

# TWO MIDDLE SAXON OCCUPATION SITES: EXCAVATIONS AT JUBILEE HALL AND 21–22 MAIDEN LANE

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## SUMMARY

*The two excavations provided the first substantial archaeological evidence of Middle Saxon London, then known as Lundenwic, a trading settlement contemporary with other North European emporia such as Hamwic, Ipswich, Dorestad, and Quentovic.*

*At Jubilee Hall structures, wells, rubbish pits, and an inhumation were found; features at Maiden Lane included ditches, pits, and a midden. The excavations produced important new evidence about farming, trade and crafts in the London area during the mid-Saxon period.*

*Of particular importance is the fabric type series, which forms the basis for the first detailed classification and analysis of Middle Saxon pottery from London in the local and wider context. Small finds composed of fired clay, glass, metal, stone, and bone are also described and discussed. The environmental evidence is summarised, and supports the interpretation of these sites as part of an 'urban or mercantile' settlement.*

## INTRODUCTION

The two excavations discussed in this report marked the beginning of a series of site investigations in the area around the Strand by the Museum of London's Department of Greater London Archaeology (hereafter DGLA), which have revealed evidence of a 7th- to 9th-century settlement, the Middle Saxon trading port or emporium of *Lundenwic*. The present configuration of these mid-Saxon sites (Cowie, this volume) suggests that the emporium covered at least 60ha between Trafalgar Square and Aldwych, with Jubilee Hall and Maiden Lane near the centre of the settlement.

The excavation at Jubilee Hall, Covent Garden (TQ 3040 8085), in June 1985, followed the discovery of Middle Saxon features during a watching brief undertaken by the DGLA while contractors were clearing the site in advance of

redevelopment. The site was adjacent to Jubilee Hall on the south side of Covent Garden, and bounded to the south and west by Tavistock Street and Southampton Street respectively (Fig. 1). An emergency excavation was carried out at great speed to minimise delay to the contractor's schedule, and in the course of one week much was salvaged from the site. Nevertheless, some archaeological strata were entirely lost, while other deposits were recorded in haste, and only limited sampling was possible.

One month later Middle Saxon deposits were exposed during trial excavation by the DGLA at 21–22 Maiden Lane (TQ 3031 8072). The site was located about 60m north of the Strand, on the west side of the Adelphi theatre, and bounded to the north and west by Maiden Lane and Exchange Court respectively (Fig. 1). The deposits were

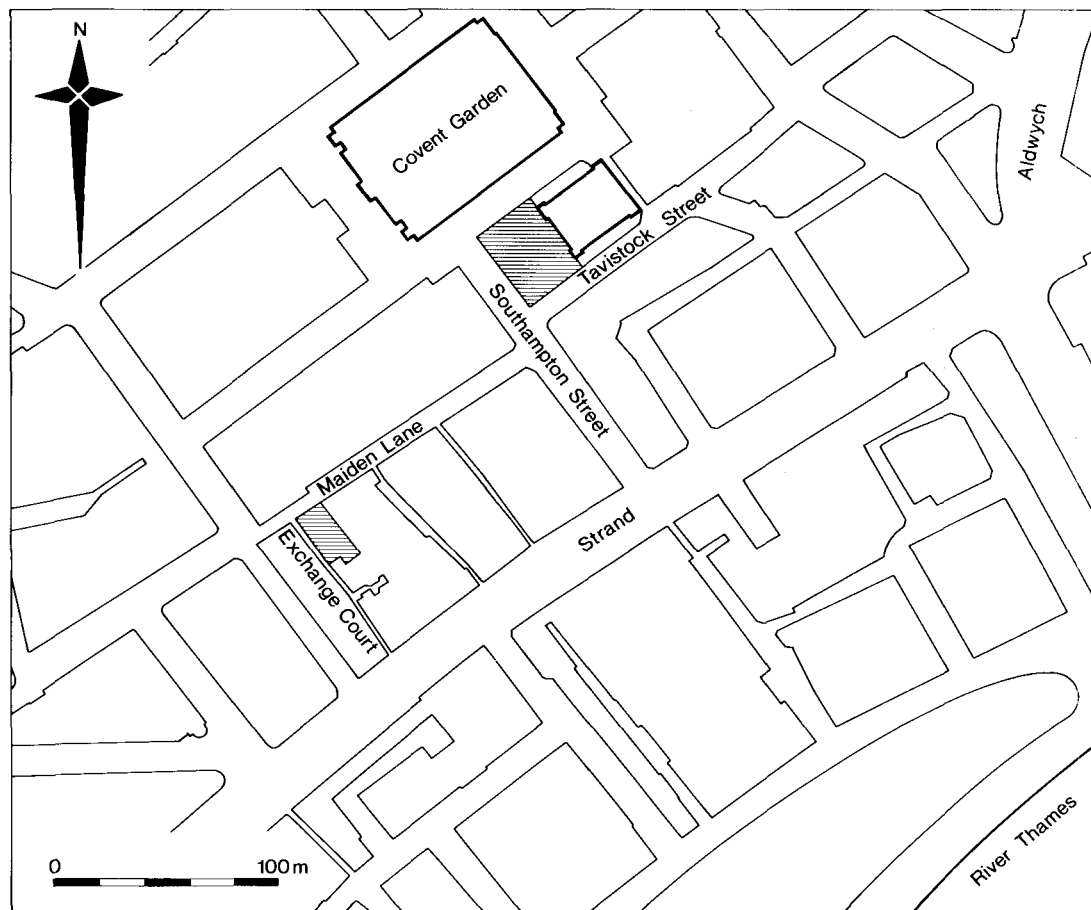


Fig. 1. Jubilee Hall and 21-22 Maiden Lane: Site location.

investigated during an excavation from April to June 1986 prior to the proposed redevelopment of the site.

The purpose of the excavation was to investigate fully and to record the Middle Saxon strata, with the recovery of economic and environmental data as a major objective. Unlike the hurried excavation at Jubilee Hall, there was sufficient time at Maiden Lane to undertake a controlled investigation of the Middle Saxon deposits, and for all contexts to be sampled for sieving and flotation.

Archive reports for the excavations at

Jubilee Hall (Whytehead 1988) and Maiden Lane (Cowie 1988) are held by the Museum of London and may be consulted on request. The contexts have been renumbered for this report; correlation tables are included in the archive. The accession (SF) numbers for the registered finds are unchanged.

#### THE TOPOGRAPHY AND GEOLOGY

The Middle Saxon trading port of *Lundenwic* was built on brickearth-covered river terraces on the north side of the

River Thames, about a kilometre upstream from the site of the Roman City, and to the west of the River Fleet, the course of which now lies beneath Farringdon Street and New Bridge Street. It is thought that the Strand follows the line of a Roman Road (Cowie, this volume, p. 37), which may have become a major route through *Lundenwic* (Cowie and Whytehead 1989, 710). The main residential area of the settlement probably lay to the north of the Strand, since to the south the ground sloped steeply down to the waterfront, part of which was found during recent excavations at York Buildings, where a Middle Saxon embankment was uncovered (Cowie 1989; Cowie and Whytehead 1989, 710; Cowie this volume, site 22).

Today Maiden Lane lies at the top of a moderate incline (1:24) up from the Strand, but the gradient decreases between here and Jubilee Hall. At Jubilee Hall the modern ground level on the south side of Covent Garden has been built up, possibly to level the area around the market.

According to the 1:10560 geological map (BGS 1982) both sites are on river terrace deposits (number 3a) comprising clayey or sandy gravels. The natural geological deposits in the excavation areas consisted of 'brickearth' overlying sand and gravels. The more deeply cut archaeological features at both sites penetrated through the brickearth into the underlying sand and gravel, the top of which was located between +14.00m and +14.90m OD. Variations in the level at which water is now encountered in the Covent Garden area suggest the presence of buried watercourses. At Jubilee Hall, for example, water was reached in a Saxon well (150) at +14.77m OD, but at Maiden Lane the deepest feature was free of water at +13.00m OD. However, water was not encountered in three shallower wells at

Jubilee Hall, or in a possible well at Maiden Lane, which also suggests that there may have been marked changes in local hydrography since Saxon times.

The river terrace sands and gravels were covered by brickearth, a term that has been used to describe fine-grained deposits of both aeolian and alluvial origin (Penn and Rolls 1981, 6). At Maiden Lane it consisted of a pale yellowish/reddish brown, fine sandy clay, the top of which occurred at heights of between +14.80m OD and +15.30m OD. The thickness of the brickearth varied, but was generally about 0.50m. The deposits at Jubilee Hall also contained bands and pockets of gravel and sandy gravel. Topsoil horizons were not identified beneath surviving areas of Middle Saxon strata at either site, suggesting that the original land surface had been removed, partly truncating the brickearth subsoil.

## THE EXCAVATION AT JUBILEE HALL

by ROBERT LAYARD  
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### CIRCUMSTANCES AND METHOD OF EXCAVATION

The original development plan involved building from ground level, sinking a retaining wall and pile shafts. A watching brief was undertaken by the DGLA to record archaeological deposits disturbed by this activity.

The initial contractors' excavation of the retaining wall trench revealed unsuspected hollow brick vaults and loose fill on the western and southern sides of the site, and a last minute decision was made to dig out to the base of this fill and to build a basement over the entire area.

The contractors' clearance was carried out in two broad N-S strips, the western half being excavated first. The western strip roughly coincided with the vaults, which had almost entirely destroyed the earlier archaeological levels, although the bottoms of some scattered deep pits survived. The first of these to be uncovered, in the NW corner of the site (Fig. 2), produced no dating evidence,



Plate 1. Jubilee Hall: General view of the excavation area, looking north towards Covent Garden.

although subsequently the pits have been assumed to be Saxon.

The eastern edge of the initial stripped area coincided with an area of Saxon strata, which included a grave containing an articulated human skeleton (see p. 156). An area, measuring 4.50 by 3.00m, was cleared around the skeleton, to enable it to be exposed and lifted, and adjacent features to be examined. No further burials were found, but

a sequence of features containing Saxon pottery was recorded.

A second, eastern portion of the site was then cleared, commencing some 3.50m from the north boundary. Here archaeological deposits survived beneath basement floors to a depth of 0.80m. The deposits included a capping layer of 'dark earth' c. 0.20m deep, and covered an area measuring 30m N-S and up to 24m E-W. The bulk of the fill had



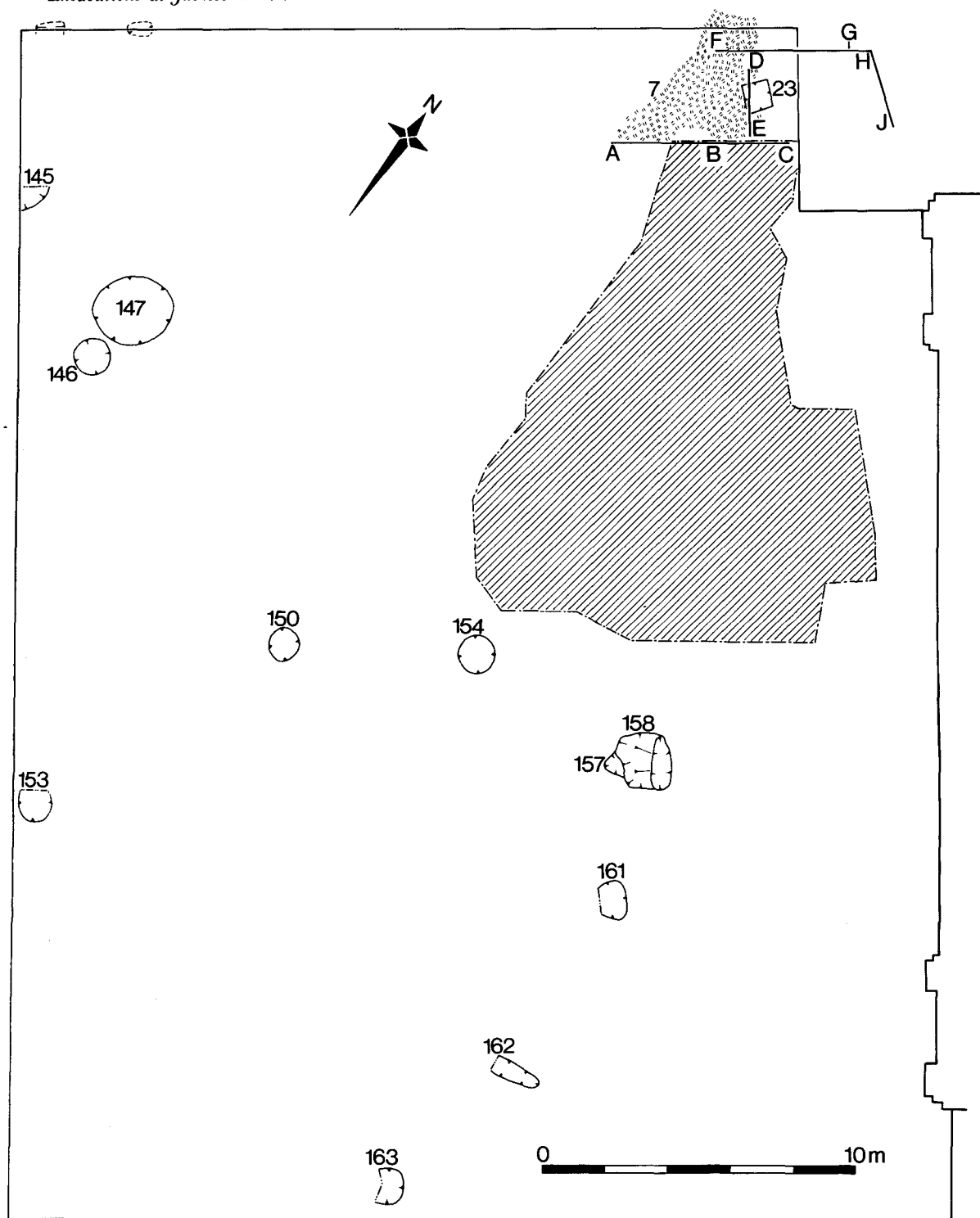


Fig. 2. Jubilee Hall: Site plan showing the excavation area, features outside the excavation area, and the location of the sections north of the excavation area.



to be removed from the site, but the machined level was raised, from +16.00m OD. to c. 16.70m OD., so that the earliest Saxon ground surface remained for excavation (Fig. 3), although the overlying strata were largely removed. Occupation levels survived in a limited area in the SW corner of the excavation area.

A block of earth was retained in the NE corner of the building site for structural reasons and was subsequently removed by machine; sections through the deposits were recorded, and a sequence established. Sections were also recorded where underpinning operations dug beyond the previously existing walls on the north site boundary.

The bottoms of some deep Saxon pits were excavated to the south and west of the main excavation area.

The excavated features were in three distinct, and physically separate, groups:

1. Occupation levels in the NE corner of the site.
2. Features within the excavation area.
3. Cut features outside the excavation area.

#### 1: THE OCCUPATION LEVELS

The evidence for the sequence of occupation levels is almost entirely based on the analysis of sections, as excavation in plan was not practical for safety reasons.

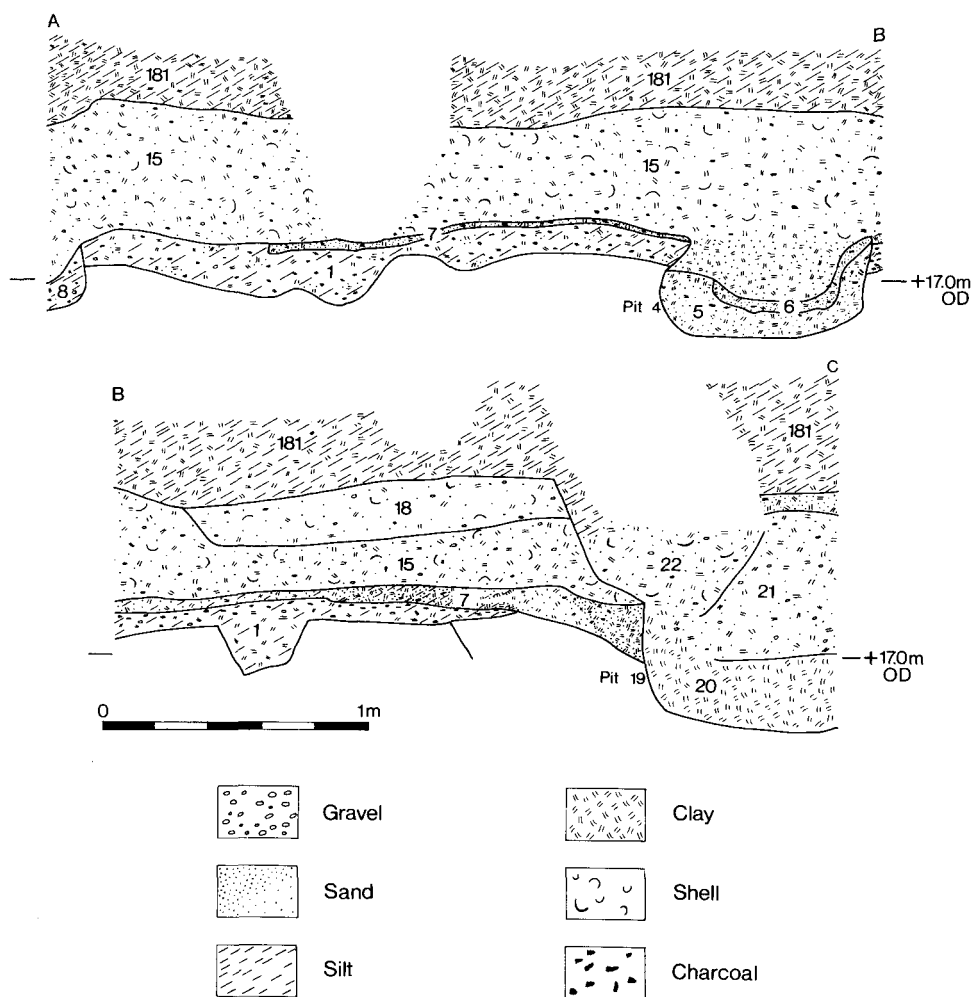


Fig. 4. Jubilee Hall: West-east section, A-C.

Three principal sections were recorded:

An E-W section (Fig. 4, A-C), on the northern edge of the area available for excavation, but physically isolated from the features in the excavation area by machine disturbance.

A N-S section (Fig. 5, D-E), extended at right angles to the north of section A-C.

A W-E section (Fig. 6, F-J) on the northern edge of the site, which turned at the NE corner to run roughly N-S. The section was extended westwards as features came to light during underpinning.

#### *Strata observed in sections*

The earliest occupation activity was marked by disturbed 'natural' brickearth (Fig. 4 (1)), comprising pale yellow silty clay mixed in places with numerous charcoal flecks (Fig. 6, (2)). This layer was particularly uneven along the north edge of the site (Fig. 6) and shallow cut features, such as (3), lay at this level.

Pit (4) (Fig. 4) was cut into the brickearth; it extended 0.30m north of section A-C (Fig. 3), and had curved corners. The lower fill of the pit was a dark grey sandy clay (5), on to which a layer of clay (6) had subsided. The clay layer appeared to adjoin a surrounding clay layer (7), interpreted as a floor. A third pit (8) (Fig. 4) may also belong to this phase.

Floor (7) was composed of orange-yellow silty clay, 25-45mm deep, which sealed the brickearth (1). It extended from section A-C north and east to beyond the limits of the site (Fig. 2), but it is not known how far this layer might have spread to the south. Micromorphological analysis (Macphail in this report, p. 158) suggests that it comprised two horizons; a lower brickearth floor overlain by fallen daub composed of similar material.

Floor (7) incorporated a hearth (9), which consisted of a sequence of three superimposed brick-earth layers, each with a burnt, reddened surface

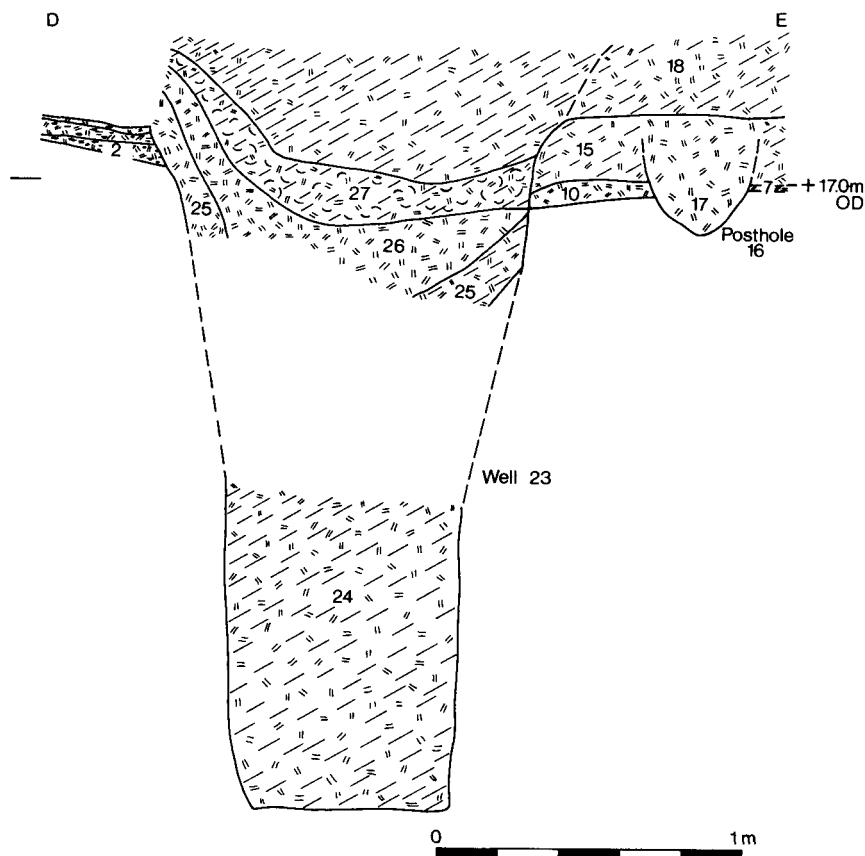


Fig. 5. Jubilee Hall: North-south section, D-E.

