ware (LOND)*

- LON1: Context 472. Imitation Rouen ware jug base. Brick-red fabric with grey core. Exterior body is covered with a yellow slip above the base carination. Applied strips in white-firing clay, every third strip is unslipped. Areas of reddish-brown slip between the yellow strips,

Excavations at Eton King Stable Street

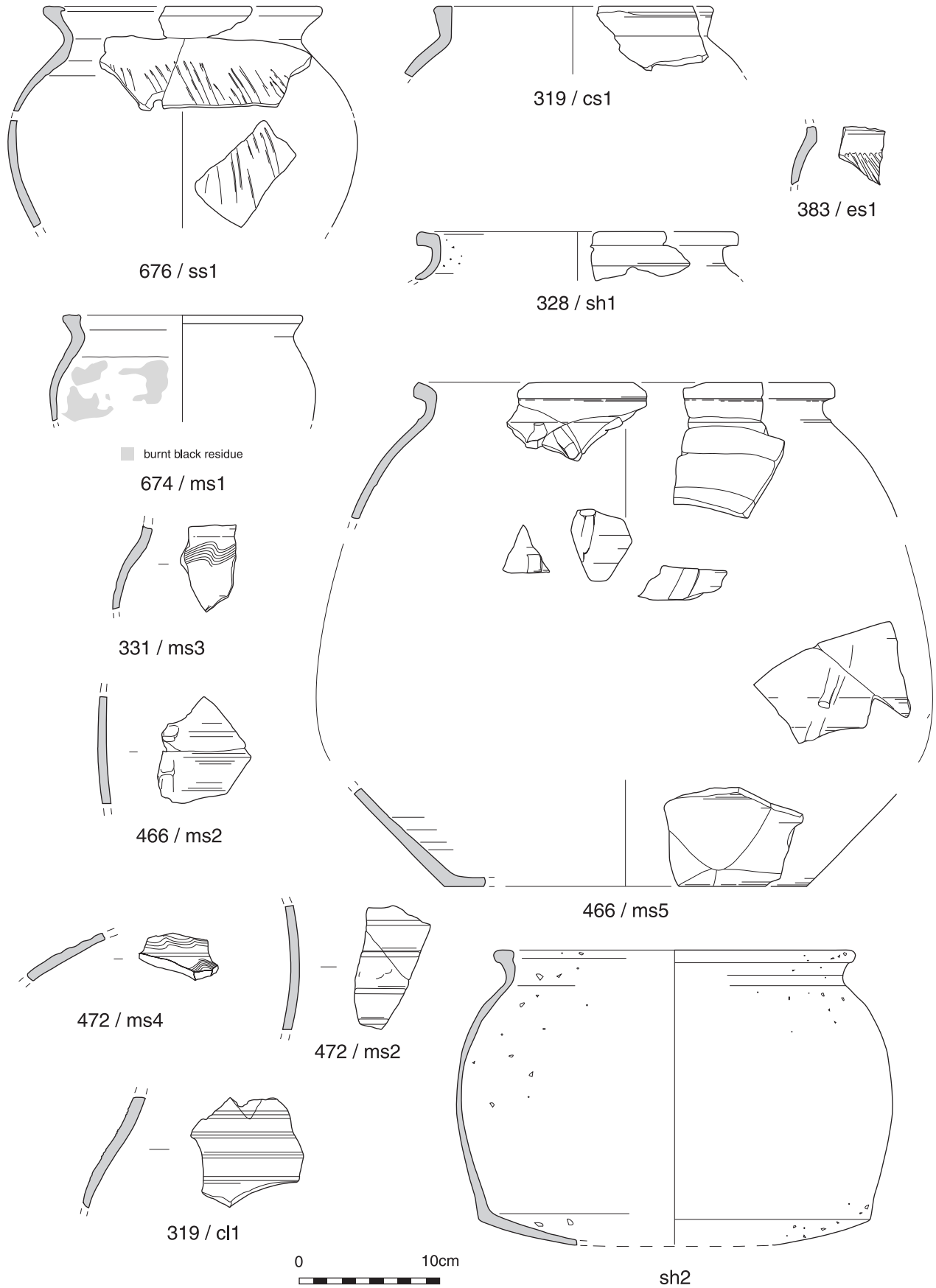


Figure 13. The Medieval Pottery

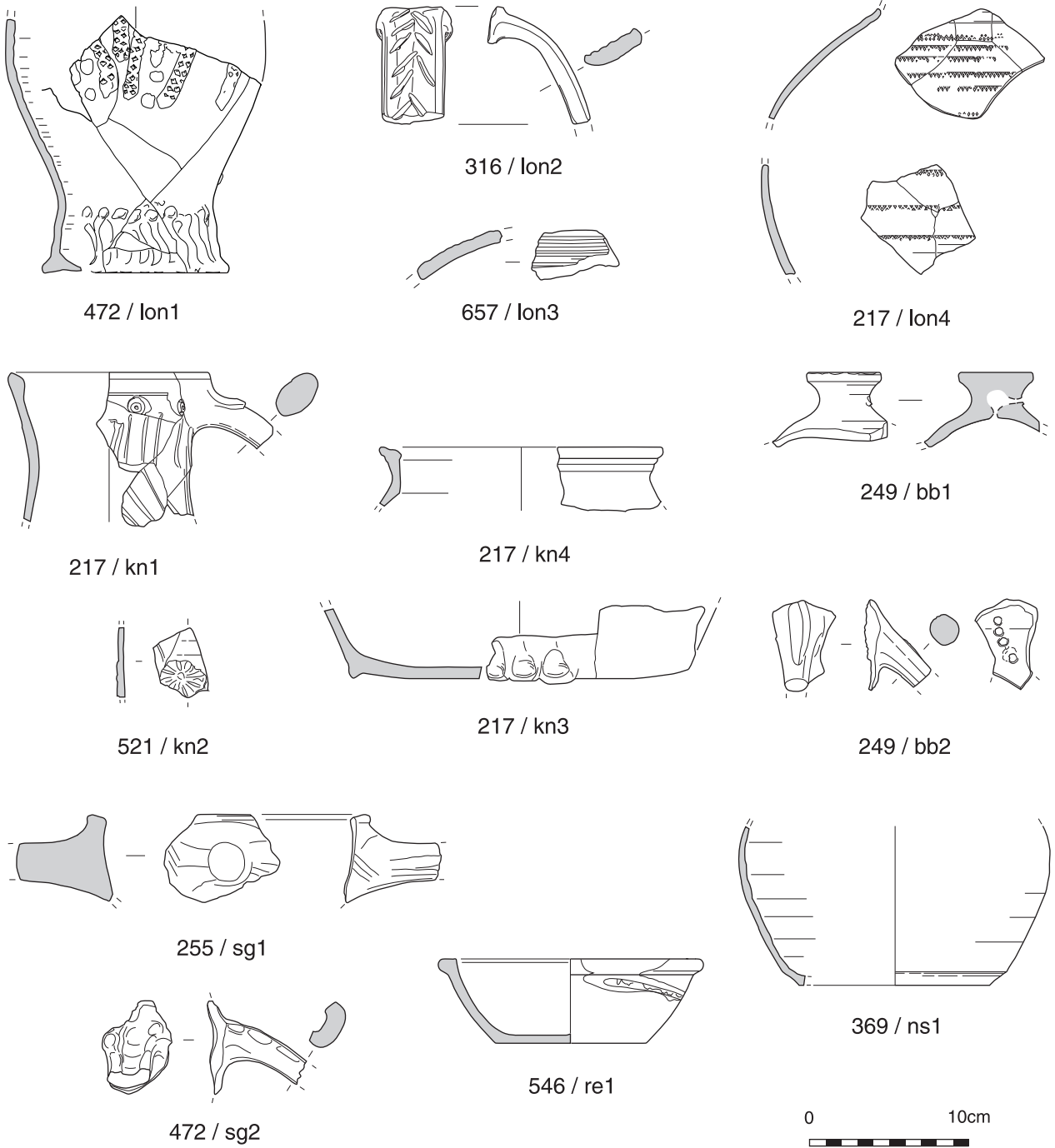


Figure 14. The Medieval Pottery

and a cordon of the same at the base carination. Covered in a clear glaze which is green on the unslipped areas.

- LON2. Context 316. Jug handle. Grey fabric with browner surfaces. Even orange glaze on outer handle face, patchier on the inner.

- LON3. Context 657. Sherd from shoulder of jug. Grey fabric with brick-red inner surface. Outer surface has even covering of white slip overlain by bright copper-green glaze. The combed decoration is cut through the slip, to give a sgraffito effect.

- LON4. Context 217. Sherds from the shoulder of a rouletted jug. Light grey fabric with pale orange surfaces. Outer surface has patchy covering of orange glaze.

#### Brill/Boarstall Ware

- BB1: Context 249. Lid fragment. Pale grey fabric with orange and grey variegated surfaces. Thin green glaze with thicker patches. Knop is hollow.

- BB2: Context 249. Jug handle. Orange pink fabric, glossy green glaze with copper filings in the body and inner handle.