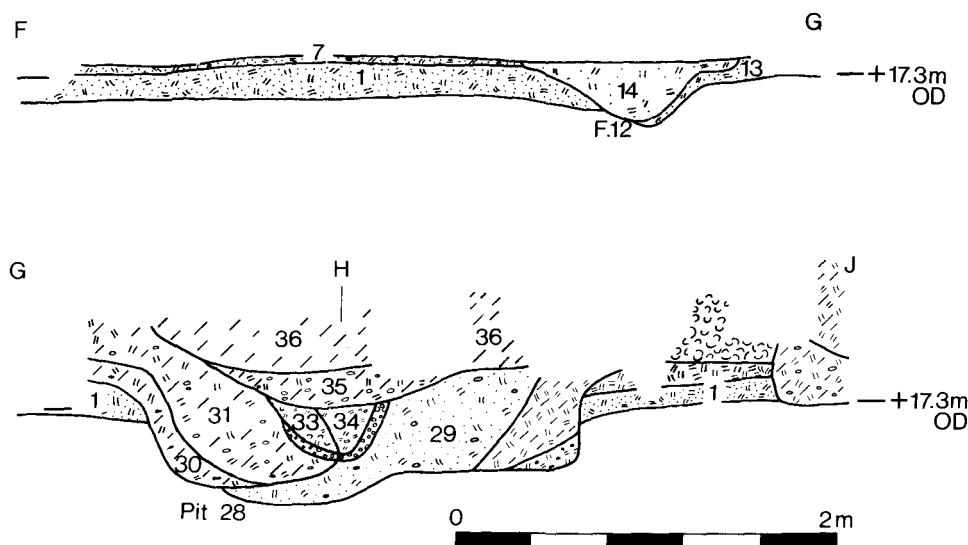


Fig. 6. Jubilee Hall: West-east section, F–J.

(Fig. 4). Floor (7) had been burnt in other places (Fig. 5, (10), (11)).

The floor seemed to incorporate a small cut feature (12) (Fig. 6). This feature was lined on the south side with burnt brickearth containing charcoal fragments (13), and had been filled with brickearth (14) raising it to the level of the adjacent clay (7).

There were no clear signs of a structure related to the floor, but its clayey composition must mean that it was covered as it would have been unsuitable for wet conditions. This problem has been discussed in relation to a similar clay floor at Ramsbury (Haslam 1980, 10). Pit (4) may have contained a timber upright. A layer of clay which had slumped into the pit may have been part of floor (7) indicating that the pit pre-dated the floor, or may have been unburnt daub which had fallen elsewhere on the floor (in which case the relationship of the pit and floor is unclear). If unburnt daub lay on the floor, as micromorphological analysis suggests, this may provide the best evidence for a superstructure. The extent of the layer would indicate a substantial building, and therefore it is surprising that no large postholes or beamslots were identified even in the limited sections observed.

The brickearth floor and fallen daub were covered by an apparently homogeneous layer of grey silty clay (Fig. 4 (15)), which micromorphological analysis (see below) suggests was mostly collapsed

organic building material, including daub, burnt daub, and charcoal, roughly reworked by earthworms, and to a certain extent by wireworms and slugs. Activity may have taken place during the accumulation of this layer as a posthole (16) (Fig. 5), filled with grey-brown sandy clay (17), was seen to cut through only the lower half of the layer. A distinctive layer of light grey material incorporating brickearth (18) lay above layer (15).

The grey earth (15) was not observed in two sections recorded to the south of the excavation area where 'dark earth' appeared to overlie either a shallow occupation layer of mixed material, or the natural brickearth. It seemed that no buildings had stood to the south and that the 'grey earth' was confined to the area of the clay floor; thus it may well have been composed of the debris of the structure which stood there. It may have been an indication of abandonment as the debris was not cleared and was reworked by natural action, presumably before the re-use of the area marked by the digging of well (23).

Pit (19) (Fig. 4) appears to have been dug through the grey earth, and had very dark grey primary fill (20), overlain by either upper fills, or later occupation layers (21)–(22).

A well (23), the shaft measuring 0.75m square, was apparently cut through layer (15), and possibly through (18) (Fig. 5). Most of the fill was a homogeneous grey-brown silty clay (24); however, in the upper part where the shaft splayed out, there were

several layers (25)–(27), some containing large amounts of oyster shell, which may have been later occupation levels which had slumped in as the main fill subsided.

It was not clear from which level pit (28) (Fig. 6) had been cut. It was filled with several layers (29)–(36), one of which (29) contained a sherd of Badorf ware, which suggests a late date for the filling of the pit (Blackmore in this report, p. 93).

The fill of well (23) was overlain by a layer of 'dark earth' consisting of homogeneous dark grey/black silty clay (37), which sealed the entire sequence of strata in the excavation area. Its surface was cut by later features. Micromorphological analysis (MacPhail in this report, p. 159) showed that it contained organic building material similar to that in layer (15) beneath it, but much more finely reworked, in particular by wireworms as well as earthworms.

The importance of wireworms in the creation of 'dark earth', stressed by Macphail (in this report, p. 159), may help to explain how this distinctive deposit develops. As wireworms occur mostly in the top few centimetres of natural soils the 'dark earth' may have accumulated gradually. A section (not illustrated) observed during machining to the south of the excavation area showed a spread of roof tiles with pegholes which overlay c. 0.30m of 'dark earth' but was in turn overlain by a further 0.25m of similar 'dark earth'. The site lies within the 'convent garden' which belonged to Westminster Abbey, first recorded 1199–1216 (GLC, Survey of London, 1970, 19); this walled area was cultivated for a wide variety of produce until it was redeveloped by the Fourth Earl of Bedford in the 1630s. Thus the 'dark earth' here would seem to be the product specifically of a long period of market gardening.

## 2. FEATURES WITHIN THE EXCAVATION AREA

This part of the site was truncated by machining roughly to the surface of the 'natural' deposits. The north end of the area was dug particularly deeply, but to the south the machine-excavated level was higher, undulating between c. +16.55m OD and c. +16.85m OD. Most features in the area were truncated and isolated, but in the SW corner of the excavation area a sequence of horizontal layers and cut features survived, enabling tentative phasing. This sequence is described first. The phase plans A–D (Figs 7–10) illustrate the sequence of features in the SW corner of the excavation area, but also show other features which were potentially, but not necessarily, contemporary. Intercutting features shown in Fig. 3 are separated out across the

phase plans, but cannot be directly related to those in the SW corner.

The natural subsoil into which the Saxon features had been cut was an orange-brown brick-earth, the surface of which was discoloured to a light greyish-brown (38).

### Phase A (Fig. 7)

The following features cut into the brickearth (38) and were subsequently sealed by a layer of redeposited and contaminated brickearth (51) in the SW corner of the excavation area:

A shallow W–E grave (39) (Fig. 7) cut through the brickearth to a depth of c. +16.38m OD. It had irregular sides, and a straight east end; the west end had been truncated but appeared to taper around the head.

An adult male (Henderson in this report, p. 156) [Pl. 2] had been laid prone in the grave, with the head at the west end. The arms had been pushed to the right hand side of the body; the right arm was straight with the hand resting on the side of the grave. The left arm was flexed at the elbow, which lay under the stomach area, so that the hand lay against the side of the grave under the right forearm. The feet both pointed to the body's right. The skull was damaged by the contractors' machining and its attitude could not be determined. The grave was filled with light grey-brown clay (40) containing a patch of greenish silty clay along the north side. The skeleton has a C-14 date of  $1370 \pm 60$  b.p. (HAR-8936) calibrated to AD 630–675 (calibration curve in Stuiver & Pearson 1986), and a sherd of Seine Valley ware was found in the grave fill.

The burial was apparently isolated, although further graves may once have lain in the more disturbed ground to the west. Single burials have been found in an urban context at *Hamwic*, and the two from site XX (Holdsworth 1980, 38–9) predated other activity there. Whether this burial predated or was contemporary with the early structure is not certain. Prone burial in the Romano-British and Anglo-Saxon periods has been interpreted elsewhere as indicative of a criminal or outcast (Herman *et al.* 1981, 167–8), which may explain the grave's apparent isolation.

To the east of the grave there were four postholes (Fig. 7), dug to a similar depth. Three (41)–(43) were closely grouped, and filled with greenish grey silty clay, similar to the overlying layer (51); a fourth (44) was filled with pale grey clayey silt, and therefore may have been unrelated.

The slight trace of what also might have been a posthole (45), 0.18m deep, lay nearby (Fig. 7). It may have been associated with the other postholes,

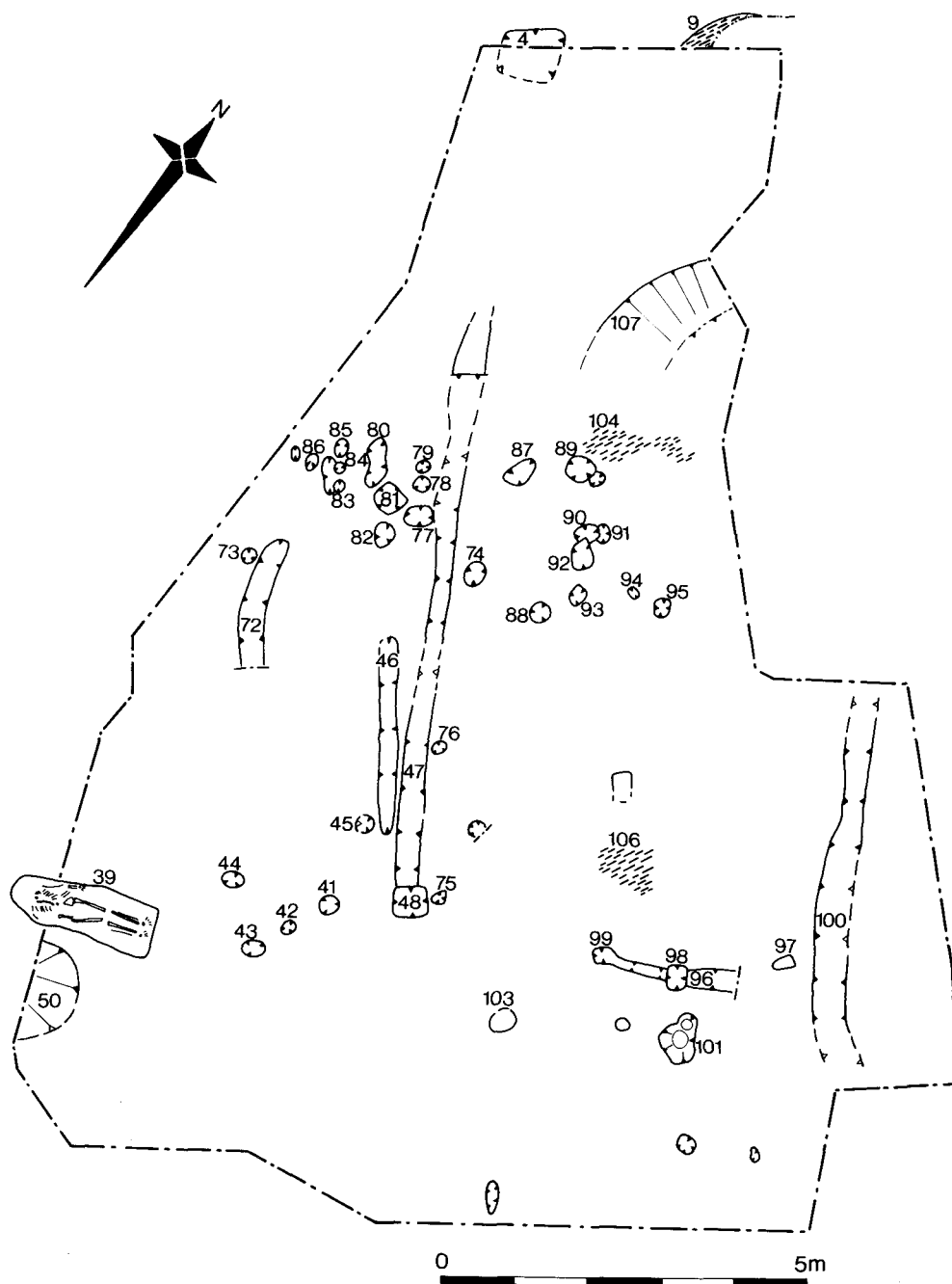


Fig. 7. Jubilee Hall: Suggested phase plan A.

and was filled with similar material. It might also be associated with an adjoining linear slot (46), which had a flat base and gently curving sides.

A long slot (47) (Fig. 7), lay to the east of slot (46). Although disturbed in places, it could be traced over 7.80m. A square posthole (48), may have marked its southern end. It may have extended further north to the limit of the excavation area (see discussion below). At the north end a dark inner fill, (49), was surrounded by lighter

earth, which might have been stained 'natural' brickearth around a beam, or possibly the fill of a construction cut for the timber. It is assumed that the darker, inner, fill was where a beam lay; it survived to a depth of 0.13m and had a D-shaped profile with a curved base and slightly curved sides. The slot was quite distinctive in plan at its south end, where it was 90mm deep; the east side was near vertical but the west side sloped gently in to the base.



Plate 2. Jubilee Hall: Prone adult inhumation burial (grave 39), looking west.



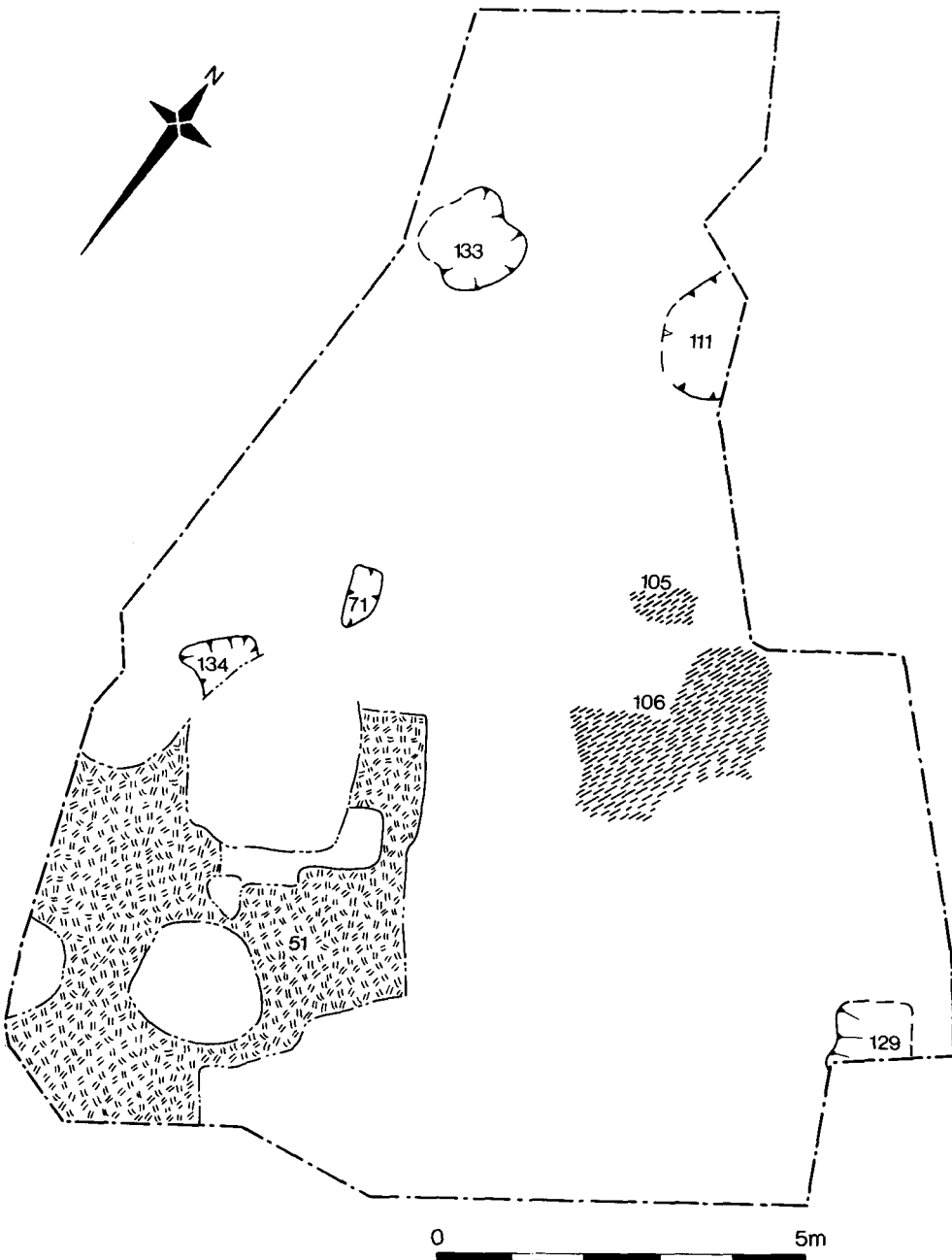


Fig. 8. Jubilee Hall: Suggested phase plan B.

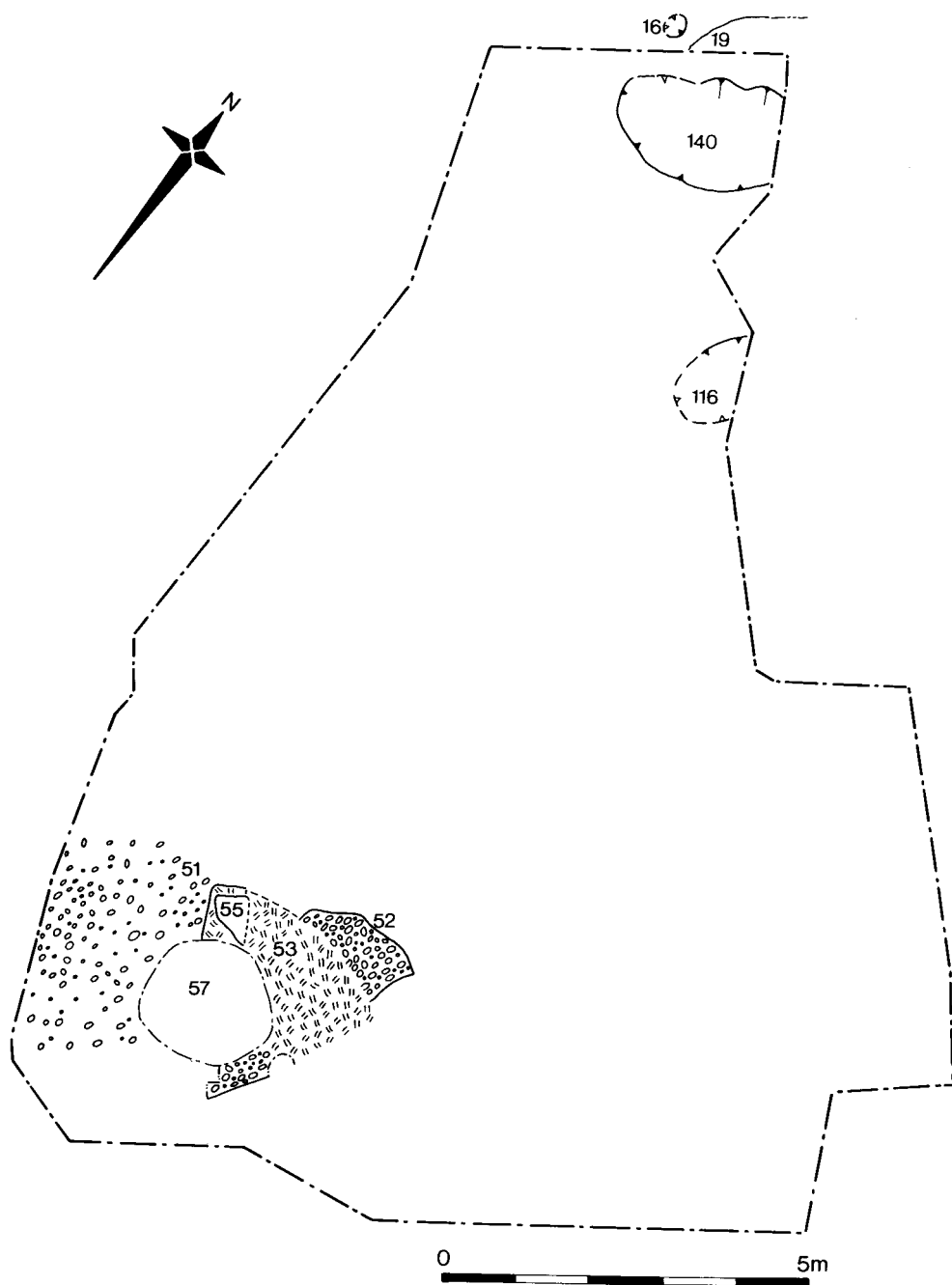


Fig. 9. Jubilee Hall: Suggested phase plan C.

The posthole (48), abutted the west side of slot (47) at its south end, and may have been contemporary with it. Slots (46) and (47), and posthole (48), were filled with green-grey silty clay, but slot (47) had more charcoal flecks in its fill. Disturbance to the south of (48) destroyed any evidence for the continuation of the slot.

Pit (50) was filled with dark grey silty clay containing lumps of charcoal, and appeared to be sealed by layer (51).

#### *Phase B (Fig. 8)*

Layer (51) (Fig. 8), which sealed the southern end of slot (47), was composed of greyish-green silty clay containing frequent charcoal flecks and animal bones. It extended over the SW corner of the excavation area, and its eastern limit lay just beyond the eastern edge of slot (47). The surface of the layer was at +16.75m OD.

#### *Phase C (Fig. 9)*

A gravel layer (52) (Fig. 9), overlay clay layer (51); it survived only in the SW corner of the excavation area, and appeared to fill a hollow where layer (51) had subsided into the grave (39). The surface of the gravel lay at c. +16.80m OD. It did not appear to be a rammed gravel metallised surface, but was perhaps make-up for the overlying clay 'floor' (53).

The gravel was covered with a layer of orange brickearth, (53) (Fig. 9), c. 50mm deep, probably a floor. It was cut by a roughly circular posthole (54), 0.18m deep, and a small pit (55), possibly a posthole, which had an irregular shape and was 60mm deep. Both were filled with similar material.

#### *Phase D (Fig. 10)*

A spread of burnt clay, burnt daub, and charcoal mixed with some animal bone (Fig. 10, (56)), c. 50mm deep, overlay the floor' (53). It was the last of this sequence of layers to survive and was badly disturbed by later activity. It would seem to mark the destruction by fire of a timber and wattle-and-daub structure built over the brickearth floor.

The entire sequence of layers described above was cut on its west side by a pit (57) (Fig. 10). This pit was circular, with steep sides and a flat base dug to +16.10m OD. It had been filled with dark grey sandy clay containing debris including animal bone, slag, fragments of ragstone and Roman tile.

Pits (58) and (59) (Fig. 10) cut layer (51) where it spread beyond the surviving extent of the overlying layers, and therefore their direct relationship to the stratigraphic sequence cannot be established. Pit (58) was roughly circular, and was 0.70m deep.

It was filled with green-grey sandy clay containing animal bone and oyster shell. Pit (59) was irregular, and was 0.75m deep. The primary fill (60), which was composed of grey silty clay containing frequent charcoal flecks, had subsided towards the centre. The resulting hollow was filled with layers of varying material (61)–(65), all of which contained frequent charcoal flecks except layer (65) which was pure gritty gravel. It was overlain by a series of deposits mostly of charcoal and burnt daub (66)–(70), about 0.20m deep in total, which spread beyond the pit to the east. These layers of burnt material extended north of layer (56) and may have been associated with it. The layers which filled the hollow in layer (60) may have been later occupation layers truncated elsewhere during machining.

A scoop (Fig. 8 (71)), cut the northern edge of slot (46). Its fill contained a potsherd which joined with sherds from layers (61) and (64).

The following slots and postholes (Fig. 7) may have been associated with slot (47), although they were not sealed by brickearth layer (51).

To the west of slots (46) and (47) lay a short slot (72), which had steep sides and was 80mm deep. The slot had been filled with greenish grey silty clay containing frequent charcoal flecks, resembling the fill of slot (47). A small, circular, posthole (73), 0.20m in diameter, lay on the west side of the north end of slot (72).

Three postholes, (74)–(76) (Fig. 7), between 60mm and 0.16m deep, and spaced roughly 2.00m apart, lay close to the east side of slot (47).

A group of postholes lying immediately to the west of slot (47) may have been associated with it. Three postholes (77)–(79) lay adjacent to the slot. To the west lay three more postholes aligned N-S ((80), a double posthole, (81) and (82)); and further west were four more postholes (83)–(86). A group of nine postholes (87)–(95) (Fig. 7) lay to the east of slot (47).

An E-W slot (96), with a 'D-shaped' profile and incorporating square postholes, lay at right angles to slot (47) (Fig. 7). The east end was not well-defined but there were traces of what might have been a terminal posthole (97) beyond it. The central posthole (98) appeared to straddle the slot, and was dug to the same depth. Posthole (99), at the west end, was shallower and projected slightly to the north of the slot. Any evidence for the relationship between this slot and slot (47) had been removed by later intrusions.

A N-S linear cut feature (100) lay to the east of slot (96). It was excavated over a length of 4.10m and survived to a depth of 0.18m. It had a steep west side and a more gradually sloping east side, with a slight step in it; the base was very slightly

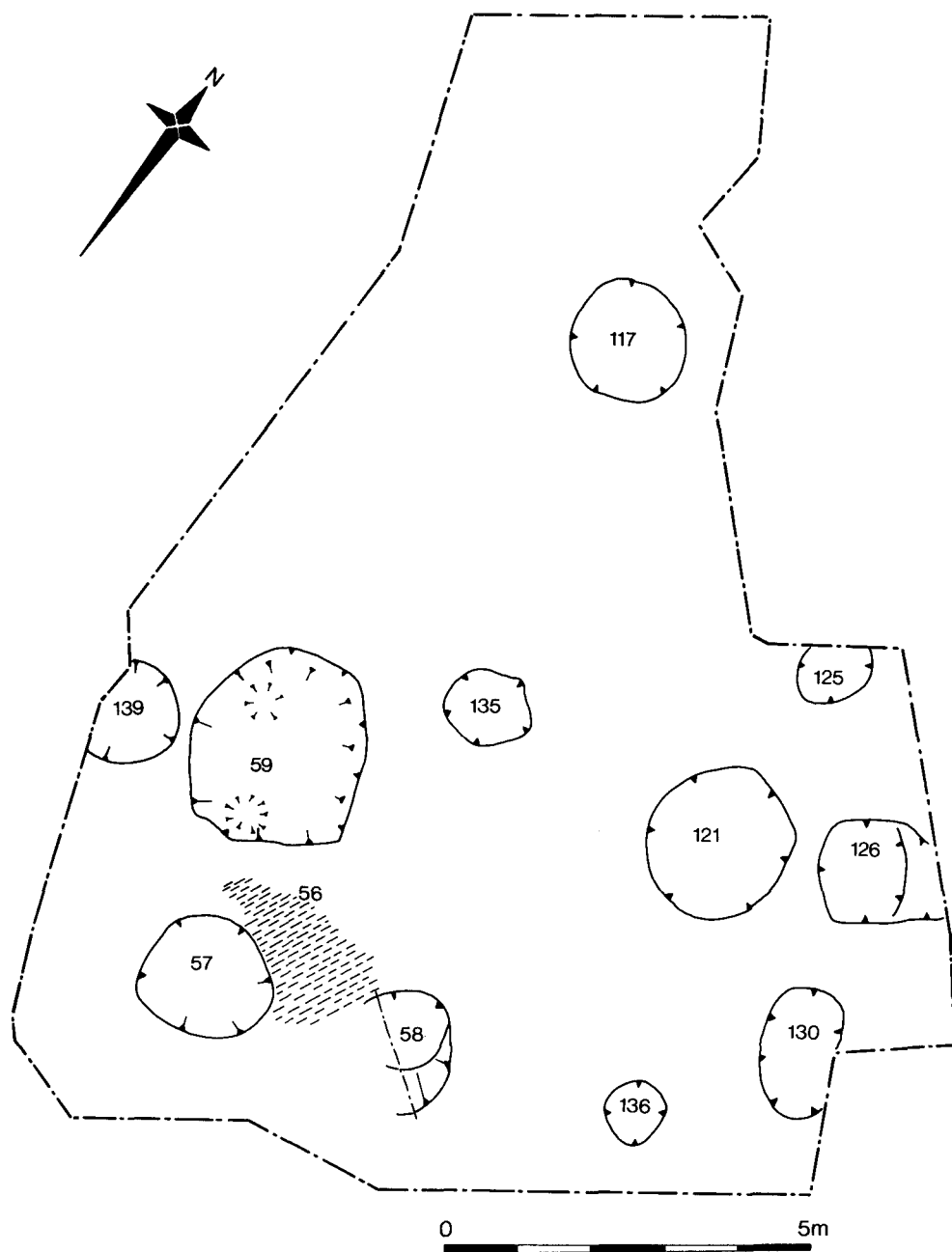


Fig. 10. Jubilee Hall: Suggested phase plan D.

curved or flat. It may have been a substantial slot or a gully. The fill consisted of grey silt.

#### *Discussion of the structural evidence (Fig. 7)*

The evidence for structures described above can be divided between those features sealed by layer (51), (i.e. slots (46) and (47) and the postholes to their south and west), and the remaining features which were possibly contemporary. Although modern disturbance separated them, slot (96) seemed to run roughly at right angles to the south end of slot (47), and may have been associated with it. Both slots were quite narrow and do not indicate substantial structures. Slot (96) appeared to have been interrupted at regular intervals by vertical postholes, which might have framed panels of wattle. Slot (47), however, was over 7.80m long, yet only one posthole, at what might have been its south end, was directly associated with it. It probably held a ground-beam, for there were no indications that it held planks, posts or stakes. It is not clear what sort of superstructure such a length of apparently narrow sill-beam could have supported—perhaps only a light wattle fence.

If projected northwards the base of slot (47) would coincide with the base of pit (4). It is possible that the pit was a posthole for a large upright, perhaps a terminal post for slot (47), and is therefore likely to have pre-dated clay floor (7).

Although there were rows and groups of postholes close to the long sill-beam they may not all have been contemporary. In particular the clay spread (51) which overlay the slot appeared to have a definite edge parallel with the eastern side of the slot and stopping short of postholes (75) and (76). It is therefore possible that these postholes, which were in line with (74) further north, mark a fence line replacing the beamslot. Similarly postholes (101)–(103) to the south of slot (98) may have been a fence replacing that structure.

If the postholes near the eastern side of slot (47) were contemporary with it then they may have been tied to its superstructure as supports, although their profiles did not incline toward it. The concentration of post and stake holes on the western side of the slot seemed to be grouped in threes, each group having similar fills, suggesting that one group replaced the other. It is not clear what sort of structure they comprised. The postholes to the east appeared to form rows at right angles and could have been fence or partition lines.

Slots (47) and (96) enclose an area with three burnt patches (Fig. 7 (104)–(106)). There was no sign of a deliberately laid floor or yard surface, but the burnt patches suggest domestic activity on a plain earth floor, which would presumably have

been roofed over; so that despite the insubstantial nature of the slots and postholes they may have been part of a building, perhaps internal partitions rather than simple fence lines. Feature (100) could have been a slot for upright wall timbers set in a trench, such as structure C10 at Cowdery's Down (Millet 1983, 213–5), and may have been part of a more substantial building lying to the east against which the timber-framed structure in the excavation area had been built. The short surviving length of (100) made interpretation difficult, and it could simply have been a gully.

The two slots (46) and (72), which lay to the west of slot (47) are hard to interpret and should, perhaps, be associated with the postholes to their north. Short slots such as these have been used to hold floor joists, but further evidence for a building to the west of slot (47) was not found.

#### *Cut features*

The remaining cut features in the excavation area were isolated from any stratigraphic sequence although some were intercut with one another. The localised sequences are described first.

On the NE edge of the excavation area a small patch of burnt clay (104), lying on the natural brickearth was cut by the latest in a sequence of pits (Fig. 3). The earlier pits lay on the edge of the excavation and could not be completely excavated. The initial pit (107) (Figs 7, 11, 12), was relatively shallow, with a curved northern edge and gently curved sides. The pit was filled with layers of brown clay (108)–(109), and a final layer containing numerous fragments of burnt daub and charcoal (110).

A deep pit (111) (Figs 8, 11), probably a well, had been dug through the fill of pit (107), to at least +15.30m OD. It was filled with layers of silty clay (112)–(115). Into the upper fill had been dug a steep-sided pit (116). Its fill contained numerous charcoal and burnt daub fragments as well as animal bone and oyster shell.

All three of the above pits were cut by a well (117) (Figs 10, 12), which was c. 1.60m in diameter, with vertical sides curved slightly at their base to the flat base cut to +15.00m OD., which lay on a water-bearing gravel layer below the brickearth. The two lower layers of fill (118)–(119), were silty clays with green staining and contained numerous charcoal fragments, burnt daub fragments, and artefactual debris, particularly loomweight fragments. Layer (119) contained lumps of 'natural' brickearth which had probably slumped in from the sides. The section showed that layer (118) had subsided before, or perhaps as a result of, the deposition of (119). Layer (119) had nearly filled

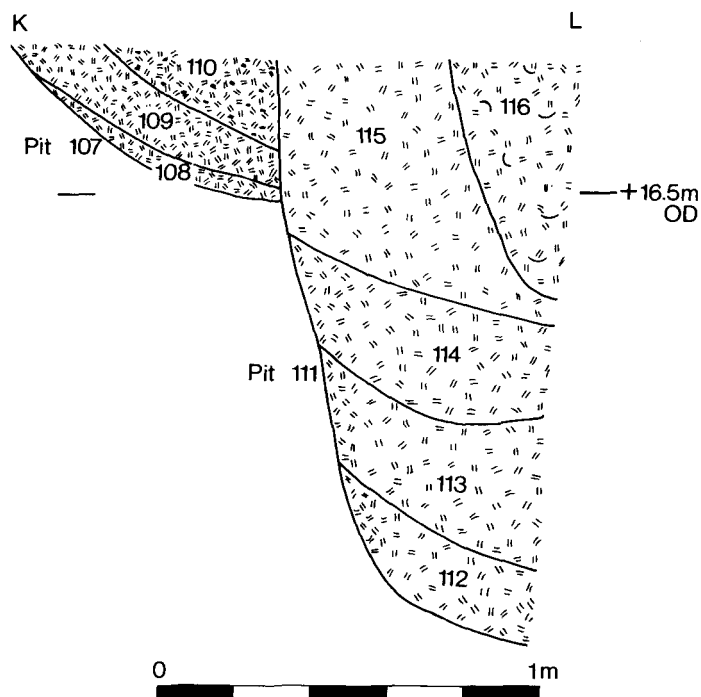


Fig. 11. Jubilee Hall: North-south section, K-L.

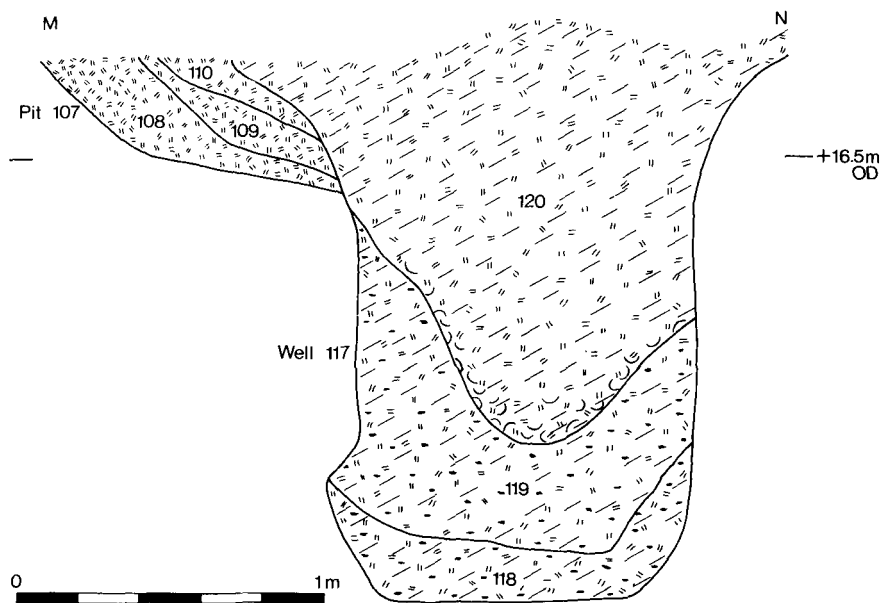


Fig. 12. Jubilee Hall: North-south section, M-N.

the well, but had subsided massively in the centre. The bulk of the fill was one deposit (120), similar to the earlier fills, but lined by a spread of oyster shells and lacking any significant amount of burnt material. This layer produced a series V *sceat* dating to AD 720-5 (Stott in this report, p. 126).

Another well (121) (Figs 10, 13), also cut an area of burnt clay and charcoal (106) lying on 'natural' brickearth. The well was 1.95m deep. Backfill layers (122) and (123) were composed of brown silty clay with quantities of animal bone and oyster shell; layer (123) also contained frequent charcoal fragments. The primary fill (122), had subsided significantly, and the overlying layer (123), seemed to have subsided with it. A layer of brown silt with animal bone and oyster (124) completely filled the remaining hollow.

Feature (100) was cut by four pits (125), (126) (129), (130) (Figs 8, 10), which produced

numerous animal bones, suggesting that they were dug for rubbish disposal. Pit (125) was 0.30m deep and was filled with dark grey sandy silt. Pit 126 (Fig. 14) was 0.58m deep and was filled with grey sandy loam (127), and, black organic silt (128), containing frequent oyster shells and some Roman tile fragments. Pit (129) was 0.40m deep, and was filled with dark grey sandy silt containing gravel. Pit (130) cut pit (129), and was roughly oval. It was 0.45m deep, and was filled with dark grey silt with gravel (131), overlain by a small patch of reddish brown sand and charcoal (132).

Pit (133) (Fig. 8), which cut slot (47), had an irregular 'clover-leaf' shape. Its fill contained a considerable amount of animal bone, burnt daub, and charcoal flecks. Scoop (134) (Fig. 8) was a slight feature cutting slot (72) and was in turn cut by pit (59).

Four isolated pits (135), (136), (139), (140) (Figs

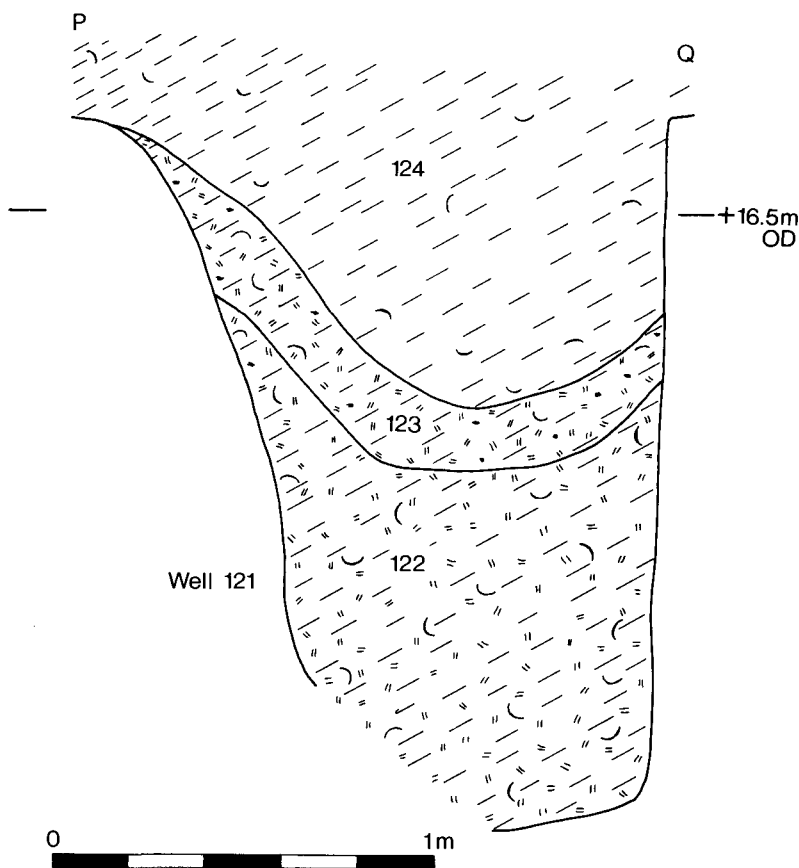


Fig. 13. Jubilee Hall: North-south section, P-Q.

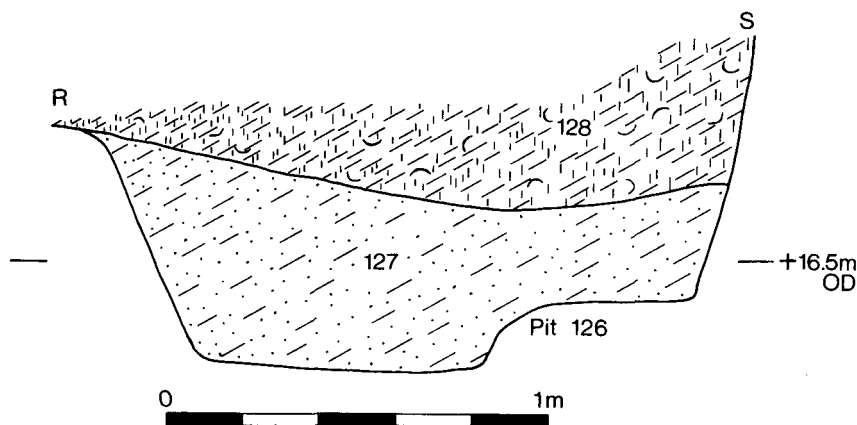


Fig. 14. Jubilee Hall: West-east section, R-S.

9, 10) lay in the excavation area. Pits (135), (136), and (139) were roughly circular, and pit (140) was roughly oval. Pit (135) was filled with material similar to 'dark earth', and may have been post-Saxon; pit (136) was filled with green grey silty clay (137) overlain by a layer of dense charcoal flecks and lumps with a little silt (138); pit (139) was filled with dark grey sandy clay; and pit (140) was lined with greenish brown silty clay (141), possibly containing human excreta, overlain by grey clayey silt containing frequent charcoal flecks, gravel, animal bone and oyster shell (142).