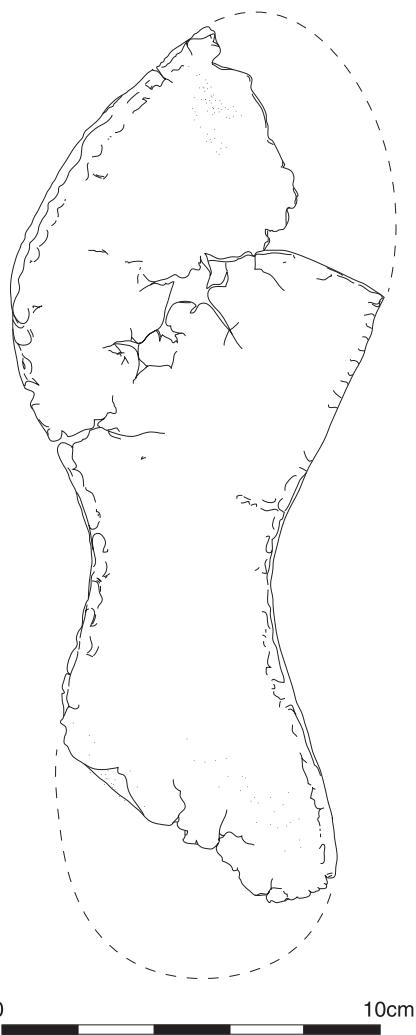


Figure 15. The leather turnshoe sole (upper view)

#### Kingston Ware (KING)

- KN1. Context 217. Jug rim and handle. Pale grey fabric with pinkish-buff surfaces. Exterior pale green glaze with darker patches and brown, partly undissolved copper filings.

- KN2. Context 521. Body sherd from highly-decorated jug. Very pale grey fabric. Exterior yellowish-green glaze.

- KN3. Context 217. Jug base. Pale grey fabric with buff surfaces. Outer surface is smoked dark grey, inner has soot patches. Patches of glossy green glaze with central pits on the outer surface.

- KN4: Context 217. Jar rim. Pale grey fabric with smoked outer surface.

#### French import

- NS1. Context 369. Base from ?jug. Normandy stoneware? Hard orange fabric with browner surfaces.

#### Red Earthenware.

- RE1: Context 546. Near-complete bowl. Brick-red fabric with greenish-orange glaze on the inner surface. Patches of sooting on outer surface and kiln scar near rim.

#### THE LEATHER by Quita Mold

A small assemblage of leather was recovered, comprising shoe components and secondary waste off-cuts. These consisted of one turnshoe sole (Fig 15) and at least four further fragments, two repaired pieces, seven fragments of secondary waste and three fragments of scrap. The turnshoe components (SFs 89, 90, 91 and sample 28) were all of medieval date, although evidence for the style of shoes represented, which would have allowed much closer dating, was lacking. The full catalogue is contained in the archive.

#### GLASS by Cecily Cropper

The glass assemblage comprised 84 fragments from a maximum of 23 vessels. There were 55 fragments from a maximum of 20 bottles, 2 fragments from 2 individual vessels of unidentifiable type, and 14 fragments from a jar. The rest of the assemblage comprised twelve fragments of plain window glass and an undiagnostic fragment. The occurrence per context by type and date is recorded in archive. None of the material can be dated to before the 17th/18th century.

#### THE METAL OBJECTS by Kate Atherton

##### Introduction

The excavation produced a total of 154 metal objects. The assemblage comprised 1 silver coin, 16 copper alloy objects, 64 iron objects, 68 iron nails and 5 lead objects. In addition, 35 lead shot were discovered encrusted to iron

objects. A complete ceramic marble was found in a post-medieval context. An iron knife tang was found encased in an ivory handle and this is discussed below (see Bone, antler and ivory objects).

The following categories of object were identified: personal items, domestic items, horse gear, building and structural ironwork, tools, miscellaneous objects and coins. Copper alloy and iron objects have been discussed together by function and lead objects are discussed separately. A full catalogue entry for each object can be consulted in the archive.

### Personal objects

Nine objects have been identified as personal items, seven of which are copper alloy and two are iron. The copper alloy objects consist of three buckle frames, one button and three pins. The iron objects are a pin and a purse frame.

Two large circular buckle frames (SFs 29 and 30) with identical diagonal incised lines were found in context 368 and undoubtedly formed a pair of shoe buckles. Shoe buckles of this size (diameters of 48 mm) and type are likely to be late medieval in date (Egan and Pritchard 1991, 65-67). The third buckle frame (SF 3, context 138; Fig 16) is decorated with four scallop edges. This is possibly another late medieval shoe buckle but it may equally be a spur buckle of similar date (Egan and Pritchard 1991, 65).

The remaining copper alloy objects include a medieval composite button (SF 1, context 119) which would have had a diameter of 17 mm. There is no evidence of decoration and its pin is absent. Such disc buttons were introduced in the 13th century and by the middle of the 14th century they were commonly used at the front of the outer tunic (Allen forthcoming). A complete dress or hair pin (SF21) was found in context 266 (Fig 16). The pin is of medium length with a discoid head decorated with at least nine repoussé bobbles. Examples of this type of pin found in Winchester were dated to the 16th century (Biddle 1990, 558, fig. 151 no. 1463). An iron pin shank was found in context 328 and is a less common find. Similar pins with a slightly tapering shank were classified as Type F at Winchester and were dated from the 10th century (Biddle 1990, 559-60, fig. 152, no. 1465).

The remaining iron object (SF 31, context 368) is an iron purse frame dating from the 15th to 16th centuries (Fig. 16). Two rods would have formed the upper and lower halves of the circular frame which was attached to the girdle by a swivelling suspension hoop. Small perforated fittings are evident which would have been sewn onto the purse material. Frames of this type, which were fastened with drawstrings, were commonly used for game bags and purses and a similar example, but with non-ferrous plating, was found at King's Lynn (Goodall and Carter 1977, fig. 296, no. 48).

### Domestic objects

Six iron objects have been classified as domestic objects, comprising four knife blades and two key fragments. Two of the knives, and possibly a third, have whittle

tangs and the fourth has a scale tang. Whittle tang knives had a tapering tang that was driven into the handle, in contrast to scale tang knives, which had a handle formed from scale plates riveted to the tang. Two of the whittle tangs (SFs 33 and 67, contexts 375 and 475; Fig 17) are a similar type, although of different size, distinguished by the back of the blade sloping sharply down to the point close to the tip (Cowgill et al. 1987, 84, fig. 57, no. 45). This type of knife is dated from the early to mid 14th century when blades became longer and thinner as knives became more specialised. It is possible that such slender knives would have been more suited for food preparation and eating than for more general use (de Neergaard 1987, 51). The third possible whittle tang knife is too fragmentary for identification but was found in the same context (428) as the ivory knife handle discussed below.

Scale tang knives, such as SF 64 (context 477; Fig 17), were introduced in the early 14th century (Cowgill et al. 1987, 82). Both the blade and the handle are broken but the x-radiograph shows the possible remains of an inlaid groove along the back which is a design characteristic of the late 14th century when one third of all knives were scale tangs (de Neergaard 1987, 94, fig 64, no. 130).

One key (SF 24, context 201) is possibly a type of padlock key that dates from the early medieval period and was no longer in use after the 13th century (Goodall 1990a, 1006). However the key is in poor condition and the bit is broken so the identification must remain tentative.

### Horse gear

Eight objects have been classified as horse gear in addition to fifteen fiddle key horseshoe nails. The iron objects comprise three horseshoe fragments, two rings, one harness buckle and one currycomb handle. The copper alloy object is a pellet or rumbler bell and is probably a horse harness accessory.

Two horseshoe fragments (context 316 and SF 25 from context 201) are Clark Type 2B (Clark 1995, 86) which are characterised by their 'lobate' profile. They typically date from the 12th century and were replaced by a heavier shoe during the 13th century (ibid. 96). The third horseshoe (context 126) is Type 4 with a broad web with rectangular nail holes and probably dates from 1350-1450. The majority of the fiddle key nails are likely to be of the same date. The iron rings and the trapezoidal buckle are most easily classified as horse gear although the rings could also have a structural purpose. The buckle (SF 68, context 475) is a common type for harness with a rolling cylinder to reduce the chafing of the straps. This type of buckle is still in use but it would not be out of place in a medieval context. The near complete currycomb handle (SF 44, context 414) is in poor condition but has three arms. This type was introduced in the 15th century and continued in use into the post-medieval period. One arm has a loose complete ring around its base, which would make a noise and forewarn the horse that the groom was approaching (ibid. 162).