### 3. FEATURES OUTSIDE THE EXCAVATION AREA (Fig. 2)

A number of features survived beneath the deeper site disturbance surrounding the excavation area. The contractors reduced this area to below the previously existing vault floor level, to *c.* +16.00m OD. over the north half, and to *c.* 15.60m OD. over the southern half of the site. Five pits were noted in the NW corner (143)–(147), but there was little time to examine them, and while they are assumed to have been Saxon no dating evidence was obtained.

Pit (143) lay beyond the site boundary and was revealed in section during underpinning work. It had a vertical west side and sloping east side and a flat bottom dug to +16.04m OD.

Pits (144)–(146) survived to about 1.00m below the contractors' floor level, and were filled with grey clay. Pits (144) and (145) had large quantities of charcoal in their fills. Pit (147) was roughly oval, and was 0.70m deep. It appeared to have been lined with a layer of grey clay (148), with a main

fill of grey, mottled brown, clay (149), in the centre of which lay a dump of slag, probably iron, and charcoal.

The deeply cut pits south of the excavation area were examined in more detail than those above, and all produced Saxon dating evidence. To the west there was a deep, circular, clay-lined well (150). The vertical well cut was excavated to +14.77m OD where the water table was encountered. The grey clay lining (151) extended to a depth of +14.90m OD, the inner well shaft was 0.80m in diameter at the truncated surface, tapering to 0.45m at the base. The shaft had been filled with grey sandy clay (152).

Pit (153) lay against the west side of the site. Only the curved base of the pit survived at +15.50m OD. It was filled with silty clay, containing fragments of an iron axehead (Fig. 36).

Immediately to the south of the excavation area there lay a clay lined pit (154). It was circular, and survived to a depth of 0.50m. It had steep sides curving at their base to a slightly curved bottom, with a maximum depth of +14.90m OD close to the water-table. The clay lining (155), was between 0.10m and 0.20m thick, coloured in dark green, dark orange, and grey bands, and contained frequent charcoal flecks. The pit had been filled with dark yellow silty clay (156) containing animal bone. The clay lining must indicate a special function for the pit. Whether it held dry or liquid contents was unclear, but the discolouration of the lining and the amount of charcoal flecks within it may suggest that dry contents such as grain had been burnt in it.

A small pit (157), which may have been roughly



circular, survived to a depth of 0.15m. It was filled with greenish brown, charcoal-flecked clay, and was cut by a larger pit (158). Pit (158) was 0.88m deep and was filled by layer (159) containing charcoal fragments, which was overlain by a layer (160) containing oyster shell and animal bone as well as charcoal.

Pit (161) had an irregular shape and survived to a depth of 0.52m. The fill was a grey clay, pebbly at the base, and contained bands of redeposited 'natural' clay, which may suggest that the pit had been left open and silted up naturally.

Pit (162) survived to a depth of 0.17m, and was filled with black clay, probably waterlaid, which contained animal bone.

Pit (163) survived to a depth of 0.40m, and was filled with dark grey clay, containing animal bone.

To the south of the excavation area a small block of strata survived behind cellar walls. In the southern section the 'dark earth' lay directly above the 'natural' brickearth, which was cut by a shallow feature (164), the fill of which contained a loomweight fragment.

## THE EXCAVATION AT MAIDEN LANE

by ROBERT COWIE

### INTRODUCTION

An area of approximately 10m by 20m was available for excavation, all of which was investigated with the exception of an area of modern basement in the southern part of 21 Maiden Lane, which was considered too deep for archaeological deposits to survive. Shallower post-medieval basements elsewhere on the site had almost entirely removed Middle Saxon occupation levels, which survived as truncated 'islands' of strata, and the lower parts of deep features.

The Saxon deposits occurred in four areas separated by post-medieval walls, designated in this report as A, B, C, D (Fig. 15).

### AREA A

The presence of stakeholes, postholes, a gully and a slot, suggest that this area was occupied by structures in the Middle Saxon period, although these features formed no apparent pattern. Among other features which may be associated with habitations were areas of baked clay, where the ground had been scorched by fires, and a well (199). The deposits in area A produced relatively little domestic refuse, unlike those in areas B and C, where rubbish pits and a midden were found.

The earliest strata in the southern part of the area produced a prehistoric potsherd and a flint blade. The artefacts were probably residual, although a prehistoric date for these deposits cannot be ruled out altogether. The flint-tempered potsherd came from a layer of greenish-yellow sandy clay (165) immediately above the natural brickearth. The top of the layer, which was 150mm deep, was located at *c.* +15.00m OD, and was cut by a stakehole and two small postholes or pits (166) and (167). Above layer (165) was a lens of fire-reddened, carbonaceous clay (168) measuring 0.34m across. This was sealed by layers of sandy clay (169), which produced a long flint blade, and (170).

Above the earliest deposits were a series of features and layers distinguished from the former by the presence of Middle Saxon artefacts. Among them were several small pits or postholes (171)–(174), and a group of stakeholes, which cut layer (165). Layers (169) and (170) were cut by a sequence of small pits (175)–(177), which were overlain by a layer of greenish-grey sandy clay (178). Layer (170) was also overlain by a layer of reddened, burnt sandy clay (179), 20mm thick and 0.65m across, and was pierced by three stakeholes probably associated with the group mentioned above. All of the stakeholes were cut by a shallow gully (180), which was filled with a greenish grey-brown silty clay. This was partly covered by a layer of dark grey silty clay (184) up to 90mm thick, which sealed a sequence of pits or postholes (181)–(183) west of the gully. The layer was cut by a small rubbish pit (185), and overlain by lenses of reddened burnt silty clay and black carbonaceous material (186) that measured 0.72m N-S.

In the SE corner of the area, pits or postholes (166) and (174) were covered by a layer of greenish-yellow sandy clay (187), on average 80mm thick, the top of which was located between +15.10m and +15.20m OD. This was cut by three pits or postholes (188)–(190), and a narrow slot (191) only 50mm deep. The slot pre-dated a sequence of pits (192)–(195).

To the north was an isolated block of archaeological strata about 1.20m square. A layer of brickearth (196) with root and worm holes lay immediately above 'natural' brickearth. The top of the layer, which was 50 to 100mm deep, was located at +15.15m OD. It was covered with a layer of light brown loam with an average thickness of 50mm, which was cut by a pit (197). The pit was sealed by a thin layer of dark grey-brown fine sandy clay (198), the top of which was at +15.22m OD.

Near the middle of area A an isolated pit (199),

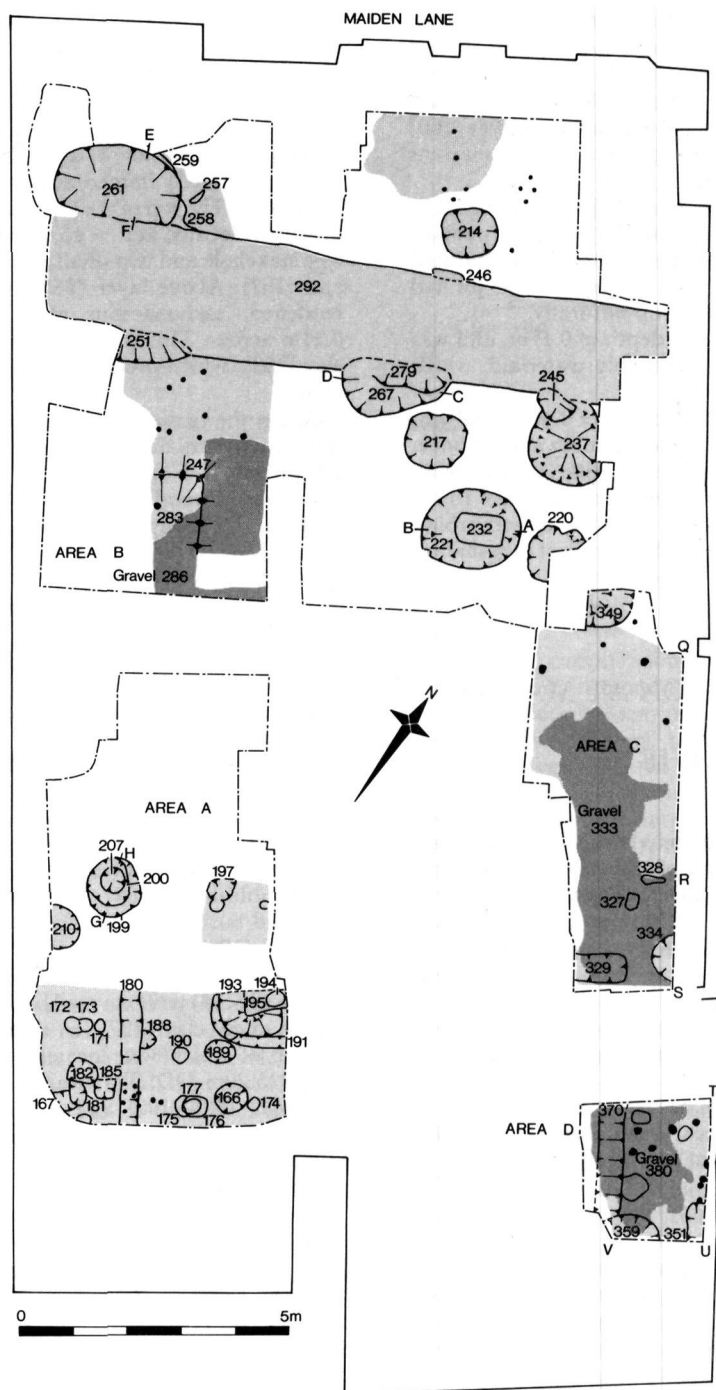


Fig. 15. Maiden Lane: Plan of the site in Maiden Lane showing the excavation areas, and the extent of the mid-Saxon deposits (light grey) including metallurgy (dark grey). For detail of ditch (292) see Fig. 17.

probably a well, cut the 'natural' brickearth and gravel (Fig. 16). Although truncated the pit survived to a depth of 1.25m. A vertical interface (200) between two sequences of fill marked the position of a lining. The space between the lining and the edge of the pit had been backfilled with greenish-grey gravelly clay (201)–(203), while the main fill consisted of layers of greenish-grey sandy clay (204), (205) and reddish brown sandy clay (206), which produced a sherd of Badorf-type ware dating to the late 8th or 9th century.

Cut into the uppermost fill of the well was a circular pit (207), which was 0.42m deep and filled with greenish-grey gravelly sand (208) and greyish-brown silt (209).

The remnant of a steep-sided rubbish pit (210) lay 0.20m SW of the well. It was filled with layers of greyish-brown and greyish-green clayey silt (211)–(213), and produced sherds of Ipswich ware.

## AREA B

The strata in this area mainly consisted of Middle Saxon rubbish pits and layers, some of which were cut by a ditch. Most artefacts from these deposits range in date from AD 650 to 850, although finds from four pits, (221), (237), (261) and (267), and ditches (287) and (292), probably date to the late 8th and 9th centuries. This suggests that these pits (and consequently pits (232), (245) and (279) which cut them) were the latest pits in Area B, and that some were in use after AD 800.

### Isolated pits

Pit (214) was 0.35m deep, with steep sides, and was filled with layers of grey silty clay. The presence of coprolites, probably human, and a relatively high number of mineralised plant remains including plum or sloe stones, in the primary fill (215) suggests the feature was used initially as a

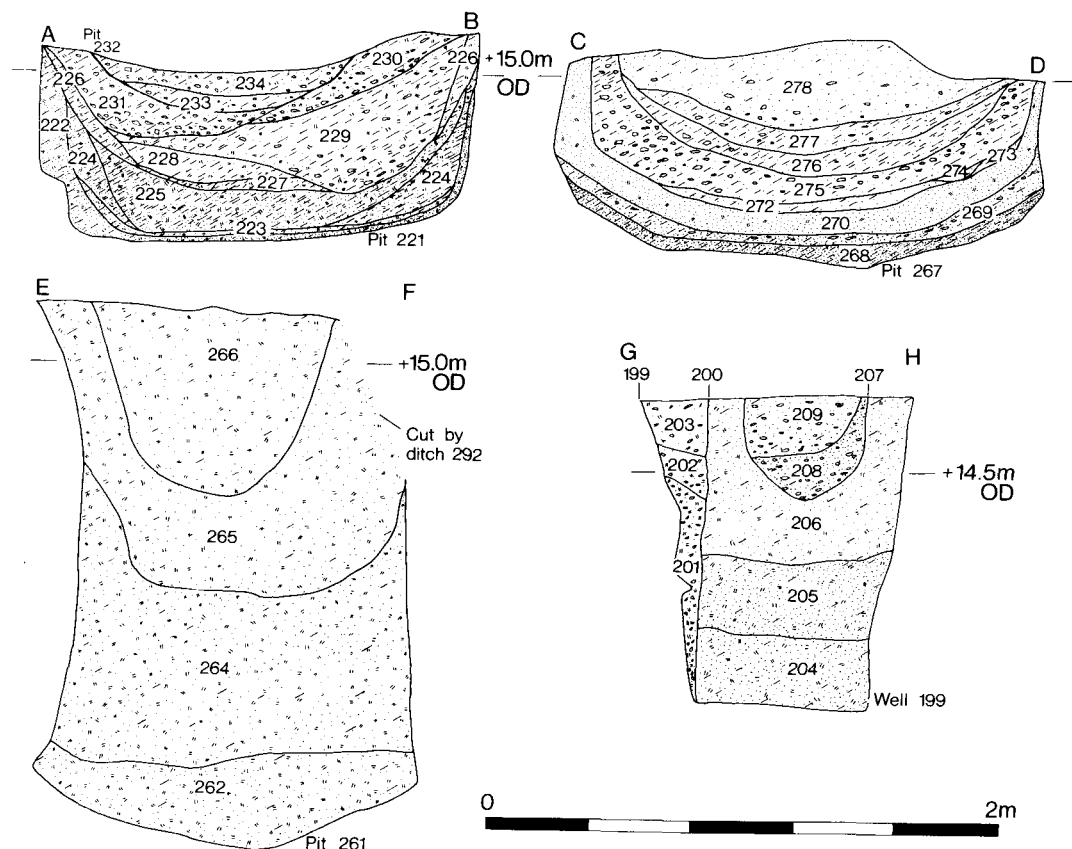


Fig. 16. Maiden Lane: Sections of well (199), and rubbish pits (221), (261) and (267).

cesspit. The fill also contained a large number of fish bones (53% of the site's total assemblage), especially those of eel and herring, which would have been ingested and passed in excreta (Locker in this report, p. 150). A notable find from the upper fill (216) was a series D *sceat* dating to AD 700–715, the earliest Middle Saxon object of known date from the site (see Stott in this report, p. 126; Pl. 8).

Pit (217) was heavily truncated, and only survived to depth of 100mm. The remnants of the sides were steep, and the base was flat. A layer of grey sandy clay formed the primary fill (218), which was overlain by a darker fill (219).

Pit (220) survived to a depth of 0.27m, and was filled with greyish-brown fine sandy clay.

Pit (221) was 0.78m deep (Fig. 16). The lower fills (222)–(229) were of greyish-brown silty clay; the upper fills consisted of orange-brown clayey sand (230), and grey-brown sandy clay (231). Some fills lay at a steep angle near the sides of the pit, partly due to subsidence caused by the compression of fills at the centre of the pit (a common characteristic of pit fills at both Jubilee Hall and Maiden Lane).

Pit (232) was 0.15m deep, and cut into the upper fill of pit (221). The primary fill (233) was a greenish-grey clayey sand, overlain by an upper fill of orange-brown sandy gravel (234).

A group of stakeholes cut into 'natural' brick-earth was found at the northern end of the area, next to pit (214). Four were overlain by two layers of grey silty clay (235) and (236), each no more than 50mm thick, containing chaff-tempered potsherds.

#### *Pits and layers cut by ditch 292*

Pit (237) was 1.60m deep, with almost vertical sides and a rounded base. The lower fill consisted of four layers of greenish-grey sandy clay (238)–(241) containing chaff-tempered pottery, while the upper layers (242)–(244) were composed of greyish brown sandy clay, and contained Ipswich ware, a shell-tempered sherd (suggesting the pit was open in the late 8th or 9th century), and a lot of charred wheat.

Pit (245) had steep sides, and was cut into the upper fills of pit (237). The north side had been cut by the ditch. The pit was 0.60m deep, and filled with dark greyish-brown sandy silt containing numerous shells (mainly oyster, although a few mussel were also present) totalling 4kg in weight.

Pit (246) had been so heavily truncated to the south by the ditch that only its curved northern edge survived. It was filled with layers of brown and grey silty clay.

A 'L-shaped' feature (247), possibly a brickearth quarry, measured 4.50m N-S, 2.80m E-W and 0.40m deep, and had eight stakeholes in the bottom. It was filled with layers of grey silty clay (248)–(250), and cut by pit (251).

A steep-sided pit (251) was heavily truncated to the west by a modern drain and to the north by the ditch, but survived to a depth of 0.95m. It was filled with layers of greyish-brown silty clay containing lumps of brickearth (252)–(256). The lower layers produced mineralised plant remains as well as a considerable number of charred barley grains.

In the NW corner of Area B were three small features cut into 'natural'. Two were irregular cuts (257) and (258) 70mm and 90mm deep respectively, filled with yellowish-grey sandy clay. To the north was a steeply sloping cut (259) probably the remnant of a pit almost completely removed by pit (261). It was 0.16m deep, and filled with dark grey sandy clay. These features were sealed by a layer of dark grey sandy clay (260). The top of the layer, which was cut to the west by pit (261), was located at +15.32m OD.

Pit (261) was 2.10m deep, and was clipped to the south by the ditch (Fig. 16). The fill was composed of dark brown and grey sandy clay layers (262)–(266) containing a large amount of domestic refuse, including numerous charred wheat grains from the upper fills. As in pit (237) there was a marked difference between the pottery in the lower fills (262)–(264), which mainly comprised chaff-tempered ware, and that in the uppermost fill, which was mainly Ipswich ware (Blackmore in this report, p. 99). The uppermost fill also produced a silver penny dating to between AD 796 and c. 805 during the reign of the Mercian king Coenwulf.

Pit (267) had been severely truncated to the north by the ditch. It was 0.90m deep, and mainly filled with layers of grey and brown sandy silt and clay (268)–(271), (273), (275)–(277), although there was also an ashy lens (274), and layers of brown sandy loam (272) and (278) (Fig. 16). Fragments of an almost complete 8th-century urn from northern France (Pl. 5) were found in the primary fill (268).

Pit (279) was cut into the upper fills of pit (267), and had also been truncated by the ditch. The fill consisted of three layers of grey and brown sandy clay (280)–(283).

#### *A possible sunken-featured building, and metalised surfaces*

The remnant of a shallow feature (283), cut in the natural brickearth, clipped the edge of feature (253). Despite modern disturbance to the SW and

SE it survived to a length of 2.20m, and a depth of up to 0.20m. The sides sloped down at a 45 degree angle to a flat bottom at *c.* +15.20m OD. A large rectangular stakehole was found at the north end of the base. Although severely truncated, the shape of the feature is reminiscent of Saxon sunken-featured buildings found elsewhere in Greater London (Blackmore, 1986, 208, Fig. 1). However, it is possible that the feature is no more than a fortuitously shaped brickearth quarry. There is a cautionary tale from Germany where at one time pits next to neolithic longhouses were interpreted as sunken dwellings but are now thought to be quarries for daub (Barker 1985, 141). The feature was filled with light grey silty clay (284) containing brickearth inclusions, and a Roman coin identified as an irregular copy of a coin of Constantinopolis produced *c.* AD 340–6 (Hammerson in this report, p. 125; Pl. 7), and a Saxon carding comb.

Feature (283) was overlain by a layer of gravel metalling (285), which was 100mm thick, with a surface between +15.14m and +15.31m OD. It was overlain by a second layer of compact gravel (286), presumably added as a resurfacing, the surface of which was located between +15.29m and +15.38m OD. Although the metalling was isolated from similar gravel layers (333) and (380) (Fig. 15) on the east side of the site, their similar composition and height suggests that they were related, and may have formed part of a road or a yard surface.

#### *The ditches*

Ditch (287) was steep-sided with a slightly rounded base located between +13.35m and +13.53m OD (Figs 17; 18, section N–P). It pre-dated ditch (292), which was on the same alignment and overlay it. It was filled with layers of silty and sandy clay (288)–(291) containing one chaff-tempered potsherd and one of Badorf-type ware.

A substantial 9th-century ditch (292), interpreted as defensive (see discussion p. 79), was aligned approximately WSW–ENE, and bisected Area B. A total length of 11.60m was recorded, although its full length was not discovered since the ditch extended beyond the excavation area. At the top it was 1.90m wide at the east end, and widened to 2.30m at the west end. A maximum depth of 2.06m was recorded at the east end of the ditch: it would originally have been deeper, but had been truncated by post-medieval activity. It had a ‘U-shaped’ profile, with steep sides and a slightly rounded base. The ditch was mainly cut through sandy gravel, but there was little evidence of erosion apart from a short stretch near the

bottom (see Fig. 18, section J–K) where shallow layers of sandy gravel (293) and (294) may have slumped in from the sides. These deposits were partly removed by feature (295), a shallow irregular cut, which may have been dug to clear the bottom of the ditch. Nevertheless, the lack of erosion suggests that the ditch only remained open for a short period, especially in view of the quite severe erosion that occurred in one part of the ditch during the few weeks of archaeological excavation.

The ditch was mainly filled with layers of dark greyish-brown sandy clay (293)–(326), most of which contained considerable quantities of flint pebbles and lumps of brickearth. The similar composition of the layers gave the ditch fill a fairly homogeneous appearance. This suggests that most of the layers may have derived from a single source, possibly the upcast from the ditch which would have incorporated a substantial amount of brickearth and gravel from the geological deposits into which the ditch was cut. Many of the layers sloped down from the south side, suggesting that the fill was mostly tipped in from the southern edge.

The pottery from the ditch included chaff-tempered ware, Ipswich ware, Badorf-type ware and North French grey and black wares. Among the other finds were half a loomweight, whitewashed daub fragments with wattle impressions, a rim fragment of a funnel beaker, copper alloy objects, fragments of iron-smithing slag and iron slag, a piece of a limestone hone, lava quernstone fragments, and pieces of worked bone and antler.

#### AREA C

This part of the site, like Area B, was mainly used for rubbish disposal during the Middle Saxon period, for a midden containing large quantities of domestic refuse had accumulated in a hollow, and had spilled out onto a layer of gravel metalling to the south.

The earliest features in the area (327)–(329), were cut into natural brickearth. Feature (327) was a shallow subrectangular cut, 80mm deep, and filled with dark grey sandy clay. An irregular slot (328), 60mm deep, and filled with an orange-brown sandy clay, was located a little to the north. Pit (329) survived to a depth of only 40mm. The primary fill mainly consisted of charcoal with dark grey silty clay (330), overlain by dark greenish-grey sandy clay (331).

The shallowness of these features, and the absence of natural topsoil above the natural brickearth indicated that the original land surface had been truncated (332) (Fig. 19), possibly to provide a level base for a layer of compact gravel metalling

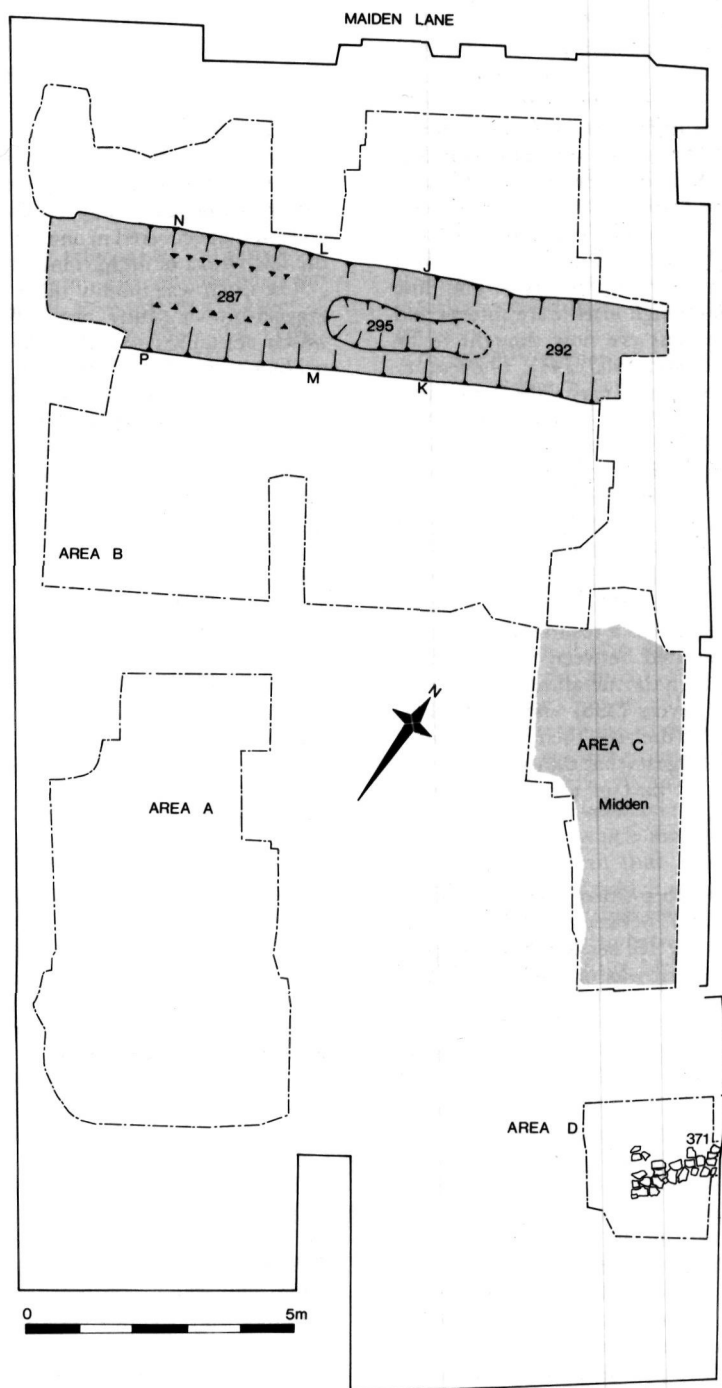


Fig. 17. Maiden Lane: Plan of ditches (287) and (292), the midden, and the tile paving (371).

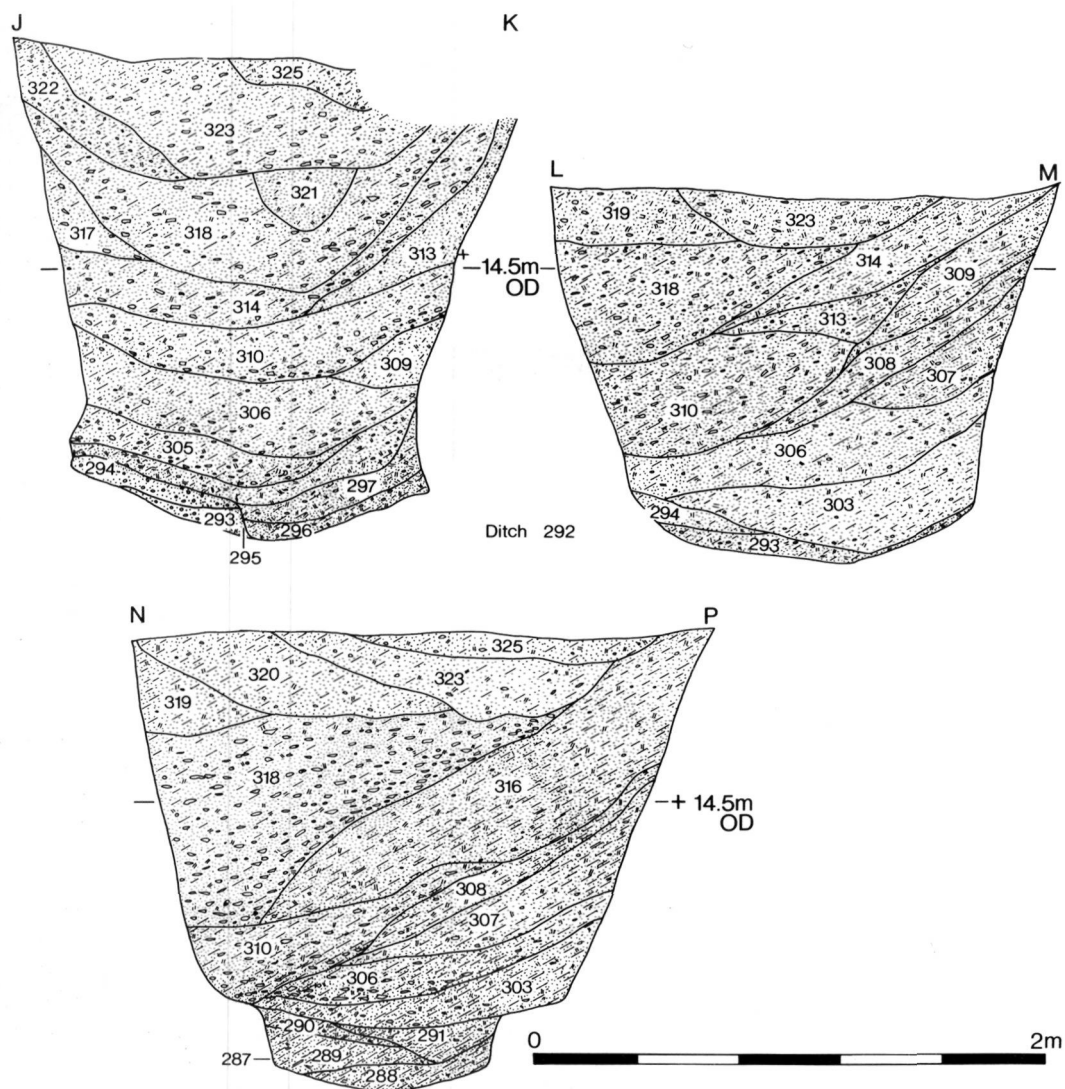


Fig. 18. Maiden Lane: Sections across ditch (292).

(333), or perhaps for brickearth quarrying. To the SE the gravel was cut by a steep-sided pit (334) with a dark greenish-grey silty clay primary fill (335), and a brown silty clay upper fill (336). North of the gravel layer, where the ground had been truncated more severely by cut (332), there was a shallow depression. Four stakeholes and a possible posthole were found cut into the bottom of the depression, towards the north end of area C.

*The midden (Fig. 19, section Q-S)*

The depression (332) had been used as a rubbish tip, and was filled with a sequence of layers (337)–(348) mainly composed of light to dark grey fine sandy clay, containing large quantities of domestic refuse including animal bones, shells, coprolites (deposited by scavenging dogs), charred cereal grains, and, of particular interest, rare examples of fig and grape. Most of the pottery is chaff-

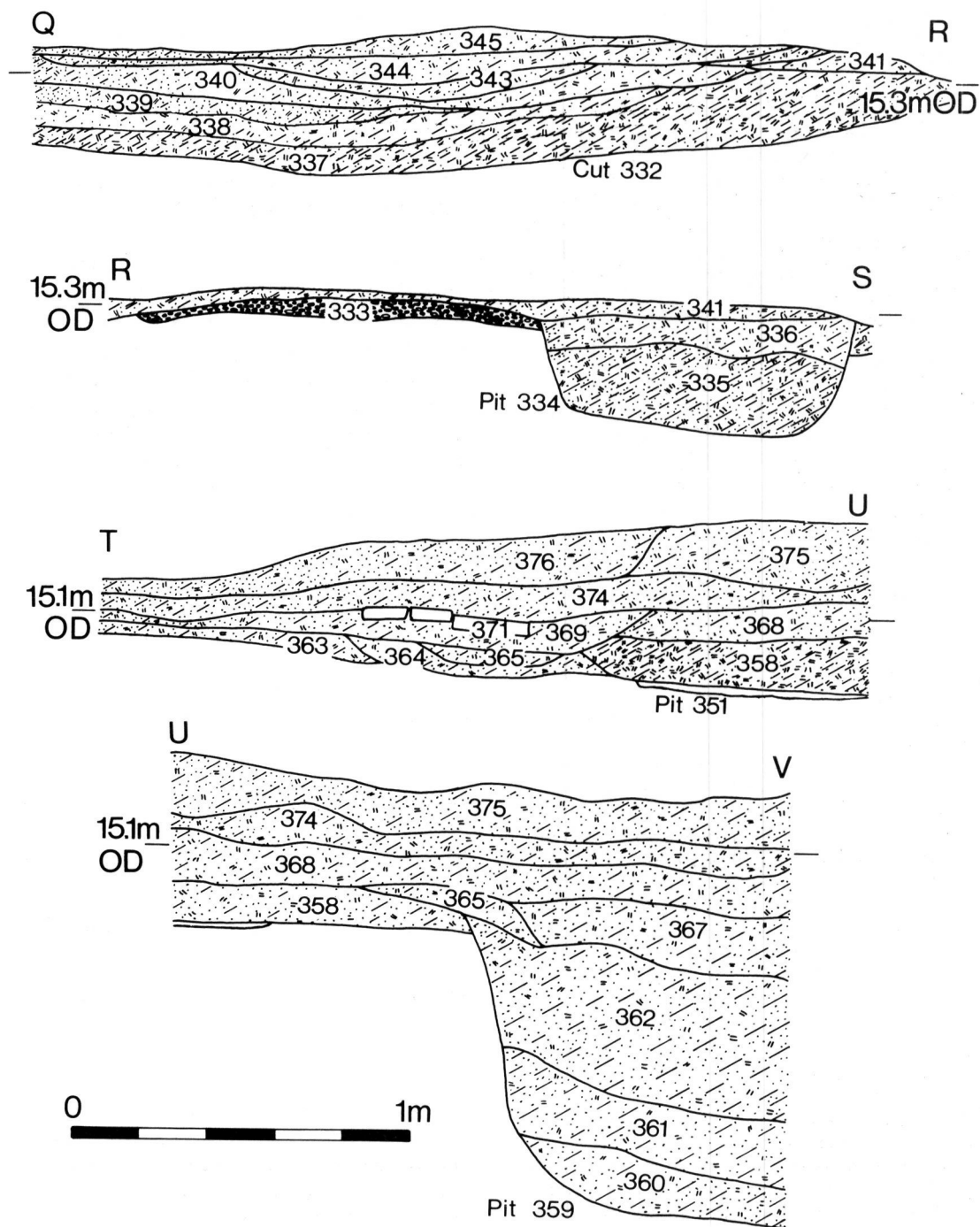


Fig. 19. Maiden Lane: Sections across areas C and D.



tempered; other artefacts include glass beads, loomweight fragments, pieces of spindlewhorl, a quernstone fragment, a piece of grey limestone which may have been part of a quern, copper alloy pins, and worked bone and antler. Fragments of human cranium were found embedded in the surface of the brickearth beneath the midden. One of the uppermost midden layers (347) was mainly composed of burnt daub fragments cleared from a fire-damaged structure (see discussion p. 78), and was up to 50mm thick. Most of the midden lay within the depression, although layers (341) and (337) spilled over to cover the gravel metalling (333) and pit (334) to the south. Extensive excavations at *Hamwic* have revealed only one midden, and it remains to be seen if middens were as rare in *Lundenwic*.

At the north end of the area a pit (349) cut through layer (337). Only the SE quadrant of the pit survived truncation by modern wall footings. The pit was 0.38m deep and filled with grey silty clay (350), containing chaff-tempered pottery.

#### AREA D

The earliest features in this area were pit (351), which was filled with a dark grey silty clay, and a cluster of stakeholes and postholes cut into natural brickearth (352)–(357). They did not appear to form a coherent pattern, although the group may have constituted part of a structure. Pit (351) was sealed by a layer of dark grey silty clay (358). The layer was cut to the west by a steep-sided pit (359) filled with layers of yellowish and greyish-brown sandy clay (360)–(362).

These features were covered by a series of dump layers (363)–(369) (Fig. 19, sections T–U, U–V), mainly consisting of greyish-brown to dark grey silty and sandy clay, which produced a loomweight fragment and chaff-tempered pottery. However, layers (363) and (366) were principally composed of yellowish-brown brickearth. To the west the layers were cut at +15.08m OD by a shallow linear feature (370) up to 0.15m deep. To the east the dump layers were overlain by an area of tile paving (371) (Fig. 17). The paving was made of large fragments of re-used Roman tile, some with *opus signinum* adhering to their surfaces. Both the paving and cut (370) were overlain by a further series of dump layers composed of brown and grey silty clay (372)–(379). The pottery from these layers mainly consisted of chaff-tempered and sandy wares. Other artefacts recovered included a loomweight fragment, pieces of glass palm cup, a fragment of lava quernstone, a bone comb fragment and a bone pin.

Above the dump layers was a layer of gravel metalling (380), the surface of which lay between +15.23m and +15.28m OD (Fig. 15).

## DISCUSSION

ROBERT COWIE with ROBERT LAYARD WHYTEHEAD

Until recently mid-Saxon London was an enigma. Contemporary documentary sources imply that it was a substantial settlement. Bede, for example, described it in his *Historia Ecclesiastica* as ‘a mart of many nations coming to it by land and sea’ (translation in Whitelock 1955, 609). This was apparently contradicted by numerous excavations undertaken by the Museum of London’s Department of Urban archaeology in the City during the 1970s and early ’80s, which failed to find evidence for the settlement. Faced with this problem Biddle (1984) and Vince (1984) reviewed the evidence for Saxon London, and using place-name and topographical evidence, supported by a few chance finds from the area of the Strand, proposed that the mid-Saxon emporium lay about a kilometre upstream from the City on the north bank of the River Thames. The theory, however, still required verification by fieldwork. This came with the excavations at Jubilee Hall in 1985 and at Maiden Lane the following year. These, and subsequent investigations nearby, confirmed that the area between Trafalgar Square and Aldwych was intensively occupied during the Middle Saxon period (Cowie and Whytehead, 1989). The discovery of the trading settlement has filled a substantial gap in our knowledge of London’s past, and the results of the excavations discussed in this report and the gazetteer (Cowie, this volume) will undoubtedly make a considerable contribution to the study of the ‘Dark Age’ emporia of northern Europe.



Plate 3. Maiden Lane: The 9th-century ditch (292), looking ENE. Traces of ditch (287) can be seen in the foreground at the bottom of ditch (292) (vertical scale 1.0m, horizontal scale 0.5m).

## EVIDENCE FOR PREHISTORIC AND ROMAN ACTIVITY

There is little evidence for occupation in the area before the 7th century, when it was probably open countryside, although residual prehistoric artefacts have been found at a few sites (Merriman 1987, Figs 1 and 2), notably the flint assemblage at Maiden Lane (Merriman in this report, p. 132). Similarly, while Roman artefacts have been recovered from some sites in the area of the Strand, no Roman buildings have been found west of St Brides, Fleet Street (Grimes, 1968, 183). Most Roman artefacts in the area are probably residual, but some items were certainly re-used by the Saxons. At Maiden Lane, for example, Roman tiles had been laid haphazardly as paving during the mid-Saxon period. The two 4th-century coins from Jubilee Hall and Maiden Lane (Hammerson in this report, p. 124), and a Late Roman dolphin brooch and a ?belt-fitting from Shorts Gardens (Aileen Connor pers. comm; Cowie, this vol., site 33) were found in mid-Saxon features and may have been lost in the Saxon period. Likewise, it is probable that at least some of the thirty-six Roman copper coins from *Hamwic* (Southampton) are not residual (Andrews 1988, 25).

## MIDDLE SAXON STRATA

The areas of mid-Saxon deposits found at sites around Covent Garden, including those at Jubilee Hall and Maiden Lane, have been small, and often severely truncated. Nevertheless, where strata survive Saxon features are often quite densely packed; possibly an indication of the urban nature of the settlement.

Patterns in the distribution of features have sometimes been apparent. At Maiden Lane, for example, structural features were mainly located at the southern end of the site, while most rubbish pits lay in the northern half. Similarly, at the

Peabody site, 26–7 Southampton Street, and the Royal Opera House car park (Cowie, this volume, sites 23, 36 and 38), groups of Saxon rubbish pits were found only in certain areas, presumably those allotted specifically for rubbish disposal. Some properties were undoubtedly re-organised during the life of the settlement; for at Jubilee Hall wells were dug in an area apparently once occupied by structures, and at the Peabody site deep pits had been dug through an extensive layer of metallurgy.

## DATING

The Saxon pottery at both sites ranges in date from *c.* AD 650 to 850. On the present evidence the stratigraphic distribution of the different wares suggests that in London the ceramic assemblages may be divided into two phases. The first may have ended *c.* AD 750, and the second, which saw the introduction of Ipswich ware, probably lasted from the mid- 8th century to mid- or later 9th century (Blackmore in this report, p. 106). However, due to the small size of the assemblages, a substantial part of which come from isolated features, it has so far proved difficult to test this hypothesis, and to refine further the mid-Saxon pottery sequence in London. The opportunities to apply independent and often more precise dating methods (numismatic, archaeomagnetic and dendrochronological) have been few, but will undoubtedly prove useful as further mid-Saxon sites are excavated, particularly those with long stratigraphic sequences.

## BUILDINGS/STRUCTURES

At Jubilee Hall one of the earliest occupation features appeared to be a sill-beam structure. It is not certain whether this was a building, or simply a yard division, but the area enclosed by beamslots was probably 12m N-S and at least 6m E-W.

The earthfast timbers may have rotted quickly, perhaps surviving as little as fifteen years (see Barker 1977, 85–7), and postholes apparently found in association with the ‘building’ may have belonged to a later structure. There are, however, no archaeological data to indicate the average life-span of mid-Saxon buildings in *Lundenwic*, for well-preserved and closely dated sequences of structures have yet to be found. Nevertheless, it seems likely that buildings in this period were as durable as their Late Saxon successors, about which more is known. For example, Late Saxon buildings found near Botolph Lane, in the City, were estimated normally to have lasted between five and twenty-five years, and in one case at least forty years (Horsman *et al.* 1988, 109).

The extensive brickearth floor on the north side of the Jubilee Hall site, measuring at least 5m E-W and 4m N-S, is likely to have been internal, and although no contemporary structural features were confidently identified, the collapsed daub on the floor, and the overlying ‘grey earth’, would suggest the presence of a building. The wooden hall excavated on the Treasury site, Whitehall, had a clay floor lying within a building 5.64m wide (Green and Thurley, forthcoming).

There was little conclusive evidence for buildings at Maiden Lane, for although concentrations of postholes and stakeholes were recorded, no coherent pattern was discernible. Feature (283), however, might have been part of a sunken-featured building. Such structures were less common in the Middle Saxon period than in the preceding Migration period and it is thought that generally they may have been used as outbuildings (Blackmore 1986, 207).

Numerous fragments of burnt daub recovered from both sites indicate that wattle and daub buildings must have been constructed on or near the sites. At Jubilee

Hall a spread of burnt material including burnt daub lying on a patch of a clay floor may have been *in-situ* collapsed material.