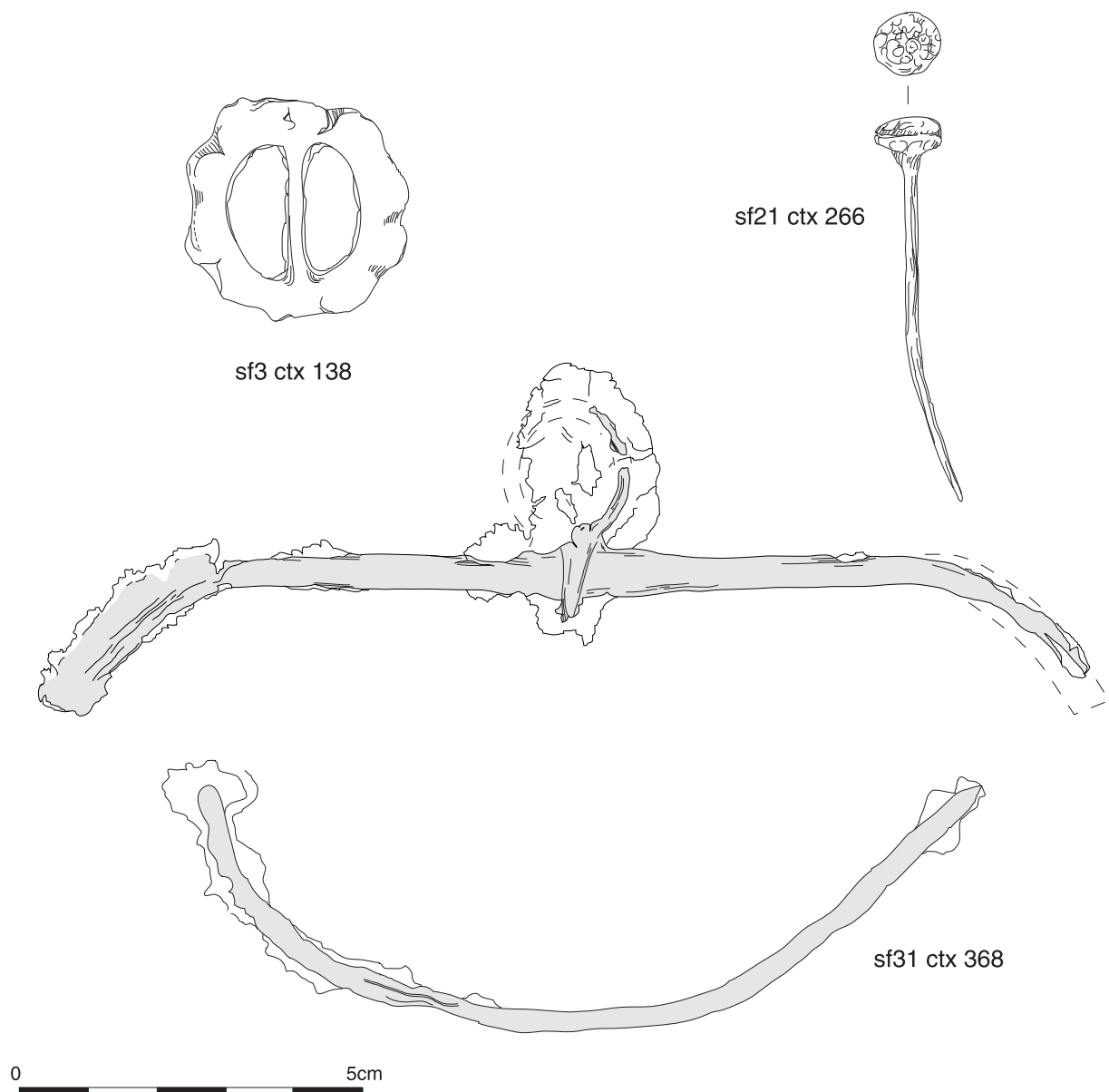


The complete pellet bell (SF 95, context 249), with a girth of 45 mm, is of a type used on horse harness from the 15th century through to the 18th or 19th centuries but it may also have been used for dress or on a pet collar. The bell is constructed from two hemispheres of sheeting, soldered together at the flanged edge and with a separate strip looped over and inserted through the top. The iron pea survives in situ but the whole bell is in poor condition. Excavations at Great Linford uncovered a slightly smaller pellet bell (from topsoil) with identical decoration that was also identified as horse gear

(Zeepvat 1992, 171, fig. 218, no. 213). The bell has a plain upper half and a lower half decorated with an incised shield shape and a palmate design.

### Tools

Five objects have been classified as tools and all but one were found in post-medieval context 171. Three of these are files and the fourth is possible a chisel blade. The context also produced a coin dated 1801. The remaining tool is a near complete spade iron (SF 66, context 125)



**Figure 16. The metal objects - buckle, pin and purse frame**



Figure 17. The metal objects - iron knives

which would have attached the spade to the handle. The earlier, medieval spade irons were U-shaped (Goodall 1993b, 194, fig. 145, no. 1514) and it is likely that the more angular spade iron from the present site is late medieval at the earliest.

**Building and structural ironwork**

This category comprises 14 objects in addition to 68 nails, 36 of which are complete. Two nails from context 327 are encrusted to at least 34 tiny lead shot and are only visible on the x-radiograph. The 14 objects consist of 7 inner building or furniture fittings: 1 copper alloy and 4 iron perforated strips, a window catch and hook, both made of iron. The iron strips are probably hinge straps that may date from the later medieval period. The structural ironwork group consists of 3 bolts, 3 clench bolts and a possible post-medieval drain fixture which was found in context 601 and probably dates from the 19th century.

**Coins and miscellaneous objects**

The excavation produced two post-medieval coins. A coin dated 1801 was found in context 171 and a silver shilling (dated 1836) was recovered from context 167.

Twenty-two incomplete or abraded objects have been grouped together as miscellaneous. Six are made of copper alloy and are fragments of sheet, mesh and wire. One iron object (SF 58, context 407) may be part of a rod with a hook or eye at one end and, therefore, from an early medieval padlock key but the identification must be speculative because of the poor condition of the fragment. The remaining objects are discs and fragments of sheet, strips and wire that probably date from the later post-medieval period.

**LEAD OBJECTS**

*(Calme and sheet identified by Cecily Cropper)*

Five lead objects were recovered in addition to 35 tiny lead shot that were encrusted to two nails from context 327 and a post-medieval drain fixture from context 601. The other lead objects consist of three strips, one sheet and a piece of lead window calme found in two pieces from context 215. This is of

Type B/C (Knight 1985, 154-56), cast in a mould and may have had an ecclesiastical purpose.

### METALWORKING DEBRIS

by Kayt Brown

A total of 768 g of slag was recovered from six contexts ranging in date from the 15th-19th centuries. The assemblage comprised small amorphous lumps of smithing slag, and 1 fragment of vitrified brick (context 136, the backfill within hearth 134). There were no unusual features within the assemblage, which was a background scatter typical of those found on many archaeological sites of all periods.

### BONE, ANTLER AND IVORY OBJECTS

by Kate Atherton

#### Introduction

Six bone objects were recovered during the excavation. These comprised toilet implements, domestic items and miscellaneous objects. A full catalogue entry for each object is available in the archive.

#### Toilet implements

This category comprises two objects which have been identified as a comb and a brush head. The comb (SF 77, context 575; Fig. 18) is a simple double-sided bone comb in a fragmentary condition. Such combs are characterised by their rectangular shape with rounded corners and teeth that are commonly coarse on one side and fine on the other. They can be typologically dated from the early 16th to 17th century. A brush head (SF 35, context 409) was made from two bone plates secured together by iron rivets at either end and there is no evidence for a handle. Green staining indicates that the tufts would have been of fine wire. Similar bone brushes found on excavations in London have all dated from the 17th century onwards (MacGregor 1985, 183).

#### Domestic items

One of the two domestic items is a complete needle (SF 74, context 117; Fig.18) with a plain polished shank that tapers to a blunt point. The needle shank expands slightly towards the head and tapers again after the eye to form a thick point. The size of the shank (with a diameter of 2 to 3 mm) would have been too large for fine material and it is likely that it was either used for mesh knitting or as a pin. Bone needles were entirely replaced by metal needles at the beginning of the medieval period and this needle can be dated to the 10th and 11th centuries (MacGregor 1985, 193).

The other domestic item is an ivory handle of a scale tang knife (SF 39, context 428) which has no decoration and would have been secured by at least three small iron rivets. Such handles were popular in the 16th century and ivory handles are known in a variety of forms in the early post-medieval period (MacGregor

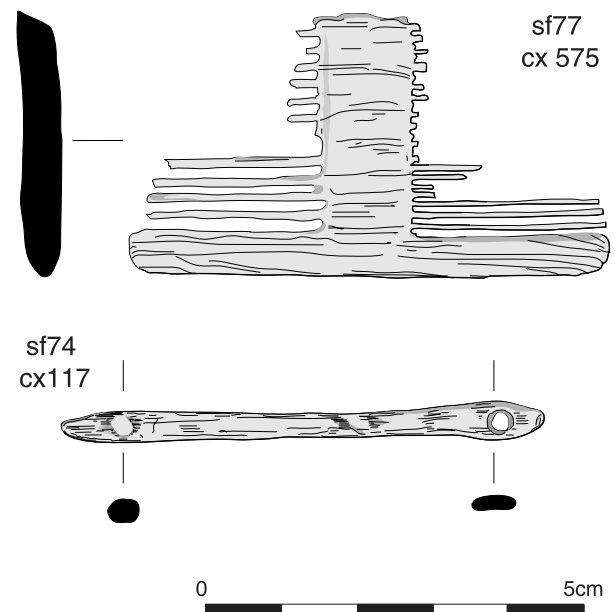


Figure 18. The bone objects - comb and needle

1985, 170). The remains of a possible end plate, made from iron is visible and this could have been originally decorated.

#### Miscellaneous objects

Two objects were recovered that cannot be identified by function. An antler point (context 510) has been polished and one side has been flattened slightly, presumably to prevent the object rolling. One side of the point is flattened, probably through wear, suggesting the object is a textile tool. The other object is a cattle rib (context 266) with a punched circular perforation. This is possibly associated with the butchering of the animal.

### CERAMIC BUILDING MATERIAL

by N Mitchell

The ceramic building material assemblage comprised 1,455 fragments weighing 128.42 kg. The forms, described below, were dominated by flat roof-tiles, some of which were glazed, with a limited number of ridge- and hip-tiles, floor-tiles and bricks. Little of the material is itself datable but the unusually distinct fabric groups have enabled some chronological inferences to be made. The spatial distribution of the material indicates that the most likely area for substantial structures lay outside the north and east limits of the excavation. The following is a summary of the analysis; the full report is contained in the archive.

#### Method

A 100% retrieval policy was followed and all pieces were quantified by weight, fragment count, and classified by form and functional type. A total of 10 distinct fabrics were noted. Detailed descriptions of the fabrics are

contained in the archive. See Table 6 for a quantification of the ceramic building material.