The daub from both sites was made of fine sandy clay, almost certainly local brickearth, to which plant matter such as grass was frequently added (Goffin in this report, p. 115). Fragments often bore impressions of timbers and wattle, and a few pieces had imprints of both vertical and horizontal members. They suggest that walls were between 80mm and 100mm thick, and were sometimes white-washed, for the surfaces of over ninety pieces (mostly from Area B at Maiden Lane) were covered with an off-white limewash. While some clay may have been baked in the course of industrial and domestic activities, most probably came from fire-damaged buildings.

The remains of fire-damaged mid-Saxon buildings have been found nearby at four sites: the Treasury, where the hall was consumed by fire in the 9th century (Green and Thurley, forthcoming), 17–18 Floral Street, where a sunken-floored building had burnt, and possibly at Jubilee Hall and 26–27 Southampton Street, where burnt daub lay over clay floors. Archaeological and documentary evidence suggests that conflagrations were an endemic hazard in *Lundenwic*, a settlement built largely of combustible materials. The scale of the problem is illustrated by a 12th-century manuscript, the *Historia Regum*, which mentions that London was destroyed by fire in AD 764, 798 and 801. The reliability of this document is open to question, although some of the manuscript, attributed to Simeon of Durham, is thought to be drawn from earlier sources (Whitelock 1955, 239).

## THE PITS

A considerable number of pits were found at both sites, and were used as rubbish tips and cesspits. A few wells with

evidence for linings were also found. Few bones were weathered or gnawed, which might suggest that rubbish was disposed of quickly. With the exception of the midden at Maiden Lane most domestic rubbish appears to have been disposed of in pits and disused wells; generally the richest source of artefacts on mid-Saxon sites in central London. The pottery in the lower layers of some pits and wells was typologically different from that in the upper fills. This might indicate that the features were filled during the transition between the first and second ceramic phases (see Blackmore in this report, p. 106), or that the upper layers were later ground level deposits which had subsided into the features.

It was common for layers in pits and wells to have subsided at the centre. Where such subsidence occurred, overlying 'surface' deposits may have slumped into the features. It is possible, therefore, that even where the Saxon ground levels have been truncated, vestiges of occupation layers might have survived in certain pits, for example wells (117) and (121) at Jubilee Hall. This may also have happened at *Hamwic*, where conjoining potsherds from one widespread occupation layer were found in separate features some distance apart (Timby 1988, 116–20; P. Andrews and A. Morton, pers. comm.).

### THE MAIDEN LANE DITCHES

The most impressive feature at Maiden Lane was the 9th-century ditch (292), which cut through an area of earlier rubbish pits. It was probably only used for a brief period before it was backfilled, possibly with the up-cast from the ditch banked up on its south side. The size and shape of the ditch suggests that it was defensive, and it was similar to a Late Saxon (probably 10th-century) ditch found at Cox Lane, Ipswich, which may

have been dug to protect an individual property before the 'collective' town defences were constructed (West 1963, 245). The Maiden Lane ditch may have had a similar function, for if it had been intended as a town defence then it should have been located on or near the periphery of the settlement, but the distribution of Middle Saxon sites in the locality (see Cowie, this volume, Fig. 1) suggests that the ditch was well inside the settlement area. The 9th-century date of the Maiden Lane ditch supports the interpretation that it was defensive, for it was dug during the period of Viking raids on the British Isles. *Lundenwic* was vulnerable to attack, located as it was on a tidal estuary on the eastern coast of England, for, as the Anglo-Saxon Chronicle tells us, London was raided in AD 842 and 851, and the 'Great Army' wintered there in AD 872 (Whitelock 1955, 173).

Ditch (292) seems to have been preceded by an earlier ditch (287) on the same alignment, which judging by the presence of Badorf-type ware was also 9th-century, indicating two phases of defences.

### CRAFTS

Small amounts of industrial waste were recovered from both sites, which with finds from other mid-Saxon sites in the area suggest that crafts such as bone-working and metalworking were undertaken on a small scale across *Lundenwic*. The antler and bone offcuts, horncores and waste from metal working (mainly iron-smithing slag) found at Jubilee Hall and Maiden Lane do not necessarily indicate craft activity at these sites, for considering the amounts involved it is likely that such waste was produced elsewhere in the settlement.

Loomweights, probably made from local brickearth, are a common find on archaeological sites around the Strand,

including Jubilee Hall and Maiden Lane, which suggests that weaving was undertaken in most parts of the settlement. Cloth production is also indicated by the presence of spindlewhorls, bone thread-pickers, and a carding comb. No cloth has yet been recovered from mid-Saxon London, but textile impressions have been found on a potsherd (Pl. 4) and two pieces of daub (Pl. 6) from Maiden Lane.

### FOOD PRODUCTION AND CONSUMPTION

Barley and wheat were the most common cereals at Jubilee Hall and Maiden Lane, and were sometimes grown as pure crops (Davis and de Moulins in this report, Table 17, p. 146). Rye was present in smaller quantities. Among the other food plants consumed in the settlement were hazelnuts, apples/pears, sloes/plums, blackberries/raspberries and strawberries.

At both sites cattle were the most important domesticated followed by pig and then sheep (West and Rackham in this report, Table 22, p. 152; also see O'Connor 1991, Fig. 41 comparing the relative abundance of major domestic taxa at Saxon sites, including Jubilee Hall and Maiden Lane). A large proportion of animals were killed at a young age to supply the inhabitants with good quality cuts of tender meat. Fewer animals were kept into maturity presumably for breeding, milk, and wool. It is also likely that some cattle were used as draught animals.

The virtual absence of chaff and large weed seeds at Jubilee Hall and Maiden Lane suggests that cereal grain was not processed on site, and likewise most animals were probably butchered before being brought to site, possibly at farms close to *Lundenwic*. The low number of foot bones in the faunal assemblages at Jubilee Hall and Maiden Lane suggest that these poor quality cuts were trimmed off animal

carcasses elsewhere. The assemblage from the site at the Treasury is quite different. Here such waste bones, were noticeably frequent, and were interpreted as 'commercial debris', which suggests that the site may have been a farm supplying *Lundenwic* (Chaplin 1971, 136; Cowie and Whytehead 1989, 714).

Hunting apparently played little part in the provision of food, but local rivers were fished for eels (common at both sites), *Cyprinidae*, roach, salmonids, and pike. Oysters and mussels, and plaice and flounder probably from the Thames estuary, were brought upstream to the settlement, together with haddock, whiting, and cod, which may have been caught in the sea near the estuary (Locker in this report, p. 149).

### TRADE

The principal function of *Lundenwic* was probably as a trading port, and evidence of regional and long distance trade was found at Jubilee Hall and Maiden Lane. The settlement was well situated for this purpose, for it probably lay below the tidal head of the Thames, which would allow the port to be easily reached by ships moving upstream, and long distance land routes would have been provided by surviving Roman roads.

*Lundenwic* probably relied on regional trade to obtain raw materials such as wool, antlers, and metals for its crafts (discussed above). Links with Kent might be indicated by the presence at Jubilee Hall and Maiden Lane of pieces of Kentish ragstone honesstones, quern fragments made of grey limestone probably from the Hythe Beds (Blackmore and Williams, in this report), and a series V *sceat*, which may have been minted in Kent (Stott, in this report, p. 126). Some sand-tempered and shelly wares found at these sites may have had a Kentish provenance (Blackmore in this report,

pp. 87–88). Certain wares in the pottery assemblages suggest links with other parts of England. The sandy gritty ware, for example, was probably produced in Surrey, the chalk-tempered ware may have come from the North Downs or the Chilterns, and an East Midlands source is suggested for the pottery tempered with igneous rock (Blackmore in this report, p. 89).

The evidence for the trading port's Continental connections is mostly based on imported pottery types and Rhenish quernstones. The Continental pottery appears mainly to have come from northern France, although some pottery also came from the Low Countries and the Rhineland (Blackmore in this report, Table 1, p. 83). The Continental wares comprise about 12% (sherds) of the assemblage at Jubilee Hall, and 8% of the assemblage at Maiden Lane (counting the urn from pit (267) as one sherd). These assemblages, however, may not be representative of the settlement as a whole, and it should be noted that at *Hamwic* greater quantities of imported wares were found near the waterfront area of that settlement, perhaps where most mercantile activity took place, or where there may have been an enclave of foreign traders (Timby 1988, 117–118).

The source of the rock from which the lava quernstones were made has been identified as the Mayen-Niedermendig area of the Eifel Hills in Germany (Blackmore and Williams, in this report, p. 132).

It is thought that the 'black stones' referred to by Charlemagne in a letter to Offa were lava quernstones:

'As for the black stones which your reverence begged to be sent to you, let a messenger come and consider what kind you have in mind, and we will willingly order them to be given, . . . and we will help with their transport. But as you have intimated your wishes concerning the length of the stones, so our people make a demand about the

size of the cloaks, that you may order them to be such as used to come to us in former times'.

(translation in Whitelock, 1955, 782)

A fragment of ?honestone from Jubilee Hall was made of schist, which may possibly have come from Eidsborge in Norway. The provenance of a number of items of possible Continental origin is ambiguous. For example, the glass with reticella threads is generally found in the North Sea and Baltic Sea areas (Evison in this report, p. 122).

Surprisingly, international trade is barely reflected by the numismatic evidence (Stott 1991, 282; Stott in this report, p. 125), for the number of *sceattas* from London are low compared with the amount from *Hamwic* or East Kent, and only one coin from excavations near the Strand is thought to have been minted on the Continent, namely the series D *sceat* from Maiden Lane (Pl. 8). However, it is perhaps premature to make such inter-regional comparisons while so few sites in London have been excavated.

Although it is unlikely that foodstuffs were traded internationally on a large scale (Hodges 1982, 128), some items found at Maiden Lane were probably transported considerable distances, including ling from the northern part of the North Sea (Locker in this report, p. 149) and figs, grapes, and possibly lentils, which may have been shipped from warmer parts of the Continent (Davis and de Moulins, in this report, p. 139). Some of the Continental table wares found at sites near the Strand also provide indirect evidence that wine was imported (Blackmore and Redknapp 1988, 225).

## THE POTTERY

by Lyn Blackmore

### INTRODUCTION

Until 1985, Middle Saxon pottery from the immediate vicinity of the City of London was lim-

ited to a few sherds and loomweight fragments from the site of the Savoy (Wheeler 1935, 39, 54, 139), a complete chaff-tempered pot found near Drury Lane (Myres 1937, 432; 1969, 30), and a few sherds of Ipswich-type ware from Arundel House in the Strand (Haslam 1975, 221–22). A little to the south-west is the 9th-century site at the Treasury, Whitehall (Green 1963; Green and Thurley, forthcoming). The Museum of London and British Museum collections contain a few single pots, sherds and loomweight fragments from both outside and within the City, but the findspots are imprecise. Within the City, Late Saxon artefacts are plentiful, yet despite the fact that a new Bishopric was established there *c.* AD 604, presumably with associated ecclesiastical and secular buildings, extensive excavations over many years have recovered only a few residual sherds of Middle Saxon pottery (see Vince, 1990, *passim*).

By 1984 it was suspected that the focus of Middle Saxon occupation lay to the west of the City (Biddle 1984; Vince 1983, 1984), but it was only in 1985 that the first well-stratified Middle Saxon domestic pottery was found at Jubilee Hall. Although small (353 sherds), this assemblage is of importance as the basis of a fabric type series for this period, which has been enlarged with material from Maiden Lane (672 Saxon sherds) and other sites excavated since 1986 (Blackmore, forthcoming). Other Saxon sites in the London area include Althorpe Grove, Battersea (Blackmore 1986, 214), possibly of 8th-century date; Rectory Grove, Clapham (Densem and Seeley 1982) and Tottenham Court (Whytehead and Blackmore 1983), both possibly of Early-Middle Saxon date; Hampstead Heath; Hendon; Northolt (Hurst 1961, 211–99), Staines (Jones and Shanks 1976, 101–13; Jones 1982), Shepperton (Canham 1979), Waltham Abbey (Huggins 1976) and Barking Abbey (Blackmore and Redknapp 1988, 231–6).

This report is divided into four sections:

1. The fabric types, incorporating notes on the petrology by Alan Vince, and discussion of the forms represented in each ware/ware group, with comments on specific sherds. Further thin-section work and analysis of the organic inclusions in the chaff-tempered wares is intended (a preliminary report by Ian Tyers on organic content of sherds from Jubilee Hall is included in the finds archive held by the Museum of London). It is hoped to publish a fuller statement on the pottery fabrics from the Middle Saxon settlement in due course.
2. Jubilee Hall—the stratigraphic distribution of the pottery (contexts 1–164).

3. Maiden Lane—the stratigraphic distribution of the pottery (contexts 165–380).
4. Discussion and dating of the pottery from both sites with reference to York, Ipswich, Canterbury and *Hamwic*.

## METHOD OF ANALYSIS

The classifications and quantification in this report are based on vessel fabric. During the initial sorting, the pottery from each context was divided into fabric groups based on the dominant inclusion and other visual and textural criteria, and each sherd was given a unique number. Selected sherds from Jubilee Hall were then examined in thin-section to confirm the macroscopic identifications. All sherds in each fabric group were studied together to identify sherd links or non-joining sherds from the same vessels, although this was not easy for the chaff-tempered sherds. Form types are limited to cooking pot/jar, jug/pitcher, bowl/dish for the rim sherds (all fabrics) and imported wares. As a rule base and body sherds could not be assigned to a specific form. The pottery was recorded on pro forma sheets using a series of codes to describe fabric, vessel type, sherd type, surface treatment, decoration, use, wear, sherd links and illustration (see appendix). The numerical data comprise the context number, sherd number, weight, rim diameter, percentage of rim present, and wall thickness. Base diameters were not normally recorded.

The computerised records were then sorted to study fabric groups or the stratigraphic distribution of the material. The pottery archives for each site thus comprise a detailed record on paper and on computer of every sherd. These will be stored together with the finds and thin-sections at the Museum of London. Details of the pottery stamps, classified by Teresa Briscoe and Paul Blinkhorn, are also held in their respective archives of Anglo-Saxon pottery stamps.

## FABRIC GROUPS

The main fabric groups are as follows:

1. Chaff-tempered
2. Ipswich-type
3. Non-local: Sand, chalk, grit, limestone, shell
4. Imports: North French/Belgian, Rhenish.

These groups have a number of sub-groups, each of which has a unique fabric code. The wares are discussed in this order with regard to fabric, manufacture and the forms represented. To this end the illustrations are ordered as far as possible by stratigraphic location within fabric and form types. Dating is considered in the final discussion. Details of the type sherd, comprising site code,



TABLE 1: The composition of the assemblages from Jubilee Hall and Maiden Lane based on sherd count and weight in grammes (excluding medieval and later sherds).

Fabric	Sherds	Jubilee Hall			Sherds	Maiden Lane		
		%	Weight	%		%	Weight	%
Prehistoric					2	0.27	18	0.14
Roman	15	4.25	106	1.2	45	6.25	315	2.59
Chaff	179	50.71	3038	34.4	426	59.16	4244.5	35.01
Ipswich	65	18.41	3719	42.1	135	18.75	4465.5	36.83
Surrey?	18	5.01	276	3.12	3	0.41	53	0.43
Sand	2	0.56	34.5	0.39	17	2.36	123	1.01
Coarse sandy	—	—	—	—	5	0.69	22	0.18
Grog	—	—	—	—	1	0.14	21	0.17
Chalk	1	0.28	123	1.39	—	—	—	—
Shell	14	3.97	184.5	2.08	9	1.25	32	0.26
Limestone	14	3.97	278.5	0.31	2	0.27	14	0.11
Igneous rock	3	0.85	65	0.73	1	0.14	1	0.01
Fine flint	—	—	—	—	12	1.67	1.6	0.95
Flint/grit	—	—	—	—	3	0.41	69	0.56
Beauvais	2	0.56	13	0.14	—	—	—	—
Seine Valley	10	2.83	97	1.09	—	—	—	—
French black	13	3.68	375.5	4.25	12	1.67	70.5	0.58
French grey	8	2.27	104	1.18	26*	3.61	2171.5	17.91
French red	2	0.56	285	3.22	—	—	—	—
France/Belgium	2	0.56	16	0.18	2	0.27	75	0.61
Rhenish	5	1.42	117	1.32	19	2.64	309	2.54
Total	353		8832		720		12122	

\*Includes many sherds from a near complete vessel

context, sherd number and thin section number are given where appropriate, at the end of each ware description. The general proportions of the ware groups present in each assemblage are illustrated in Table 1. It must be stressed that although comparison with pottery from Canterbury, *Hamwic*, Ipswich and York suggests that some fabrics are occurring on a number of widely distributed sites, the quantities involved are small and the origin of most non-local and imported wares remains unclear. While the picture is improving as the amount of material available for study increases, much work remains to be done on both sides of the Channel before the way in which pottery was produced and distributed in the Middle Saxon period can be fully understood.

#### KEY TO FABRIC CODES USED IN THE POTTERY ANALYSIS

##### *Chaff-tempered wares*

CHAF—chaff-tempered

CHSF—sparse chaff-tempered

CHFS—sand-and-chaff-tempered

CHFQ—chaff-tempered with large quartz grits

CHFI—iron-rich chaff-tempered

CHFG—chaff-tempered with grog/tile

##### *Ipswich-type wares*

IPSF—fine Ipswich-type ware

IPSM—intermediate Ipswich-type ware

IPSC—coarse Ipswich-type ware

##### *Other local and non-local wares*

SSANA—sand-tempered (?Kentish)

SSANB—sand-tempered (?Hampshire)

SSANC—sand-tempered (?Surrey)

SHGS—coarse sand-tempered (?Hampshire)

SLGSA—Lower Greensand ironstone sand in brickearth (?Surrey)

SLGSB—as above, ?Reading Beds clay (?Surrey)

SLGSC—as above, London clay (?Surrey)

SGRG—sand-tempered with grog/tile

MSFG—mixed sand, flint, grit and shell (?Hampshire)

SSFL—fine sand with sparse flint

MSCH—mixed sand, flint, chalk

MSSA—?shell-tempered (abundant voids)

MSSB—abundant bivalve shell, hard

MSSC—abundant bivalve shell with sand/organic inclusions, hard

MSSD—sparse shell, hard

MSSE—abundant bivalve shell (fine or coarse)

MSSF—abundant very fine shell, soft

SSSL—sandstone and limestone or shelly-limestone

MSOL—oolitic limestone

MSIG—sandstone and igneous rock (?East Midlands)  
SGFM—sand, granite, felspar, mica

#### Imports

NFBWA—North French blackware, brown/pink body  
NFBWB—North French blackware, reduced throughout  
NFBWC—North French blackware, bluish-white body  
NFGWA—North French grey ware, coarser sand-tempered  
NFGWB—North French grey ware, finer sand-tempered.  
NFGWC—North French grey ware, hard red body  
NFGWD—North French grey ware, micaceous, fine sand-tempered  
NFGWE—North French grey ware, very fine sand-tempered  
NFGWF—?North French grey ware, abundant iron  
NFEBA—North France/Eastern Belgium, grey ware  
NFEBB—North France/Eastern Belgium, hard grey ware  
NFRWA—North French red ware  
NFSVA—?North France, Seine Valley coarse buff ware  
NFSVB—?North France, Seine Valley, fine buff ware  
BEAV—North France, Beauvais white ware  
BEARP—North France, Beauvais red-painted  
BADOA—Rhenish, Badorf/Walberberg-type ware (soft, coarse)  
BADOB—Rhenish, Badorf-type ware (hard fine)

## THE WARES

*Chaff-tempered*: CHAF, CHSF, CHFS, CHFQ, CHFI, CHFG

Organically-tempered pottery here covers most fabrics containing vegetable matter of any kind as a dominant inclusion. Most of this pottery is almost certainly locally made, but some non-local products may be identified by other inorganic inclusions which are thus used as the basis of classification. These wares mainly fall into the possible Surrey group SLGS, although the limestone-tempered fabric SSSL also has organic inclusions (see below). Chaff-tempered ware has been discussed by, amongst others, Brown (1976, 192) with reference to Walton, Bucks, and by Hodges (1981, 6, 46, 55–56) and Timby (1988, 78–80) with reference to *Hamwic*. It has been suggested (Vince 1990, 99) that the chaff-tempered wares used in London were made in south-west Essex.

CHAF: abundant organic temper in London Clay or brickearth matrix; the dominant inclusion appears to be barley chaff, but other plant fragments are also present. This is the most common ware at both Jubilee Hall and Maiden Lane.

CHSF: similar to the above but finer, with sparse organic material. The sherd examined in thin-section also contains moderate fine clear, milky and red quartz; sparse white mica up to 0.1mm, and sparse angular flint or chert up to 2mm. This ware is not common on either site.

CHFS: London Clay or brickearth with varying combinations of abundant clear, milky and red quartz up to 1.0mm, moderate organic material up to 5mm, sparse angular flint or chert up to 3.0mm and sparse white mica up to 0.1mm. When not wiped the surfaces have a pimply feel. Not common on either site.

Thin section: JUB 162:4 (MOL TS. No. 1060).

CHFQ: London Clay or brickearth with organic temper and frequent large quartz inclusions; a few sherds from Maiden Lane only.

MAI 172: 2 (not thin-sectioned).

CHFI: London Clay or brickearth normally with sparse to moderate flecks of haematite or iron oxide and moderate organic temper. One oxidised sherd from Maiden Lane with very abundant iron inclusions up to 2mm giving a speckled appearance to the burnished outer surface. Also from Maiden Lane are a number of sherds from a jar or bottle (Fig. 27, No. 46), possibly from a white firing clay, with a reduced core and pinkish-brown surfaces; this vessel may relate to fabric group SLGSB.

MAI 243: 1 (not thin-sectioned).