### Flat Roof-tile

There were no nib-tiles in the assemblages, suggesting that it is likely that all the flat tiles are peg-tiles. All fabric groups except fabric 7 included some glazed fragments.

### Ridge and Hip-tiles

There were 8 ridge-tiles, all of which are of a simple curved form, and usually with a thick clear or green glaze, although two fabric 1 ridge fragments are unglazed. Four pieces are partly straight and partly curved and are interpreted as possible hip- or gutter-tiles (fabrics 1, 2 and 4).

### The Floor-tiles

Only one decorated floor-tile was found, a medieval slip-decorated fragment from rubble deposit 174. Its design, comprising interlocking bands with dots around an eight petalled flower, is known to have been made at the tile 'factory' at Penn in Buckinghamshire (Hohler 1942, design P62), c 15 km to the north of Eton. Such tiles are known from several sites in the region, including the Aerary at nearby Windsor Castle. There is documentary evidence for the delivery of tiles from Penn to Windsor in 1352 and specifically by boat in 1356/7. The Aerary floor was laid in 1354 (Hohler 1942, 7). This example could therefore have been part of a contemporary shipment.

### Brick

Most of the 52 fragments of brick were from 16th-century contexts or later, although 128, 138 and 163 are associated with pottery dating to the late 15th century. Such a chronology is early for brick but large quantities were brought from Slough for use at Eton College from the 1440s, and the material was also used in small quantities at Windsor Castle before then (Clifton-Taylor 1972, 213).

### Distribution

Two large assemblages were found; one from the fill (264) of an oval pit [263], which produced the largest assemblage (191, 1320g). Some of the tiles in this feature showed evidence of secondary burning. A tile-lined feature (291) possibly a soakaway, was located 2.5 m to the south of this. There was no evidence of secondary burning on any of the tiles in this feature, although they had the same range of fabrics as those from pit 263, (fabrics 2-6). This may indicate contemporaneity, and possibly related functions, for the two features.

The north-eastern part of the site produced the most tile fragments. All fabrics were present in this area but fabric 4, which is likely to span both medieval and post-medieval periods, was the most numerous here.

### Conclusion

The ceramic building material suggests that tiled buildings may have been concentrated outside the north and east limits of the site, both in medieval, and post-medieval times.

The diversity of the assemblage may reflect the immediate access to the river and the unusual ease of transport of tiles, cumbersome and fragile, from a selection of production centres.

### THE WOODEN WATERFRONT STRUCTURES by N Mitchell

#### The Waterfront Structures

Two phases of waterfront structures were found. The earlier was a simple line of stakes with horizontal rods, and the later comprised a line of stakes with woven rods at the southern edge of a platform of larger, horizontally laid wood. Most of the wood was in good condition except the uppermost horizontals of the phase 2 platform which were found just above the level of the permanent water-table.

#### Phase 1: Fence-line 741

This structure consists of small group of vertical and semi-vertical stakes with diameters averaging 68 mm, which were interwoven with thin rods. The rods were in a fragmentary state with the structure surviving to only two rods in height. It is therefore not certain whether these were prefabricated wattle hurdles or woven *in situ*.

Three of the stakes were oak, one was of the Pomoideae group (apple, hawthorn etc.), and one was beech. A variety of species were present among the woven horizontals, including seven beech, one Pomoideae, one birch, one alder and one oak. The presence of these several species in such a limited sample suggests a relatively *ad hoc* construction making use of the trees close at hand.

Wattle-and-stake constructions have been noted at several sites along the Thames, such as the Vintry site and at the Thames Exchange, which are dated to the 11th century, but the form was still in use at the 14th century site of the Old City of London Boy's School (Milne 1991, 112-3). Some of these are more likely to have been foreshore fences than permanent waterfronts and this seems the most appropriate interpretation of the Eton phase 1 structure. The lightweight fence may simply have provided flood and wave protection for the alluvium slope.

#### Phase 2: Platform 290 and Fence-line 500

Structure 290, the wooden platform, was constructed in three layers, laid alternately east-west and north-south. All three consisted of roundwood branches of beech and willow/poplar, and the only oak timber lay across the top. This sequence of construction of the

platform is intact for only one metre in width, east to west. Only the largest timbers remained in place in the western part of the trench while to the east only a few branches and a tree stump of willow/poplar were found strewn north-west to south-east. The structure may have been washed away in this area.

The southern limit of the platform 290 is marked by fence-line 500, and comprises stakes, mainly in pairs, interwoven with horizontal rods. The structure survives to a height of only 4 rods but it is clear that the rods were not woven alternately but instead were laid in pairs and threes. The stakes varied from 23 to 100 mm in diameter and of the 20 present, nine are willow/poplar, eight are beech, two were oak and one is alder. The rods varied from 21-40 mm in diameter, and were mostly fast-grown beech, but five oak rods were also present.

Four of the beech rods of fence 500 display the distinctive curve of a coppice 'heel' which shows that they were ripped from the tree at the junction of an upright branch, probably from a coppice-stool or pollard-bole. All the beech rods from this structure were fast-grown and are in marked contrast to the eight pieces of beech from the phase 1 stake-line 741 which were very slow-grown.

A total of 12 other stakes (group number 748) were noted amongst the timbers of the platform. At least six of these were in a rough alignment, and were likely to have been inserted to secure the brushwood mass. Another four stakes were found marking the northern edge of the platform but there was no evidence of this having been a wattle fence.

Sixteen wood-working chips were recovered from amongst the timbers of the platform and from layer 471 immediately to the south of fence 500. Fourteen of the chips were beech and two were oak, ranging in length from 20 to 205 mm. The absence of willow/poplar and the presence of two small off-cuts of squared-section oak does not strongly link this debris with the construction of the phase 2 structures.

### **Interpretation**

The platform 290 with its retaining fence of woven rods (500) was a relatively unsophisticated structure with several layers of wood laid down and pegged into place at intervals to form a waterfront revetment and a dry platform by the river's edge.

The line of the stakes, 500, is not straight but undulates and probably reflects the method of its construction. Instead of erecting a pre-fabricated wattle fence this form of fencing was probably created by the adding and bending of rods around stakes in the ground and the insertion of more stakes to secure the rods. The straightness of the line would then be dictated by the flexibility of the rods and the stability of the stakes. The undulating course of the fence may also have prolonged its useful life by dissipating any ebbing effect of the river.

The platform seems to have suffered substantial damage on the eastern side where it is largely absent. That it was originally present in this area is suggested by the several beech and willow/poplar timbers lying

south of the woven fence 500 and by the presence of the smaller stakes inserted to hold the mass of branches in place. The woven fence, designed to retain the mass of wood, also suffered at least partial collapse to the south as the majority of the stakes lie at an angle of approximately 45 degrees from vertical. The platform, as found when excavated, would not have provided a good working or walking surface due to the sparsely laid large timbers of the 'top' layer. It is possible that the true surface was removed for re-use or was washed away. The uppermost layer of the platform was very poorly preserved due to its presence just above the permanent water level and it is probable that the structure existed above the level of waterlogged preservation. The decay of wood above the level of permanent waterlogging would also explain the deposition of thick organic layer 316 which was present throughout the trench directly above the wooden platform 290 to a maximum thickness of 0.12 metres.

A similar structure, of approximately this date, has been recorded at Dowgate, also on the River Thames, (Milne 1991). The structure, sealed by dumps with 13th-century pottery, comprised tree trunks and branches laid on a brushwood raft and was interpreted as waterfront embankment (ibid.140). A second similar structure was found at Norwich, dated to the late Saxon period consisted of a series of brushwood layers revetted into place by wattle fences. It was interpreted as the consolidation of the foreshore by individual tenement holders (Ayers 1987, 24). Since the wattle fence was so high, the landing of boats on the Norwich platform is considered to have been impossible, something not necessarily precluded at Eton given the level to which the structure was preserved. It cannot be known if the Eton platform had a function beyond the reclamation of the river-side as dry, firm and usable ground. It would have enabled the boarding of small boats although it is doubtful if the relatively insubstantial retaining fence 500 would have withstood the regular loading and unloading of substantial cargo.

### **ECOFACTUAL EVIDENCE**

#### **ANIMAL BONE** *by Bethan Charles*

#### **Introduction and Quantification**

A total of 1476 fragment of bone were retrieved by hand. The majority of bone from site was very well preserved with little attritional damage. All the identified bones are listed in archive. There was no evidence of a structured disposal pattern. The following is a summary of the analysis and results. A full report is included in the archive.

#### **Methodology**

Neither NISP or MNI methods of quantifying the relative frequency of species were used due to the fact that both are problematic (see Grayson 1984, O'Connor in prep.).

All fragments of bone were counted including elements from the vertebral centrum, ribs and long bone shafts. Sexing of the animals was not attempted due to the lack of suitable material.

The similarity of sheep and goat bones often pose difficulties in identification, and only one goat was positively identified in the collection. All Caprine bones have been listed as sheep.

Ageing was based on tooth eruption and epiphyseal fusion, although the latter is less reliable. A combination of Silver's (1969) and O'Connor's (1982) tables were used to give timing of epiphyseal closure for cattle, sheep and pigs. Tooth eruption and wear was measured using a combination of Silver's (1969), Payne's (1973) and Grant's (1982) tables. In addition to this an attempt was made to age the cattle horns using Armitage's (1982) system. This was only carried out for the hand retrieved assemblage, as the sieved material lacked the appropriate bones.

The measurements taken are those defined by von den Driesch (1976). Measurements on sheep bones were taken and used to gain biometric data on the animals using a procedure outlined in O'Connor (1995). Again, the sieved material proved to be lacking in appropriate bone fragments to contribute to the data.

In Table 7, the incidence of butchery, burning and excavational damage was calculated from both the hand collected and sieved bone. Carnivore gnaw marks were also noted. All of the bones with carnivore damage were sheep long bones, except for one pig metapodial. The majority came from phase 5.

#### **Hand collected bone**

It can be seen from Table 8 that of the main domestic species, sheep occur the most frequently, with cattle the next most frequent, followed by pig and horse. The pattern is common for a medieval site and appears to have been a constant throughout the different phases.

#### **Sieved bone**

The majority of the sieved bone was unidentifiable (Table 9). Most of the bones appeared to have been fragmented prior to excavation and only one had clear evidence of butchery marks. A small number of undiagnostic fish bones were also recovered.

#### **Butchery and body part representation**

A number of butchery marks were noted amongst hand collected bone. Most occur on the cattle and sheep long bones and are listed in Table 10. A large number of complete sheep metacarpals were noted, comprising 35% of the total fragments of sheep bones. This may be due to the animals having been skinned on site, since the feet were removed with the hide, and detached during the tanning process. However, the fact that many of the metacarpals are cut mid-shaft is unusual and more typical of butchery waste. It is therefore possible that

both small-scale butchery and tanning were taking place at the site.

#### **Age of the main domestic species**

The epiphyseal fusion data from cattle and sheep showed that the majority of the animals were slaughtered after the age of four years (see Tables 10, 11 and 12). In the case of cattle, they were probably kept for a long period, probably as draught beasts, or for breeding or dairy purposes. It is also possible that they might have been brought to the site for skin-processing and for their meat. As Ryder has suggested (1983), sheep exploited for their wool or milk were kept for as long as they had teeth with which to eat. In contrast, the majority of the pigs kept on this site were killed before 3 years of age, which indicates non-intensive pig husbandry through all periods.

#### **Biometric evidence**

A biometrical study was carried out in order to reflect the probable size of the sheep, using the metacarpal bones, the most common complete elements found. The results indicated that the bones from each phase were very similar (see Table 13). Ryder (1981) and Noddle (1975) have demonstrated that only in the late- and post-medieval period did the average size of sheep begin to increase. The fact that this was not apparently the case at this site could be due to the continued presence of unimproved breeds such as Soay.

#### **Other Mammals**

There were numerous fragments of horse bone. All the bones were from mature individuals, and some had clear indications of chop and knife marks, particularly radii and metacarpals. The consumption of horse meat was not customary in England during the medieval period, due to Pope Gregory III's ban on consumption of the meat in AD 732, although there is evidence that it was eaten during periods of famine (Wilson and Edwards 1993). However it is probable that the meat was used for dogs since there is evidence from as early as the 13th century that horse meat was fed to dogs in wealthy and noble households (*ibid.*). The fact that the majority of the horse bone appeared to be disposed of separately from human food waste suggests that the meat was not consumed by humans. The carcasses may have been utilized for the production of glue and tallow, and the hides tanned.

Two dog skulls were noted from phase 5 contexts and an articulated skeleton, probably of a breed similar to a young whippet or greyhound, complete apart from its front legs, was recovered from context 523 a fill within a late medieval pit [558] - (see Table 14).

A cat skull and mandible was found in context 471 (phase 5). This was probably a domestic animal used to keep down vermin. Other fragments included a small number of deer bones, and two rabbit bones.

## Bird Bone

24 fragments of bird bone were noted, ten of which were from domestic fowl. All were limb bones. Two fragments were from phase 1 contexts, one from phase 2, three from phase 3 and two from phase 5. The remaining bones were unidentifiable.

## Pathology

There was little notable pathology other than that already discussed. A sheep metatarsal from context 523 had thickening resembling an inflammatory response around the distal half of the cortical bone. It is possible that a large ossified haematoma developed as a result of bruising possibly caused by the animal having been hobbled for a long period of time (Baker & Brothwell 1980).

## Discussion

The condition of the bones from this site is good, implying that the representation of the bones by species is probably reasonably reliable, but certain species, particularly cattle, may be over-represented due to bone size and density. It is clear from the remains that sheep and cattle dominate the site through all phases. The most active period was during phase 5, and the animals which were brought to site appear to have been mostly fully mature or elderly. It is likely that the sheep had been utilized for wool production, and the cattle were probably dairy or draught beasts at the end of their working lives. It also appears that small numbers of horses were slaughtered, as some of the fragments retrieved had butchery marks. The fact that most of the animals were old means that they would not have been valued greatly for their meat, so a plausible conclusion could be that the site was used as an *ad hoc* knacker's yard where the animals were slaughtered and skinned and their carcasses split up for sale.

## CHARRED AND WATERLOGGED PLANT REMAINS by Ruth Pelling

### Introduction

Samples of soil were taken for the retrieval of charred and waterlogged plant remains. Two (5 and 23) were found to be rich in charred remains and were therefore subjected to full analysis. In addition, several deposits were found to contain waterlogged remains and two samples were selected for the detailed analysis of waterlogged plant remains.

### Methodology

The original sample sizes were 10 and 18 litres. Those taken for charred plant remains were processed by bulk water flotation and the flots collected onto a 500 µm mesh. When dried, they were submitted for analysis. The two flots contained such a large quantity of remains

that they needed to be split into manageable fractions using a riffle box. A fraction of each sample was sorted for seeds and chaff and other recognisable plant remains under a binocular microscope at x10 to x20 magnification. Identifications were based on morphological characteristics and by comparison with modern reference material. The results are displayed in Table 15 below.

For the two waterlogged samples, a sub-sample of 5 kg was processed in the laboratory using a simple wash-over technique. The resulting flot was then sorted under a binocular microscope as for charred remains and any seeds or other quantifiable plant fragments were extracted. Sample 17 contained such a large quantity of seeds of *Urtica dioica* (common nettle) that they were not quantified after the first 1000. Identifications were made as above.

For both charred and waterlogged remains, nomenclature and taphonomic order follows Clapham, Tutin and Moore (1989). The plant part recorded is the seed, nutlet etc. unless otherwise stated.

### The Charred Remains

The charred remains are detailed in Table 15. Both samples 5 and 23 (contexts 264 and 638) contained very large numbers of grain of *Avena* sp. (oats), with 322 grains per litre in sample 5 and 143.2 grains per litre in sample 23. All the oats identified are recorded as cultivated. In addition, occasional hulled *Hordeum vulgare* (barley) and free-threshing *Triticum* sp. (wheat) grains are present. A large proportion of the indeterminate grains are also likely to be poorly preserved oats. The total number of barley and wheat grains forms approximately 2% of the samples.

Chaff forms a very minor component of the samples. The chaff elements present include rachis of *Secale cereale* (rye) and free-threshing *Triticum* sp. (wheat) and a single glume base of *Triticum spelta* (spelt wheat), presumably a residual contaminate derived from prehistoric or Roman deposits. Occasional cultivated legumes (Pea/Bean/Vetch etc.) were also recovered from sample 23.

Weed seeds were present in both samples in small numbers. In each sample the weed assemblage is typical of arable or ruderal habitats. Some indication of heavy soils and damp ground comes from the *Anthemis cotula* (Stinking Mayweed), *Eleocharis palustris* (common Spike Rush), and *Carex* sp. (Sedges). *Anthemis cotula* and *A. arvensis* (Corn Chamomile) suggest the cultivation of calcareous soils. *Agrostemma githago* (Corn Cockle) is a common weed of corn fields and particularly associated with rye or winter wheat. The majority of the other weed species could have been growing around the site on grass patches, rubbish tips or general ruderal habitats. The ruderal species include *Silene* sp. (Campion/Catchfly), *Chenopodium album* (Fat Hen), *Hyoscyamus niger* (Henbane), *Sambucus nigra* (Elder) and *Lolium temuletum* (Rye Grass). The total proportion of weeds within each assemblage is very low, less than 5%.

## Composition

In both charred samples oat grains form approximately 85% of the total assemblage while a large proportion of the indeterminate grains are also likely to be oat. Weed seeds and chaff together only formed approximately 5%. It would appear likely, therefore, that the assemblages represent clean threshed and winnowed oats from which the majority of weed seeds and chaff have been removed. The remaining cereal remains, chaff and weeds are likely to represent general processing waste which has become mixed with the oats and is probably no more than the usual degree of cereal waste present on medieval settlement sites. These samples are, therefore, likely to be deposits of basically pure oat grains which have become mixed with other rubbish at or soon after deposition.

While oats and barley were commonly grown together as a drage in a ratio of 1:1, the assemblages comprising solely oats suggest it was grown as a pure crop. It had a range of uses as a pure grain, as both human and animal food.

The waterlogged plant remains also contained a few charred remains. They are of a range and quantity similar to those noted in the majority of the original samples. These include occasional grains of *Avena* sp. (oats), hulled *Hordeum vulgare* (barley) and free-threshing *Triticum* sp. (wheat), large legumes (pea/vetch/bean etc.) and occasional weed seeds. Such remains must represent background scatters of cereal processing waste such as is commonly found on medieval sites.