CHFG: Grog-tempered. One highly fired sherd from Jubilee Hall, with a grey core and oxidised surfaces, has an iron-rich fabric with moderate grits of what appears to be crushed Roman tile (mostly 2–3mm but up to 5mm across).

JUB 119: 1 (not thin-sectioned).

## MANUFACTURE

This pottery is all hand-made, mainly by the coil technique. Some pots, notably MAI Fig. 25, Nos 26–29, may have been finished on a turn-table but in general rims are irregular and wall and base thicknesses vary greatly. The majority of sherds are reduced; a small number are partly oxidised, and very few are completely oxidised; one such sherd from Jubilee Hall appears to be under-fired, suggesting that pottery may have been produced on or near the site. Many sherds have externally smoothed or burnished surfaces, and some have a distinctive scoring of the inner wall caused by roughly wiping the pot with grass while it was still wet. Several sherds bear grain impressions.

The quantities of the different wares are described in Table 2.

Table 2: Chaff-tempered wares: quantities.

	Sherds	Rims	EVEs	CHAF	CHSF	CHFS	CHFQ	CHFI	CHFG
JUB	178	8	0.65	161	5	12			1
MAI	426	37	3.29	329	4	51	12	30	

FORMS AND DECORATION (Jubilee Hall: Fig. 20, Maiden Lane: Figs 24, 25).

*Cooking pots/jars* appear in three size groups. The smallest have a rim diameter up to c. 150mm (JUB: No. 1; MAI: Nos 1–8, and 11). The medium size has a rim diameter of 160–240mm (MAI: Nos 23–25; MAI No. 23 has been placed in this group on the basis of wall thickness and profile). The large cooking pot/storage jars have a rim diameter of over 240mm (JUB: Nos 3, 4; MAI: Nos 26–27). The medium and larger sizes are less common, possibly because the stronger Ipswich wares were used instead. The cooking pots/jars from both sites mainly have a simple everted rim. The rim and body sherds from Jubilee Hall (Nos 3, 4) are probably not from the same pot, but give an impression of the type of globular flat-based vessel they would have come from; this form is long-lived, and is found on both Early and Middle Saxon sites. The rim form of No. 26 from Maiden Lane (and possibly also No. 27), on the other hand, appears later, and to be copying an Ipswich ware form and is probably of 8th-century date. A similarly 'evolved' form found at Portchester Castle was also dated to the first half of the 8th century (Cunliffe 1970, 72).

The *small straight-sided jar* with a distinctive groove below the rim (JUB: Nos 5, 6; MAI: No. 12) has been found on other sites in the Covent Garden area, and at Barking Abbey, Essex (Blackmore and Redknap 1988, Fig. 6 and others more like those illustrated here: Redknap, pers. comm.).

The *necked jar* is an uncommon form, found only at Maiden Lane (No. 16). The smaller pot has a pale grey very highly burnished surface. The larger vessel (MAI: No. 28) may also fall into this group, although insufficient of the body survives to be certain. This form has also been found at *Hamwic* (Timby 1988, Fig. 2, No. 2). The unusual jar or bottle from Maiden Lane (Fig. 27, No. 46) may be a chaff-tempered Surrey product (see below).

The *cup/small bowl* is represented by only one vessel (JUB: No. 8).

The *medium-sized bowl* is absent at Jubilee Hall, but both open and closed forms are present at Maiden Lane (Nos 13–15 and ?11: open; Nos 18–19: closed, both highly burnished). An irregularity on the rim of No. 18 suggests that this has broken at the junction of the rim and a lug. The open forms mainly have a slightly everted 'bead' rim reminiscent of Iron Age pottery.

*Other forms* include an unusual upright rim from Jubilee Hall (No. 2) which appears to be from a very large vessel. Two pots from Maiden Lane have flat-topped rims, one probably from a small jar (No. 17), the other a massive thick-walled vessel (No. 29).

*Decoration* is rare on both sites, possibly because on current evidence it appears to be a 6th–7th-century trait. One pot (No. 7) from Jubilee Hall (and possibly also No. 18 from Maiden Lane) has the scar of a lug on the rim, while another from Maiden Lane has the remains of a vertical perforated lug on the shoulder, (No. 9). One small sherd from Maiden Lane (No. 1) has a comb impression (Briscoe category N1b); comb-stamped decoration has also been found at the Peabody site (Blackmore, forthcoming). Both lugs and comb-stamped decoration are present in the Mucking assemblage (Jones

and Jones 1975, 159). The jar from Maiden Lane (Fig. 27, No. 46) is unusual but not unique in London. A near complete Middle Saxon chaff-tempered vessel, described as a shouldered beaker with flaring rim, found in 1935 in Drury Lane (Myres 1937, 432, Pl. XCIVa; Myres 1977, Fig. 87 No. 713), has a similar, but more pronounced decoration in the style known as 'melon-ribbing'. This comprises narrow vertical bosses which are more closely spaced and stand in higher relief than on the Maiden Lane vessel, where the decoration has degenerated into broad panels defined by shallow grooves.

The *bases* of all vessels may be either flat or sagging, in which case they are not always distinguishable from the mass of body sherds; one exception, possibly a later form, has a foot-ring with finger impressions around the outer base angle (MAI No. 20). Where measurement has been possible, it appears that most bases from Jubilee Hall are between 10–13mm thick, with one at 18mm. At Maiden Lane most fall between 7–9mm thick, with smaller groups of 5–7mm and over 10mm.

## USE

At Jubilee Hall one vessel was externally sooted, two had external sooting and an internal deposit (one white); four had an internal deposit, two definitely of food debris.

At Maiden Lane, fourteen sherds were sooted externally, and three were sooted on both surfaces. Twenty-eight were sooted internally and one had both sooting and a white deposit internally. A further twelve sherds had internal deposits ranging from white to yellow to purplish-white. Most probably derive from water or other liquid foods, but the purple deposit may indicate the use of vegetable dyes such as madder.

## *Ipswich ware*: IPSF, IPSM, IPSC.

Ipswich ware was produced in a number of kilns in Ipswich, notably in the Cox Lane/Carr Street area (Smedley and Owles 1963; West 1963), and the Buttermarket (Blinkhorn 1989). The ware has been discussed by Hurst (1959, 14–9; 1976a, 299–303), and Hodges (1981, 59–60). For dating see discussion.

**IPSF**—Normally has few visible inclusions apart from a little silver mica; analysis shows sparse rounded clear and milky quartz up to 0.5mm, abundant angular and sub-angular quartz up to 0.2mm, moderate black iron ore up to 0.2mm and sparse white mica up to 0.1mm. Some sherds of inferior quality contain organic inclusions as a part of the clay matrix. The latter are less well fired, with streaky orange-grey surfaces.

Thin section JUB 57:2 (MOL TS. No. 1077).

**IPSM**—as above, but an intermediate ware with a scatter of coarser rounded quartzite grains up to 1mm.

**IPSC**—Moderately to heavily tempered with rounded red-brown, dark grey and white quartz up to 1mm. There is considerable variation in the quantity, size and sorting of the inclusions in the coarse wares.

## MANUFACTURE

Ipswich ware is generally hand-made and wheel-finished. The bases are normally sagging, with knife-trimming around the base angle, although flat bases do occur

(MAI unstratified, Fig. 26, No. 40). The upper body of the cooking pots/jars bear characteristic girth grooves, while the rims are of simple everted form and fall into a number of standard types. Analysis of c. 60,000 sherds from various sites in Ipswich indicates that there is no chronological sequence in either fabric type, form or rim form (Blinkhorn, pers. comm.). One completely oxidised fine ware sherd from Maiden Lane (context 266) apparently has spots of clear glaze on the outer surface. Unless this is an intrusive sherd of later date, these must be regarded as accidental. One small ?base sherd of ?Ipswich fine ware has a textile impression on the outer surface, possibly a four-shed twill (F. Pritchard, pers. comm; Pl. 4).

The quantities of the different wares on the two sites are described in Table 3.

Table 3: Ipswich ware: quantities.

	Total sherds	Rims	EVEs	IPSF sherds	IPSM sherds	IPSC sherds
JUB	65	7	1.04	36	7	22
MAI	135	15	1.22	39	38	58

#### FORMS AND DECORATION. (Jubilee Hall: Fig. 21; Maiden Lane: Fig. 26)

In Ipswich itself over 90% of the Middle Saxon pottery comprises cooking pots/jars (West 1963, 247; Blinkhorn, pers. comm.); minority wares include pitchers, bowls, lamps and lids. These are mainly reduced, but partly or completely oxidised wares do occur. The recently excavated 'Buttermarket kiln' was producing a different range of cooking pots/jars and bottles in a variant of the usual coarse fabric, with very distinctive decoration (Blinkhorn 1989), but so far these have only been recognised at Brandon (Suffolk), and Raunds (Northants).

The *cooking pots* (in all three fabric types) fall into three size groups on rim diameter. The small pots range between 130–170mm in rim diameter. The intermediate size is 170–240mm, the large size over 240mm; at Jubilee Hall this group was represented by base sherds only (one at 320mm diameter), but at Maiden Lane Nos 39, 43 are 280mm and 300mm in diameter. Early work at Ipswich found a range of 100–200mm with 75% falling between 110–170mm (West 1963, 247–48). Recent research has shown that the most common sizes were 120–140mm for the fine wares, and 120–160mm for the coarse wares (Blinkhorn, pers. comm.). No examples of perforated lugs or perforated necks are present, although this form occurs in the National Gallery basement assemblage (Blackmore, forthcoming).

The cooking pot/jar rim forms found on both sites fall into the types defined by West (1963, 248):

Group I: simple everted—JUB: Nos 10, 15; MAI: No. 30

Group II: internal seating—JUB: Nos 11, 12, 16, 18; MAI: Nos 31, 32

Group III: external bead—MAI: Nos 34–37  
internal bead—MAI: Nos 38, 39.

Other forms comprise the *storage jar* (fine ware only, MAI: No. 44); the *globular jar* (fine ware only, JUB: Nos 14, 22); the *pitcher* (fine ware only), one stamped vessel (JUB: No. 16), and possibly a *lamp*—one flat base sherd (coarse ware: MAI: No. 40).

#### DECORATION

Stamped decoration is limited to one vessel from each site. The large storage jar/pitcher type with a type IIK rim (West 1963, 248) and alternating upright and pendant triangles, JUB No. 16, is one of a number now known from the London area. The first was found at The Savoy (Wheeler 1935, 139–141; Hurst 1959, Fig. 4, No. 6), the second at Althorpe Grove, Battersea (Blackmore 1986, 214). Further examples have been found at Barking Abbey (eg. Blackmore and Redknapp 1988, Fig. 6, Nos 5, 6) and other sites in the Covent Garden area. The pendant triangle stamp is also found in Ipswich (West 1964, Fig. 50, Pl6 L5 No. 1; Blinkhorn, pers. comm.).

The Jubilee Hall stamp (Blinkhorn corpus no. TG7.1; Briscoe group E.8) is much smaller and neater than the Althorpe Grove example, and much neater than the Savoy example, although almost identical in size. Measuring 10mm across the base, and 11–12mm in height, the stamp comprises five rows of triangles and rhomboids; these define an 'X', which creates a triangle within the larger triangle, the point of which is missing, presumably worn through use. The stamp has been firmly and evenly applied around the neck of the pot, and the impressions are generally clear and deep (up to 2mm). It is possible, but not definite, that the large base sherd, No. 20, is also from this vessel.

The two stamped sherds from Maiden Lane (Nos. 41, 42) are probably from the same spouted pitcher, which has a red-grey vertically burnished surface. The stamp is a simple blank circle which cannot usefully be dated or paralleled.

Burnished decoration is found on the pitchers and globular jars. The burnish may be horizontal, vertical or latticed decoration, apparently copying pitchers from Eastern Belgium or Northern France such as have been found in London, York, Ipswich, Canterbury and *Hamwic* (see below), which may have been regarded as status symbols, possibly through an association with wine (Hodges 1981, 59). Of the Jubilee Hall finds, No. 14 has a horizontal burnish over the upper part of the body, and a vertical burnish over the lower half; No. 22 has an all-over horizontal burnish or smoothing over the upper part of the body, while Nos 17, 20 and 21 have a patchy burnish.

In addition to the above, one pot from Jubilee Hall (No. 13) has an incised cross, possibly a maker's mark.

#### USE

At Jubilee Hall nine sherds were externally sooted, and one internally; four were sooted on both surfaces, and one was externally sooted with an internal food deposit. Other internal deposits were noted on eleven sherds: seven white, one yellow-white, one brown and two purplish-white (including Fig. 21, No. 20).

At Maiden Lane, seven sherds were sooted externally, one was sooted on both surfaces, and three were internally

sooted. Internal deposits were observed on twenty-five sherds: fifteen white, five yellowish-white, one brown, and four purple (see chaff-tempered wares).

#### Other local and non-local wares

Sand-tempered wares: SSANA, SSANB, SSANC, SHGS.

This is a small group which currently embraces three different fabrics with both fine and coarse temper, the sources of which are unknown. At *Hamwic*, some of the sandy-gritty wares listed below are included in the sand-tempered group.

**SSANA**—Fine micaceous clay matrix with abundant fine quartz sand, and moderate larger angular rose quartz grits up to 1mm; moderate fine iron oxide; and small blue-black streaks from burnt-out organic inclusions. The body, which has a granular texture, varies from pale pink to pinkish-brown in colour, with a dull, slightly darker inner surface. The outer surface is frequently knife-trimmed and/or irregularly burnished; the inner surface may be knife-trimmed or wiped.

JUB 163: 16 (not thin-sectioned).

Two sherds from Jubilee Hall, five from Maiden Lane. This ware occurs in small amounts on almost every site within the settlement. Although these vessels are handmade, some appear to have been finished on a turntable; several sherds exhibit knife-trimming on one or both surfaces. The similarity of this ware to a group of Middle Saxon sand-tempered vessels from Canterbury (especially Fabric MLS2) suggests a Kentish origin, although a similar ware (not sourced) has been found at *Hamwic* (Timby 1988, 84: Fabric 12). It is not impossible that some of this pottery was produced in East Anglia.

**SSANB**—A hard dense slightly micaceous fabric containing abundant quartz grains, fine organic inclusions, and occasional flint grits up to 4mm; grey-black body and surfaces. Eleven sherds, from Maiden Lane, including Fig. 27, No. 45, many with external sooting and several probably from the same vessel. This ware is distinct from CHFS, and appears to match the description of *Hamwic* Fabric 13 (Timby 1988, 84).

MAI 250:32 (not thin-sectioned).

**SSANC**—A hard dense slightly micaceous fabric with a pale grey core and buff surfaces, possibly from a white-firing clay. This ware may be related to fabric SLGSB below, although there are no apparent iron-coated quartz grains. The inclusions comprise abundant very fine quartz sand, moderate fine black iron, sparse larger rounded quartz grains up to 2mm, occasional flecks of iron oxide/haematite and frequent fine blue-black streaks and voids from burnt-out organic inclusions. One sherd only from Maiden Lane (Fig. 27, No. 49), with an unusual carinated shoulder and scored 'decoration' reminiscent of the Ipswich ware bottles (eg. Hurst 1976a, 300, Fig. 7.7). This was found in a later context, but a stratified handle from the Peabody site shows that this is a Saxon fabric.

MAI unpublished context: 1 (not thin-sectioned).

**SHGS**—A soft-medium hard fabric containing abundant fine quartz grains (clear, milky, yellow, red or pink), together with moderate fine flint, rounded black iron and angular red iron and grog/clay pellets; pinkish-

brown body with grey surfaces. This is similar to Ipswich coarse ware, but different, and may be related to the SLGS group. The nearest equivalent ware at *Hamwic* appears to be Fabric 8 (Timby 1988, 82). Five small sherds from Maiden Lane only, four probably from the same vessel, and one externally wiped oxidised neck sherd from ditch (292).

MAI 379:4 (not thin-sectioned).

Sandy-gritty wares: SLGSA, SLGSB, SLGSC

**SLGSA**—Brickearth(?) matrix with angular and sub-angular quartz and some white mica, tempered with Lower Greensand(?) ironstone sand. Abundant iron-coated quartz up to 1.0mm; abundant angular red iron ore fragments up to 1.0mm. The finer variant of this fabric is macroscopically the same as *Hamwic* Fabric 10 (Timby 1988, 82).

Thin-sections: JUB U/S:8 (Fig. 22, No. 24; MOL TS. no. 1076). JUB 155:1 (Fig. 22, No. 25; not thin-sectioned).

**SLGSB**—Micaceous white-firing clay (Reading Beds?) with whitish clay pellets and little visible quartz, tempered with Lower Greensand(?) ironstone sand. Abundant iron-coated quartz up to 1.0mm; abundant and sub-angular rounded iron-coated quartz up to 0.5mm; moderate angular red iron ore fragments up to 0.5mm; moderate organic temper. Both sherds examined have a black core and oxidised outer margin and surface.

Thin-sections: JUB U/S:5 (MOL TS. no. 1084). JUB 49:1 (MOL TS. no. 1078).

**SLGSC**—Fine micaceous London Clay tempered with Lower Greensand ironstone sand, probably from Surrey. Abundant rounded iron-coated quartz up to 1.0mm, moderate red iron ore up to 1.0mm; sparse organic temper. The mica content varies from low to high. Some sherds have abundant sub-angular and rounded iron-coated quartz up to 0.5mm, and a higher organic content. The surfaces are generally black, the core a dark grey. Also provisionally included in this group is a very hard reduced micaceous ware with abundant fine white quartz sand and very fine iron-coated quartz grits.

Thin-sections: JUB 51:6 (MOL TS. no. 1080). JUB U/S:4 (MOL TS. no. 1079). JUB unpublished context: (MOL TS. no. 1075). JUB 62:1 (MOL TS. no. 1083).

#### MANUFACTURE AND FORMS (Jubilee Hall: Fig. 22; Maiden Lane: Fig. 27)

These wares all contain a distinctive iron-rich sand which is characteristic of parts of the Lower Greensand around the Surrey-Hampshire Borders, in Bedfordshire and Central Buckinghamshire. At *Hamwic* sand-tempered wares account for 29% of the total sherds, with Fabric 10 being the most common (Timby 1988, 82). At Staines sparse fine ironstone is present in all the Early—Middle Saxon sand-tempered wares, and also in some of the chaff-tempered pottery (Jones 1982, 198–9). In London these wares are not common, and are usually represented by body sherds. Two hand-made vessel types are represented, cooking pots and globular jars. Of the former, JUB No. 24 is in a very coarse version of SLGSA, with

abundant large grits and additional organic temper; the outer margin and roughly wiped surface are pinkish-brown, the core is black. The inner surface is weathered so that the inclusions stand proud. No. 47 from Maiden Lane is very similar, but less weathered.

The bag-shaped jar JUB No. 25 is very fine, with no organic temper, a burnished outer surface and possibly knife-trimmed inside the neck. This pot is similar to a jar from *Hamwic* (Timby 1988, Fig. 4, No. 50), and a little smaller, but otherwise almost identical in form to that found on the site of the Savoy (Wheeler 1935, Fig. 22, No. 1; Hurst 1959, Fig. 4, No. 7). The latter, however, is thought by Vince (1990, 99) to have been made in the London area using a clay rich in brickearth sand, and to date to the 7th century. The jar or bottle from Maiden Lane (No. 46, iron-rich chaff-tempered fabric), which appears to be made in a white-firing clay, may also belong to this group.

#### Sand-and-grog-tempered: SGRG

One highly fired sherd from Maiden Lane in a red-brown fabric with wiped surfaces and external sooting; the fine sandy body is tempered with abundant angular grits of what appears to be crushed Roman tile (up to 5mm).

MAI 266:1 (not thin-sectioned).

#### Mixed grit-tempered ware: MSFG

A very distinctive hard brown or black ware with a very hackly fracture. The abundant inclusions comprise coarse ill-sorted rounded quartz with moderate round and angular patinated flint grits up to 5mm, frequent rounded black iron, sparse grog or weathered clay, and shell. Both inner and outer surfaces are wiped. This fabric is very similar to a group of closely related wares found at *Hamwic* (Timby 1988, 84–5, Fabrics 55, 56). Three sherds only from Maiden Lane, all from the same vessel. The ware has also been found at Shorts Gardens (Connor 1990).

MAI 269:3 (not thin-sectioned).

#### Flint-tempered: SSFL

A very fine micaceous clay matrix (?brickearth), with sparse fine flint 'dust' and occasional larger flint inclusions up to 3mm. One, possibly two vessels only from Maiden Lane (Fig. 27, No. 48), with patchily oxidised margins, and a pale grey core and surfaces. Flint-tempered wares occur as a minority group at *Hamwic*, where the closest parallel to SSFL is Fabric 24 (Timby 1988, 88), and as a larger proportion of the wares in Middle Saxon deposits at Canterbury. The production centre(s) is unknown.

MAI 318:25 (not thin-sectioned).

#### Chalk-tempered ware: MSCH

A slightly micaceous clay matrix with few visible inclusions, tempered with moderate rounded chalk(?) up to 2.0mm, and sparse black chert and grey flint up to 2.0mm. This ware probably comes from a chalk region such as the North Downs or the Chilterns. Found only at Jubilee Hall, a few sherds from a large storage jar

(burnt); although distorted, this appears to have had a simple everted rim and a slack shoulder. Chalk-tempered wares are common in *Hamwic*, where they form 15% of the total assemblage (Timby 1988, 81–82), and also occur as a minority ware in Canterbury (MacPherson-Grant, pers. comm.).

Thin-section: JUB 119:2 (MOL TS. no. 1073).