## Waterlogged Remains

The waterlogged plant remains identified are displayed in Table 16. Sample 17 was dominated by seeds of *Urtica dioica* (Stinging Nettle) to the extent that counting was stopped after the first 1000. Sample 28 was dominated by *Sambucus nigra* (Elder). In both samples ruderal species dominate in addition to the *Urtica dioica* and *Sambucus nigra*, notably *Conium maculatum* (Hemlock), *Urtica urens* (Small Nettle), *Rubus fruticosus* (Blackberry) *Stellaria media* (Chickweed), *Chenopodium album* (Fat Hen), *Polygonum lapathifolium* (Pale Persicaria) and *Hyoscyamus niger* (Henbane). These are all species which are characteristic of ruderal habitats, especially nitrogen-rich soils, and are to be expected within the more disturbed parts of settlements, including rubbish dumps. Occasional arable species, such as *Agrostemma githago* and *Legousia hybrida* (Venus's Looking Glass) were also present. The majority of the remaining terrestrial species are also commonly found in ruderal habitats, including species which are usually associated with arable conditions such as *Anthemis cotula* (Stinking Mayweed).

Some aquatic and damp ground species are also present, all of which could have been growing within the ditches or on the wet soils towards the river. The ditches appear to have contained shallow, slow-flowing water, supporting some *Potamogeton* sp. (Pond Weed)

and *Oenanthe aquatica* group (Water-Dropwort), with *Alisma plantago-aquatica* (Water-Plantain) present in the muddy sub-strata on the edge of the ditch or within the shallow water *Ranunculus acris* (Meadow-Buttercup) *Conium maculatum* (Hemlock), *Montia fontana* (Blinks), *Eleocharis palustris* (Common Spike Rush), *Schoenoplectus* (Club Rush) and *Carex* sp. (Sedges) may have been growing within damp grass around the ditch and down towards the river.

Generally the waterlogged remains are indicative of a disturbed and neglected area with nitrogen-rich deposits, with shallow muddy ditches. Some evidence for tree-cover was present in the form of occasional *Betula* sp. (Birch) seeds.

## MOLLUSCA (TABLE 17)

by Mark Robinson

### Introduction

Excavations at King's Stables Street, Eton, revealed a great depth of calcareous alluvial sediments many of which contained high concentrations of shells. A column of 26 samples was taken from the main alluvial sequence and 4 samples were taken from some possible levee deposits.

### Methods and Results

The samples, which ranged from 1.0 to 2.0 kg, were floated onto a 0.5 mm mesh and the residues sieved to 0.5 mm. The flots were scanned under a binocular microscope. The abundance of molluscs in selected samples is listed in Table 17.

### Interpretation

The molluscs from the main alluvial sequence show a transition from assemblages dominated by flowing water aquatic species such as *Bithynia tentaculata* at the bottom of the sequence (eg Sample 146) through to faunas of alluvial grassland towards the top (Samples 126-122). The entire sequence could have represented overbank sedimentation and the abundance of shells of *Trichia hispida* gp. and *Vallonia pulchella* from Sample 126 upwards is characteristic of flood meadows. Occasional shells of the dry ground molluscs *Pupilla muscorum* and *Vallonia excentrica* in some of the lower samples had probably been derived from elsewhere rather than being representative of floodplain conditions. The number of aquatic molluscs declines over the top 0.30 m of the sequence, such that there are only a few shells of *Bithynia tentaculata* in Sample 122, other aquatic species being absent. Alluviation was evidently much reduced when the settlement was established. The terrestrial species throughout the sequence are suggestive of open conditions.

The samples from the deposit sealing the earliest timber waterfront structures all contain very high concentrations of molluscs, with over 4000 shells per litre. They are almost all of aquatic species, the flowing



water species *Valvata piscinalis*, *Bithynia tentaculata* and *Theodoxus fluviatilis* being much in evidence. Many of the shells are adult and almost intact. Such assemblages are not typical of general overbank alluvial sediments and indeed they contrast with the assemblages from the main alluvial sequence. They are more characteristic of river bed and strand line deposits. It is therefore suggested that this deposit (Context 674) either represents dumped dredgings from the river channel or strand-line sediments perhaps against a flood embankment.

#### **MARINE MOLLUSCA** *by Greg Campbell*

A small group of marine shell, 270 identifiable items in total, was recovered by hand and from the processing of soil samples from the site. The vast majority of these were edible oyster (*Ostrea edulis*, 249 shells), with cockles (*Cerastoderma edule*) and mussels (*Mytilus edulis*) forming the remainder. They are most likely to derive from domestic refuse nearby.

Oysters occur in features on the site during all the medieval phases, but not at a constant rate. While the percentages of the overall number of oyster valves is roughly constant for phases 1 -3 and 5, there is a marked reduction during phase 4 to about 4% of the total.

There were no deposits rich in shells. Overall, the shells are relatively clean and free of pests, which may indicate that they were being collected from farmed or regularly gleaned beds. A very few shells had been bored by the worm *Polydora*. Some of the borings were on the shell edge, and some were centrally placed on the shell, indicating that both *P. hoplura* and *P. ciliata* were responsible. The former worm is confined to the warmer waters along the English south coast (Winder 1993, 348), indicating that at least some of the oysters are from there, and not from the more obvious sources around the mouth of the Thames.

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#### **THE ARCHIVE**

The archive has been microfilmed and is currently held by the Oxford Archaeological Unit. The records and finds will be deposited at Reading Museum, Berkshire.

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APPENDIX 1: TABLES.

Pottery

**Table 1. Occurrence of glazed and unglazed fabric 2 by number and weight of sherds (in g) and MNV per ceramic phase.**

fabric	Phase 1			Phase 2			Phase 3			Phase 4			Phase 5			Phase 6		
	no.	wt.	mnv	no.	wt.	mnv	no.	wt.	mnv	no.	wt.	mnv	no.	wt.	mnv	no.	wt.	mnv
f1	13	367	0.79	17	178	0.22	22	143	0.11	1	14	0	2	79	0	0	0	0
f2	81	1146	0.54	91	1645	0.69	182	3335	1.02	8	134	0	14	178	0.14	0	0	0
f3	6	50	0	5	75	0.10	12	228	0.03	0	0	0	2	24	0	0	0	0
f4	3	55	0	5	108	0	2	50	0.10	1	42	0	0	0	0	0	0	0
f7	12	1681	0.84	10	246	0.22	5	56	0	0	0	0	0	0	0	0	0	0
f9	49	561	0.31	56	828	0.10	40	740	0.14	4	77	0.11	3	76	0.05	0	0	0
f11	4	41	0.18	13	214	0.25	12	361	0.27	3	28	0	0	0	0	0	0	0
lond	-	-	-	39	874	0.46	48	811	0.19	10	187	0.20	8	187	0.47	0	0	0
lcoar	-	-	-	6	435	0	0	0	0	1	14	0	0	0	0	0	0	0
dstam	-	-	-	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0
brill	-	-	-	1	1	0	2	145	0	0	0	0	0	0	0	0	0	0
frimp	-	-	-	2	40	0	2	16	0	1	29	0	1	56	0	0	0	0
king	-	-	-	-	-	-	80	1237	0.66	3	52	0	2	37	0	0	0	0
lmox	-	-	-	-	-	-	0	0	0	17	460	0.07	3	213	0.15	0	0	0
tudg	-	-	-	-	-	-	3	40	0	2	11	0.08	3	6	0	0	0	0
gston	-	-	-	-	-	-	2	38	0	15	151	0	4	126	0	1	217	1.00
dutr	-	-	-	-	-	-	-	-	-	3	193	0.15	1	11	0	0	0	0
cist	-	-	-	-	-	-	-	-	-	1	5	0.05	0	0	0	0	0	0
rede	-	-	-	-	-	-	-	-	-	-	-	-	48	1594	0.96	4	78	0
bord	-	-	-	-	-	-	-	-	-	-	-	-	14	355	0.37	2	51	0
mblk	-	-	-	-	-	-	-	-	-	-	-	-	3	188	0	0	0	0
	168	4171	2.66	245	4644	2.04	413	7202	2.52	70	1397	0.66	108	3130	2.14	7	346	1.00

**Table 2. Pottery occurrence by number and weight of sherds and MNV per fabric type per site phase.**

Fabric	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6
	MNV	MNV	MNV	MNV	MNV	MNV
F1	29.7%	10.8	4.4	0	0	0
F2	20.3	33.8	40.5	0	6.5	0
F3	0	4.9	1.2	0	0	0
F4	0	0	4.0	0	0	0
F7	31.6	10.8	0	0	0	0
F9	11.7	4.9	5.6	16.7	2.3	0
Shert	6.8	12.3	10.7	0	0	0
Lond	-	22.5	7.5	30.3	22.0	0
Lcoar	-	0	0	0	0	0
Dstam	-	0	0	0	0	0
Brill	-	0	0	0	0	0
Frimp	-	0	0	0	0	0
King	-	-	26.2	0	0	0
Imox	-	-	-	10.6	7.0	0
Tudg	-	-	-	12.1	0	0
Gstone	-	-	-	0	0	100
Dutr	-	-	-	22.7	0	0
Cist	-	-	-	7.6	0	0
Rede	-	-	-	-	44.9	0
Bord	-	-	-	-	17.3	0
Mbck	-	-	-	-	0	0
	2.66	2.04	2.52	0.66	2.14	1.00

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**Table 3. Fabric types as a percentage of each phase by MNV.**

Phase	Unglazed			Glazed		
	No.	Wt.	MNV	No.	Wt.	MNV
1	81	1146	0.54	0	-	-
2	88	1583	0.65	3	62	0.04
3	148	2368	1.02	34	967	0
4	6	101	0	2	33	0

**Table 4. Mean sherd weight (in g) per phase by fabric type, major medieval fabrics only.**

Phase	1	2	3	4	5
Fabric					
1	49.0	10.5	6.5	14.0	39.5
2	14.1	18.1	18.3	16.8	12.7
5		22.4	16.9	18.7	23.4
6			15.5	17.3	18.5
7	140.1	24.6	11.2	0	0
8		72.5	0	14.0	0
9	11.4	14.8	18.5	19.3	25.3
11	10.3	16.5	30.1	9.3	0

**Table 5. Vessel use per medieval site phase, expressed as a percentage of the total vessels per phase (by rim sherds).**

	Jars	Bowls	Jugs	Cups/Tygs	Total No.
Phase 1	96.0%	0	4.0	0	25
Phase 2	73.1	7.7	19.2	0	26
Phase 3	58.8	8.8	32.4	0	34
Phase 4	28.6	28.6	28.6	14.3	7
Phase 5	9.1	45.5	45.5	0	11

**Building Material**

**Table 6. Quantification of ceramic building material by type and fabric, shown as fragment count and weight (in g).**

Fabric	Ridge-tiles		Floor-tiles		?Hip-tiles		Flat roof-tile		Brick		Tegula		Total	
	no	weight (g)	no	weight (g)	no	weight (g)	no	weight (g)	no	weight (g)	no	weight (g)	no	weight (g)
1	2	210	-	-	2	1150	277	27950	-	-	-	-	281	29310g
2	5	770	3	310	1	400	289	26150	-	-	-	-	298	27630g
3	2	360	-	-	-	-	280	20990	-	-	-	-	282	21350g
4	-	-	-	-	1	180	260	18730	-	-	1	150	262	19060g
5	-	-	-	-	-	-	112	9200	-	-	-	-	112	9200g
6	-	-	1	320	-	-	86	8140	-	-	-	-	87	8460g
7	-	-	-	-	-	-	56	4590	-	-	-	-	56	4590g
8	-	-	1	120	-	-	-	-	-	-	-	-	1	120g
9	-	-	-	-	-	-	-	-	49	18590	-	-	49	18590g
10	-	-	-	-	-	-	-	-	3	1910	-	-	3	1910g
Slate	-	-	-	-	-	-	2	100	-	-	-	-	2	100g
Totals	9	1340	5	750	4	1730	1362	115850	52	20500	1	150	1433	140620

**Animal Bone**

**Table 7. Butchery, Burning, post excavational and carnivore gnaw damage.**

Damage	Number	% of total
Butchery	243	18
Post excavational	290	22
Burning	16	1.2
Carnivore	11	0.8

**Table 8. Total number of hand retrieved bones per species per phase.**

Phase	Cattle	Sheep	Pig	Horse	Dog	Deer	Cat	D. Fowl
1	26	66	7	0	0	1	0	2
2	34	43	14	13	0	0	0	1
3	34	41	11	0	0	1	0	0
4	34	44	8	1	0	1	0	4
5	105	137	8	23	2	1	3	3
19thC	1	6	4	0	0	0	0	0
Total	234	337	96	37	2	4	3	10

**Table 9. Total number of sieved bones per species per phase.**

Phase	Cattle	Sheep	Pig	Cat	Mole	D.Fowl	Un. Id. Bird	Un. Id.
1	1	5	1	0	2	0	0	161
2	2	6	1	1	0	1	1	139
3	2	3	1	0	0	0	0	59
4	0	1	0	0	0	0	0	52
5	0	1	1	0	0	0	0	17
19thC	0	0	0	0	0	0	0	0
Total	5	16	4	1	2	1	1	428

**Table 10. Epiphyseal fusion in cattle bones.**

Phase:	Unfused						Fused					
	1	2	3	4	5	19c	1	2	3	4	5	19c
Early (9-18 months)												
Humerus Distal	0	0	0	0	0	0	0	3	0	0	0	0
Radius Proximal	0	0	0	0	0	0	1	0	0	0	4	0
Intermediate (2-3 years)												
Metacarpal Distal	0	0	0	0	2	0	1	0	0	1	0	0
Tibia Distal	0	0	0	0	0	0	0	0	2	0	1	0
Metatarsal Distal	0	0	0	0	0	0	0	0	0	2	0	0
Late (3.5-4 years)												
Humerus Proximal	0	0	0	0	0	0	0	0	0	0	0	0
Radius Distal	0	0	0	0	0	0	1	0	0	0	2	0
Femur Proximal	0	0	0	0	0	0	0	0	0	0	0	0
Femur Distal	0	0	0	0	0	0	0	0	0	0	0	0
Tibia Proximal	0	0	1	0	0	0	0	0	1	1	1	0

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**Table 11. Epiphyseal fusion in sheep bones.**

Phase:	Unfused						Fused					
	1	2	3	4	5	19c	1	2	3	4	5	19c
6-12 months												
Humerus Distal	0	1	0	1	0	0	4	4	1	4	4	1
Radius Proximal	3	0	0	0	0	0	6	0	0	2	2	0
1-2 years												
Metacarpal Distal	0	3	0	0	0	0	3	1	0	1	23	0
1.5-2 years												
Tibia Distal	0	1	0	1	0	0	4	1	1	1	5	0
1-2.5 years												
Metatarsal	0	2	0	0	1	0	2	3	0	1	15	0
2.5-3 years												
Femur Proximal	0	1	0	0	1	0	0	1	0	0	0	0
3-3.5 years												
Radius Distal	0	2	0	0	1	0	2	0	1	2	3	0
Humerus Proximal	0	0	0	0	0	0	0	0	0	1	0	0
Femur Distal	0	1	0	0	2	0	1	0	0	0	0	0
Tibia Proximal	0	0	0	1	0	0	1	0	2	0	1	0

**Table 12. Age grouping of sheep mandibles.**

Age	0-2m	2-6m	6-12m	1-2y	2-3y	3-4y	4-6y	6-8y	8-10y
Phase 1	0	0	0	1	0	0	0	0	0
Phase 2	0	0	0	1	0	0	0	2	0
Phase 3	0	0	0	1	0	0	0	0	0
Phase 5	0	0	0	1	1	0	0	2	2

**Table 13. Biometrical variations in sheep metacarpals. (Data from O'Connor 1995)**

Breed and Phases	GL	Bfd	Kd	Bp
Clun Forest	131	29.2	17.6	26.2
Soay	116.2	22.2	12.4	19.8
Phase 1	104	19	9	17
Phase 2	115	22	12	20
Phase 5	106	19	9	18
	110	22	10	19
	111	24	12	19

**Table 14. Dog bone measurements.**

Context	Element	GL	BP	SD	BD	DC	-
523	Femur (R)	169	36.5	10.2	27.8	16.4	-
	Femur (L)	166.1	35.9	10.2	28.7	15	-
		GL	BP	SD	BD	DD	DP
	Tibia (R)	177.8	31.1	11	19.9	14.5	36
	Tibia (L)	178	31	11	19	14	35
		GL	BP	SD	BD	BT	DP
	Humerus (L)	93.8	15	5.8	20	15	24
		GL	BP	SD	BD	Bfd	-
	Radius (L)	89	10	6	13	10.9	-
		SDO	DPA	BPC	-	-	-
Ulna (L)	11.1	16	6.8	-	-	-	
532		GL	BP	SD	BD	BT	DP
	Humerus (R)	93	14.8	5.5	19	14	23.8
		GL	BP	SD	BD	Bfd	-
	Radius (R)	91	10	5.5	13.5	11	-
		SDO	DPA	BPC	-	-	-
	Ulna (R)	11	15	8	-	-	-

## Ecofactual Data

Table 15. Charred remains.

		Sample	5	23
		Context	264	638
		Volume (litres)	10	18
	Description		post medieval	post medieval
	Fraction Sorted		1/4	1/2
<i>Avena</i> sp	Oats, grain		805	1289
<i>Hordeum vulgare</i>	Barley, hulled grain		10	16
<i>Hordeum</i> sp.	Barley, grain		5	8
<i>Triticum</i> sp.	Wheat, free-threshing grain		6	5
<i>Triticum</i> sp.	Wheat grain		-	4
Cerealia indet	Indeterminate grain		70	103
<i>Avena</i> sp.	Oats, lemma fragment		1	-
<i>Avena</i> sp.	Awn fragment		1	2
<i>Hordeum</i> sp./ <i>secale cereale</i>	Barley/Rye rachis internode		1	1
<i>Secale cereale</i>	Rye rachis node		-	2
<i>Triticum</i> sp.	Wheat, free-threshing rachis node		-	1
<i>Triticum spelta</i>	Spelt wheat glume base		--	1
Cereal size embryo	-		5	3
Cereal sized culm node	-		1	6
<i>Pisum/Vicia/Lathyrus</i> sp.	Cultivated/Bean/Vetch		-	4
<i>Brassica/sinapis</i> sp.	-		2	1
Cruciferae	Seed capsule		-	1
<i>Silene</i> sp.	Campion/Catchfly		-	1
<i>Agrostemma githago</i>	Corn cockle		1	-
Caryophyllaceae	-		-	1
<i>Chenopodium album</i>	Fat hen		-	2
<i>Atriplex</i> sp.	Orache		-	2
Chenopodiaceae	-		2	-
<i>Medicago lupulina</i>	Black Medick		1	1
<i>Medicago/Trifolium</i> sp.	Medick/Clover		-	3
<i>Vicia/Lathyrus</i> sp.	Vetch/Tare		-	2
<i>Rumex</i> sp.	Docks		1	5
<i>Polygonum aviculare</i>	Knotgrass		-	2
Labiatae	Small seeded		-	1
<i>Hyoscyamusniger</i>	Henbane		1	-
<i>Sambucus nigra</i>	Elder		-	1
<i>Anthemis arvensis</i>	Corn Chamomile		1	4
<i>Anthemis cotula</i>	Stinking Mayweed		-	5
<i>Tripleurospermum</i> sp.	Scentless Mayweed		-	1
Compositae	-		3	3
<i>Eleocharis palustris</i>	Common Spike Rush		-	2
<i>Carex</i> sp.	Sedges		2	1
Cyperaceae	-		-	1
<i>Lolium temulentum</i>	Rye Grass		4	3
<i>Bromus subsect Eubromus</i>	Brome Grass		-	2
Gramineae	Grass, small seeded		-	4
Gramineae	Grass, large seeded		6	15
Indet	-		-	6



Excavations at Eton King Stable Street

Table 16. Waterlogged remains.

		sample	28	17
		context	669	105
		feature	629	106
		weight (kg)	5	5
		description	11/12thc ditch	11/12thc ditch
<b>Waterlogged Seeds</b>				
<i>Ranunculus acris</i>	Meadow Buttercup		3	-
<i>Ranunculus bulbosus</i>	Bulbus Buttercup		-	1
<i>Ranunculus acris/repens/bulbosus</i>	Buttercup		-	2
<i>Papaver cf. dubium</i>	Long-headed Poppy		-	8
<i>Brassica sp.</i>	Brassica, cultivated		-	5
<i>Silene cf. dioica</i>	Red Campion		-	5
<i>Silene cf. vulgaris</i>	Bladder Campion		-	1
<i>Silene sp.</i>	Campion/Catchfly		1	-
<i>Lychis alba</i>	White Campion		-	2
<i>Agrostemma pithago</i>	Corn Cockle		-	3
<i>Myosotus aquaticum</i>	Water Chickweed		-	8
<i>Stellaria media</i> agg.	Chickweed		1	48
Caryophyllaceae	-		3	-
<i>Montia fontana</i> subsp. <i>chondrosperma</i>	Blinks		-	1
<i>Chenopodium album</i>	Fat Hen		5	79
<i>Atriplex</i> sp.	Orache		4	13
Chenopodiaceae	-		5	18
<i>Vicia/lathyrus</i> sp.	Vetch/Tare etc.		-	1
<i>Rubus fruticosus</i> agg.	Bramble/Blackberry		9	19
<i>Potentilla anserina</i>	Silverweed		1	1
<i>Oenanthe aquatica</i> gp	Fine-Leaved Water-Dropwort		6	-
<i>Aethusa cynapium</i>	Fool's Parsley		-	1
<i>Conium maculatum</i>	Hemlock		29	71
<i>Torilis japonica</i>	Upright Hedge-Parsley		-	1
Umbelliferae	-		-	1
<i>Rumex</i> sp.	Docks		4	11
<i>Rumex cf. crispus</i>	Curled Dock		-	6
<i>Polygonum aviculare</i>	Knotgrass		-	8
<i>Polygonum lapathifolium</i>	Pale Persicaria		-	26
<i>Follopia convolvulus</i>	Black Bindweed		-	1
<i>Betula</i> sp.	Birch seed		-	1
<i>Corylus avellana</i>	Hazel nut shell fragment		-	2
<i>cf. anagalis arvensis</i>	cf. Pimpernel		-	2
<i>Urtica urens</i>	Small Nettle		1	28
<i>Urtica dioica</i>	Common Nettle, Stinging Nettle		91	1000+
<i>Hyoscyamus niger</i>	Henbane		25	-
<i>Solanum</i> sp.	Nightshade		9	26
<i>Prunella vulgaris</i>	Selfheal		1	-
<i>Stachys</i> sp.	Woundwort		1	-
<i>Lamium</i> sp.	Dead-Nettle		-	3
<i>Galeopsis</i> sp.	Hemp-Nettle		-	1
Labiatae	Large seeded		-	1
Labiatae	Small seeded		-	2
<i>Plantago major</i>	Plantain		-	1
<i>Plantago lanceolata/media</i>	Plantain		1	-
<i>Legousia hybrida</i>	Venus's Looking Glass		-	1
<i>Sambucus nigra</i>	Elder		150	1
<i>Dipsacus fullonum</i>	Wild Teasel		-	1
<i>Anthemis cotula</i>	Stinking Mayweed		-	3
<i>Arctium</i> sp.	Burdock		-	?1
<i>Carduus</i> sp.	Thistle		-	4
<i>Cirsium</i> sp.	Thistle		-	11
<i>Lapsana communis</i>	Nipplewort		-	8
<i>Sonchus asper</i>	Spiny Milk- or Sow-Thistle		1	3
Compositae	-		-	5
<i>Alisma plantago-aquaticum</i>	Water-Plantain		3	-
<i>Potamogeton</i> sp.	Pondweed		2	-
<i>Eleocharis palustris</i>	Common Spike Rush		-	10
<i>Schoenoplectus</i> sp.	Club rush		-	1
<i>Carex</i> sp.	Sedges		2	7
Cyperaceae	-		-	2
Gramineae	Grass,small seeded		1	-
Indet seed	-		6	4
Indet bud	-		-	2
Caddis fly pupareae	-		-	1

Table 16. Waterlogged remains, continued.

Charred Seeds

<i>Avena</i> sp.	Oats, grain	6	1
<i>Hordeum vulgare</i>	Barley, hulled grain	1	2
<i>Triticum</i> sp.	Wheat, free-threshing grain	1	6
Cerealia indet	Grain	1	3
<i>Triticum</i> sp.	Wheat, free-threshing hexaploid rachis	-	3
<i>Triticum</i> sp.	Wheat, free-threshing rachis	-	2
<i>Pisum/Vicia/Lathyrus</i> sp.	Cultivated Pea/Bean/Vetch	5	1
<i>Medicago/Trifolium</i> sp.	Medick.Clover	1	-
<i>Chenopodium album</i>	Fat Hen	-	2
<i>Galium</i> sp.	Goosegrass	1	1
<i>Anthemis cotula</i>	Stinking Mayweed	-	1
<i>Carex</i> sp.	Sedges	1	-

Table 17. Mollusca.

sample	Alluvial Sequence											?Levee	
	146	141	137	133	128	127	126	125	124	123	122	188	185
context	716	716	716	716	103	103	103	103	103	103	103	674	674
depth (m)	1.25- 1.30	1.00- 1.05	0.80- 0.85	0.60- 0.65	0.35- 0.40	0.30- 0.35	0.25- 0.30	0.20- 0.25	0.15- 0.20	0.10- 0.15	0.05- 0.10	0.15- 0.20	0- 0.05
<i>Theodoxus fluviatilis</i>	-	-	-	-	+	+	-	+	-	-	-	++	++
<i>Valvata cristata</i>	+	+	+	++	++	+	+	+	-	-	-	-	+
<i>V. piscinalis</i>	-	-	-	-	-	-	-	-	-	-	-	+++	+++
<i>Bithynia tentaculata</i>	++	+	+	+	++	++	+	+	+	+	+	+++	+++
<i>B. leachii</i>	-	+	-	+	+	+	-	-	+	+	-	+	+
<i>Carychium</i> sp.	+	-	+	-	+	-	+	+	-	+	+	-	-
<i>Lymnaea truncatula</i>	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>L. peregra</i>	-	-	-	-	-	-	-	-	-	-	-	+	+
<i>Planorbis planorbis</i>	-	-	-	-	-	+	-	-	-	-	-	+	-
<i>P. carinatus</i>	-	-	-	-	-	-	-	-	-	-	-	+	++
<i>Bathymphalus contortus</i>	-	-	-	-	+	+	-	-	-	-	-	+	++
<i>Gyraulus acronicus</i>	-	-	-	-	-	+	-	+	-	-	-	+	+
<i>G. albus</i>	+	+	-	+	-	-	+	+	-	-	-	+	+
<i>Armiger crista</i>	-	+	+	-	-	-	-	-	-	-	-	+	+
<i>Planorbarius corneus</i>	-	-	-	-	-	-	-	-	-	-	-	+	+
<i>Ancylus fluviatilis</i>	+	-	-	-	-	-	-	-	-	-	-	+	+
<i>Acroloxus lacustris</i>	+	+	+	+	-	-	-	-	-	-	-	-	-
<i>Succinea or Oxylamo</i> sp.	+	+	+	-	-	+	+	+	-	-	-	-	-
<i>Cochlicopa</i> sp.	-	+	+	+	+	+	+	+	+	+	+	-	-
<i>Pupilla muscorum</i>	-	-	+	-	+	-	-	-	-	-	-	-	-
<i>Vallonia pulchella</i>	-	+	+	+	+	++	++	++	++	++	++	-	-
<i>V. excentrica</i>	-	-	-	+	-	-	-	-	-	-	-	-	-
<i>Vitrea</i> sp.	-	+	-	-	-	-	-	-	+	+	-	-	-
<i>Nesovitrea hammonis</i>	-	-	-	-	+	-	-	+	-	+	+	-	-
<i>Trichia hispida</i> gp.	+	++	++	++	++	++	+++	+++	+++	+++	+++	-	-
<i>Pisidium amnicum</i>	-	-	-	-	-	-	-	-	-	-	-	+	+
<i>Pisidium</i> sp. (not <i>amnicum</i> )	++	+	+	+	-	-	-	-	-	-	-	+++	+++

- not present      + present      ++ abundant      +++ very abundant