#### Shell-tempered wares: MSSA, MSSB, MSSC, MSSD, MSSE, MSSF

A range of shell-tempered wares is present, but all in such small quantities as to preclude accurate provenancing at this stage; only thirteen sherds from Jubilee Hall, and eight from Maiden Lane, probably deriving from two vessels at the most. It is possible that some wares were coming downstream from Oxfordshire, while others were coming in from Kent. Shell-tempered wares have also been found at *Quentovic* in northern France (Coutts and Worthington 1986, 24, Fig. 1). Most sherds are clearly from hand-made vessels, but it is possible that JUB No. 27 was wheel-finished if not wheel-made. Both techniques are found among the shell-tempered wares at *Hamwic*. For dating see discussion.

MSSA—Sparse to moderate rounded red clear and milky quartz up to 1.0mm; white sandstone (silica cement); overgrown quartz grains giving a sugary appearance up to 1.0mm; abundant voids (original content unknown) up to 1.0mm. Pale grey fabric throughout, badly laminated.

Thin-section JUB 140:1 (TS. no. MOL. 1058).

MSSB—Abundant bivalve shell up to 2.0mm; sparse rounded quartz up to 0.5mm, sparse gastropod shell up to 1.0mm, sparse angular red iron ore up to 2.0mm, sparse wood fragments. This ware, which has a pale grey-buff core and slightly darker surfaces, is similar to the later Saxon fabric OXB at Oxford, but is harder and the rim form of JUB: No. 26 is unlike the Oxford forms (M. Mellor, pers. comm.).

Thin-section JUB 57:3 (Fig. 22, No. 26; TS. no. MOL. 1062).

MSSC—Abundant shell fragments up to 1.0mm; sparse rounded quartz up to 0.5mm; sparse wood fragments up to 3.0mm. This is macroscopically very similar to MSSB and to fabric OXB from Oxford, but is harder (M. Mellor pers. comm.).

Thin-section JUB 57:4 (TS. no. MOL. 1063).

MSSD—One reduced sherd only from Jubilee Hall, with a very hard dense body and a hackly fracture. Moderate to abundant heat-altered shell fragments up to 2.0mm; these show on the inner surface, but not in the (fresh) fracture. There is a purple deposit on the inner wall, and a reddish mineral deposit on the outer surface, apparently acquired after deposition.

JUB 57:7 (not thin-sectioned).

MSSE—Packed with abundant bivalve shell fragments up to 2.0mm; sparse red iron ore up to 1.0mm. The sherd examined has an oxidised outer margin and surface, and a grey body; the inner surface is leached. This is the most common shell-tempered ware at Maiden Lane and on other sites in the settlement; it is possible that a finer and a coarser variety exist.

Thin-section JUB 123:1 (TS. no. MOL. 1061).

MSSF—a fine clay matrix with abundant finely crushed shell up to 1.0mm, sparse subangular to rounded quartz to 0.5mm, sparse wood fragments to 2.0mm. The rim examined from Jubilee Hall is a pale grey throughout, with numerous small voids in the surfaces where the shell has leached out; a black deposit of food debris covers most of the inner surface.

JUB 162 (Fig. 22, No. 27, not thin-sectioned).

Sandstone and Limestone or Shelly-Limestone: SSSL

Reduced micaceous fabric with sparse white sandstone up to 1.0mm; sparse red sandstone (subangular to rounded quartz grains) up to 1.0mm; abundant angular quartz up to 0.5mm; sparse sub-angular shelly-limestone with a brown muddy matrix up to 3.0mm, and sparse chaff. This hand-made ware is found only at Jubilee Hall, with fifteen sherds from the same vessel.

Thin-section: JUB 120:11

Oolitic limestone-tempered: MSOL

Two sherds only from Maiden Lane, from the same vessel. Fine micaceous body with abundant fine rounded grains of oolitic limestone up to 1mm, abundant very fine quartz sand, occasional larger quartz grains, sparse fine red grains of iron oxide. The outer surface of both sherds is smoothed, the inner surface missing, so that it is uncertain whether they derive from a hand-made or a wheel-made vessel. See also MSIG.

MAI 340:23 (not thin-sectioned).

Igneous rock-tempered: MSIG, SGFM

Igneous-rock-tempered wares comprise a small but significant group at *Hamwic* (1% of the total sherds). It is suggested that these come from Southern England, but a source is not proposed. This ware is very rare in London; the inclusions suggest a source in the East Midlands.

MSIG—Moderate white sandstone up to 1.0mm; moderate fine grained limestone, rounded up to 1.0mm (possibly fossiliferous ooliths and gastropods); moderate angular acid igneous rock fragments up to 1.0mm; matrix contains little quartz but is micaceous. This probably derives from the Charnwood Forest area of the East Midlands (Vince 1990, 101).

Thin section JUB 57:6 (TS. no. MOL. 1074)

SGFM—One hand-made sherd from Maiden Lane and another from Jubilee Hall with a sooted outer surface. David Williams comments: 'fairly hard smoothish sandy fabric with some felspar inclusions visible. Dark grey outer surface and core (Munsell, 2.5 YR N4-), lighter grey inner surface. Thin-section shows that large discrete grains of potash and plagioclase felspar are scattered throughout the fabric; also present are grains of quartz, some of them polycrystalline, a few flecks of mica and some small fragments of granite or grano-diorite. This is obviously not a local product. Similar granitic inclusions have been noted in an increasing amount of Early and Middle Saxon pottery from a number of sites mainly situated in the east of the country. The origin of this distinctively tempered pottery has yet to be identified, but a possible source

is in the Charnwood Forest area to the south-west of Leicester, or the post-Tremadoc diorites around Nuneaton'.

JUB 128:14 (Southampton TS.)

### The imports

The imports pose many problems, as few Merovingian or Carolingian production centres have been excavated, and although the Rhenish wares are comparatively well researched, much remains to be done on the French material (Hurst 1976a, 311; Evison 1979, 298–9). The following owes much to the work on the *Hamwic* pottery by Hodges (1981) and Timby (1988), but the identifications must still be regarded as provisional. The terms 'North French' or 'East Belgian' are used for convenience despite the inherent political and geographical problems. Until such time as the sources and dating of these wares are known it is thought better to use contemporary general terms even though the Continental definition of Northern France is geographically much smaller than the English interpretation, which tends to include the whole of Normandy, Paris and even Brittany in this area. It should also be noted that fragmented grey and black wares cannot always be identified as such with confidence, since a pot may be inherently grey, but appear black when burnished, and some vessels could fall into either group. As a rule the term 'black ware' is used here for pots which would have been totally black (either burnished or unburnished); grey wares include sherds which may be partly black through burnishing.

All the imported wares are wheel-made, and appear to be table wares, mainly for serving liquids; a variety of sizes is present. Their dating is discussed below, but probably spans the early 7th to mid-9th centuries. The earlier wares have been discussed by Evison (1979); the imported wares from *Hamwic* and the Continental industries have been fully discussed by Hodges (1981). Other useful summaries and reviews of imported pottery and trade connections include those by Dunning (1956; 1959), Hurst (1969) and Hodges (1977).

North French Black: NFBWA, NFBWB, NFBWC

These wares correspond broadly with Hodges' Class 14 (Hodges 1981, 21–25; 68–70) and Timby's Fabrics 130–140 (Timby 1988, 93–6). Some are easily matched in the *Hamwic* collection, but further thin-section work is required to confirm other parallels.

NFBWA: Very fine pinkish-brown fabric with black surfaces. Anisotropic matrix containing abundant sub-angular and rounded quartz up to 0.4mm, sparse angular flint up to 0.3mm, sparse to moderate red iron and brown clay pellets up to 1.5mm, abundant angular quartz up to 0.02mm, moderate white mica up to 0.1mm. Where not burnished the surfaces have a pimply feel. A coarser variant with the abundant iron/clay pellets is also present (Fig. 22, No. 31). This group equates with *Hamwic* Fabrics 129 and 130 and possibly with Fabric 131 (Timby 1988, 92–93).

Thin sections: JUB 120:16 (Fig. 22, No. 29). JUB U/S:7 (MOL TS. No. 1067). JUB 131:5 (Fig. 22, No. 30; MOL TS. No. 1071).

**NFBWB:** A micaceous fabric with abundant fine quartz sand up to 0.5mm; one sherd also has sparse angular flint inclusions. Reduced throughout; the inner wall may be dark grey, but the outer is black, with zones of vertical or horizontal burnishing (eg. JUB Fig. 22, No. 28). This ware resembles 8th- and 9th-century finds from Douai, Cambrai, Ghent and the Escaut valley (Callebaut, pers. comm.; De Molon, pers. comm.).

JUB 59: 6 (not thin-sectioned).

**NFBWC:** A very fine dense fabric with few visible inclusions, apparently from a white-firing clay. The core may be bluish-grey, as at Maiden Lane (Fig. 27, No. 51), or a pinkish-white as found on other sites in the vicinity; the surfaces are black. This fabric is similar to that of Tating ware.

MAI 323:4 (not thin-sectioned).

#### FORMS:

This group includes a range of jugs and pitchers with angular rims and wire-cut bases; the body may have cordons (JUB Fig. 22, No. 30) and be partly or entirely burnished (JUB Fig. 22, No. 29). No sherds with tin-foil decoration are present here, but Tating-type ware has been found at the Peabody site (Blackmore, forthcoming). The underside of the base may be smooth (MAI Fig. 27, No. 51) or roughly finished (JUB Fig. 22, No. 28). The latter has an uneven base angle and dents in the outer wall where the pot was held while the panels of vertical burnishing were applied. For dating see discussion.

North French Grey: NFGWA, NFGWB, NFGWC, NFGWD, NFGWE, NFGWF

This group corresponds broadly with *Hamwic* Class 15 (Hodges 1981, 21; 25–28), Fabrics 151–161 (Timby 1988, 96–8). Of the various sources postulated by Hodges for this material (ibid, 27; 70–73), Normandy, or the Pas-de-Calais region (eg. Baralle, near Douai), where grey-ware production dates from Roman times, seem geographically most likely.

**NFGWA:** Very fine clay matrix with abundant angular quartz sand up to 0.5mm, moderate red and black iron, blue-grey flecks and voids up to 1mm where organic matter has burnt out. Two varieties are present, one very hard with mid grey surfaces and a paler grey core, the other less highly fired with pale grey surfaces and a yellow-brown or pinkish brown core. The clay matrix can appear variegated. These resemble Fabric 131 at *Hamwic* (Timby 1988, 95).

Thin sections JUB 120:17. JUB 160:9 (MOL TS No. 1082).

**NFGWB:** Fine clay matrix with abundant fine sand and blue-grey flecks and voids up to 1mm where organic matter has burnt out; very occasional iron and/or weathered clay pellets. Pale grey surfaces with pinkish-brown core, burnished externally. This fabric is macroscopically similar to material from Huy in the British Museum reference collection (H12370).

Thin section: JUB 68:1 (Fig. 22, No. 32; MOL TS. No. 1069).

**NFGWC:** Very fine clay matrix with moderate fine quartz sand up to 0.5mm giving a pimply surface; thin walled

and very hard grey surfaces, pink core; the external burnish gives a metallic appearance and a superficial resemblance to Mayen ware. This fabric is similar to wares found in 8th- to 9th-century contexts at Arras (D. Callebaut, pers. comm.).

Thin section: JUB unpublished context:2 (MOL TS. No. 1065).

**NFGWD:** A fine clay matrix with abundant fine sand and silver mica and a tendency to laminate; where not burnished the surfaces have a very slightly pimply feel. This is a problematic ware, since it may appear black or grey, and a number of oxidised or partly oxidised sherds are present which probably also belong to this group. Found at Maiden Lane only, the main example being the bossed shouldered jar (Fig. 28, No. 56, Pl. 5).

MAI 268: SF.72 (not thin-sectioned).

**NFGWE:** A very fine micaceous clay matrix with few visible inclusions, evenly fired to a pale grey throughout, with a lightly burnished exterior. The fabric appears Roman, but the vessel from Maiden Lane (Fig. 27, No. 50) is clearly a Merovingian form.

MAI 285:11 (not thin-sectioned).

**NFGWF:** One unevenly fired sherd only from Jubilee Hall (Fig. 22, No. 34); this is a problem piece, which appears to be of a white-firing clay, and may be an unusual Seine Valley or Rhenish ware. Where reduced the sandy fabric appears similar to NFGWA, but where oxidised the fabric clearly contains abundant fine ferruginous inclusions up to 1mm. This sherd is in poor condition, being internally laminated and also covered with plant remains in a heavy iron-pan deposit.

JUB 117:1 (not thin-sectioned).

#### FORMS:

The grey wares appear in a wider range of forms and sizes than the black wares, but there is also a certain repetition of forms. A number of bases from small vessels in NFGWA have now been found (eg. JUB Fig. 22, No. 33) with a characteristic ridge, often grooved, just above the base angle; above this the body may, be wiped, or burnished in vertical panels and a wiped or which often has a groove in it.

Some sherds, such as JUB No. 32, have horizontal cordons which reflect their Frankish/Merovingian origin. Arguably the earliest of these is a small biconical pot from Maiden Lane, the upper part of which is corrugated (Fig. 27, No. 50). Merovingian biconical bowls/jars have been discussed by Evison (1979, 14–6; 36–41) and more recently by Tilkin-Peters (1986, 225–8). This vessel resembles finds from St. Peter's, Kent (grave 75), Prittlewell, Essex, and Breach Down, Kent (Evison, 1979, Fig. 14a; Fig. 16, a–c).

The tradition of rouletting on North French wares continues throughout the Merovingian period. Bosses are not common on wheel-thrown pots, and appear to be a 7th-century trait; the source is not known, but is probably in North-west France or Belgium (Evison 1979, 17–8; 41–2). Examples of bossed and rouletted shouldered jars of possible late 7th-century date have been found in Kent, Essex and Norfolk. The jar from Maiden Lane (Fig. 28, No. 56; Pl. 5) is a particularly elaborate example, with a



complex arrangement of six vertical bosses and a triple swag of segmented arcs, both pendant and standing; these have been irregularly applied so that the three elements do not always show clearly, especially where the stamps overlap. This pot may be of late 7th- or 8th-century date. Similar complete pots have been found at Broadstairs, Kent and Sint Joris Winge, Belgium (Evison, 1979, Fig. 21a; Fig. 32c); this stamp has also been found at Barking Abbey (Redknapp, pers. comm., BA. 1, 85 2211), at Ipswich (Evison 1979, Fig. 19i; Wade 1988, Fig. 55 No. 2) and Fishergate, York (Mainman, pers. comm., 1986.9 3360; 1986.9 10183).

North-French or Eastern Belgian: NFEBA, NFEBB.

These wares correspond broadly with *Hamwic* Class 13 (Hodges 1981, 21) thought to come from Eastern Belgium, although the production centre is unknown. A possible source is Huy, where Merovingian kilns dated to c. AD 700 and producing rouletted pottery have been found (Willems 1986, 241–60), although this appears more similar to the Class 15 wares than Class 13.

NFEBA: A fine sandy matrix with abundant quartz sand up to 0.5mm with occasional iron-rich inclusions. Grey core, red margins, matt grey surfaces. Found only at Jubilee Hall (JUB Fig. 22, No. 35), with stamped or rouletted decoration in the Frankish tradition.

Thin-section: JUB U/S (MOL TS. No. 1072).

NFEBB: Very similar to the above, but much harder; sherds in this group typically have silvery grey surfaces, orange margins and a grey core, possibly resulting from double firing. The outer surface is frequently burnished. Found at Maiden Lane only, this ware equates with *Hamwic* Fabric 129 (Timby 1988, 92–3). MAI 374:2 (not thin-sectioned).

#### FORMS:

The stamped/rouletted sherds in NFEBA from Jubilee Hall (Fig. 22, No. 35) probably derive from a bottle with banded or random decoration of interlocking chevrons, examples of which have been found in the Kentish cemeteries (Evison, 1979, 11; Fig. 7c). Vessels in NFEBB include a strap-handled pitcher or jar (MAI Fig. 27, No. 52), a form which has been found on other sites in London, at Barking (Blackmore and Redknapp 1988, Fig. 5, No. 5) and at Fishergate, York (1986.9, 5239; Mainman, pers. comm.).

North French Red: NFRWA

This ware is closely related to those in group NFEB, with a grey core, red margins and reddish-grey surfaces, but has a red slip over both surfaces, which when burnished gives a streaky red-grey appearance. A few flakes from Maiden Lane may also fall into this group, although they have been classified with the grey wares (NFGWD). This ware falls into *Hamwic* Class 21 (Hodges 1981, 30), Fabric 181 (Timby 1988, 100), although not exactly matched at *Hamwic*. Red burnished sherds of 7th-century date, possibly imitating Roman wares, have been found at Huy (Hodges 1981, 71–2; Tilkin-Peters 1986, 228; Willems 1986), and a source in North France or Belgium seems likely.

Thin sections: JUB 137:1 (Fig. 22, No. 37; MOL TS. No. 1053); 118:2 (Fig. 22, No. 36; MOL TS. No. 1054).

#### FORMS:

The two sherds from Jubilee Hall include a spouted pitcher and the base of a jug or pitcher, both burnished and possibly from the same vessel. This form is rare in pagan Saxon graves; the dating is unclear, but seems to be from the 7th century onwards. Examples in England include Woodnesborough, and St. Peter's (grave 225), both in Kent (Evison 1979, 4; 35–60; Fig. 13c, 13d).

?Seine Valley: NFSVA, NFSVB

NFSVA—A distinctive hard oxidised coarse ware with (streaky) yellow-buff to pinkish-grey surfaces, which have a pimply feel due to the abundant rounded quartz and quartzite up to 2mm. The quartzite is notably murky and the grain boundaries indistinct (possibly an altered rhyolite?). Also present are abundant spherical fragments of black iron ore up to 0.2mm, sparse lenses of gypsum or calcium carbonate up to 0.4mm long; moderate rounded brown clay pellets up to 0.4mm. The clay matrix is variegated with sparse angular quartz inclusions. Found at Jubilee Hall only; several sherds, mostly from the area of the burial, apparently all from the same vessel.

Thin section: JUB unpublished context:1 (Fig. 23, No. 38; MOL TS. No. 1049).

This fabric is the equivalent of *Hamwic* Class 25 (Hodges 1981, 31), and closely matches Fabrics 185–187 (Timby 1988, 100–101), and York buff ware 9 from Fishergate (Mainman, pers. comm.). Macroscopically this ware bears a resemblance to the later Normandy Gritty and coarser Rouen wares, and the suggested source in the Seine Valley seems likely (Hodges 1981, 31).

NFSVB—A hard sandy oxidised fabric, similar to the above, but very fine. The fabric is variegated, with a pink and white body with black streaks and cream to salmon pink surfaces; the outer surface is flaking slightly. The visible inclusions comprise fine mica with ?muscovite or biotite, black iron ore and red ?iron or weathered clay. This ware is very similar to *Hamwic* Fabric 135 (which although grouped with the black-wares has an unevenly fired body and is very like *Hamwic* Fabric 203). One sherd from Jubilee Hall only. This may prove to be a Rhenish ware.

Thin-section JUB 120:18 (Fig. 23, No. 41).

#### FORMS:

The NFSVA vessel is a jar decorated with incised horizontal and wavy lines, and possibly with strap handles (published as possibly Lower Rhenish in Blackmore and Redknapp 1988, Fig. 3, No. 16). The form as reconstructed here resembles jars with combed decoration from Groningen and from Jersey, which were identified by Dunning as Badorf ware (Dunning 1956, 223; Fig. 49, No. 6; Dunning 1959, Fig. 26, No. 8), and another example from Ile Agois, Guernsey, classified by Hodges (1981, Fig. 4, No. 2) as a Class 15 grey ware. The NFSVB sherd has a flat base and traces of sooting externally.

**Beauvais: BEAV, BEARP**

A fine buff fabric with frequent fine voids but few visible inclusions apart from rare iron inclusions up to 5mm (BEAV). The surfaces may be white, yellow-buff or pale pinkish-brown, and have a slightly sandy feel. The outer surface may be wiped or knife-trimmed, and often has a red-painted decoration (BEARP). This equates with *Hamwic* Class 9 (Hodges 1981, 18–9), Fabric 125 (Timby 1988, 91).

Thin section: JUB U/S:11 (Fig. 23, No. 42).

**FORMS:**

One cooking pot/jar with red-painted decoration (JUB Fig. 23, No. 42) over a knife-trimmed surface.

**Badorf and Walberberg-type: BADOA, BADOB**

Pottery was produced at many centres in the Rhineland from the Roman period onwards, notably in the Vorgebirge area of Cologne, at Mayen, and in the Badorf area. The Carolingian Badorf-type wares have been divided by Tischler (1952) into early and later phases, dating to *c.* AD 720–780 (coarser) and AD 780–850 (finer), a rough chronology which has been generally accepted at Dorestad (Van Es and Verwers 1980, 77–8). At *Hamwic* this ware is Class 7, Fabric 122 (Hodges 1981, 18; Timby, 1988, 90–1). Some of the London sherds may derive from Walberberg rather than from Badorf, but although the two fabrics may be distinguished by scientific analysis (Van Es *et al* 1984), they are macroscopically quite similar, and the term Badorf-type is thus preferred for the London wares at present.

**BADOA**—Coarse Badorf-type ware; a fine buff matrix with ill-sorted inclusions of variable size and quantity, and variable surface colouring. Some sherds from other sites in London may belong to this group or be from the Walberberg kilns. The sherd examined contains moderate black iron ore up to 0.3mm, which has a curious reticulated outline and may be of biological origin, moderate sub-angular quartz up to 2mm but mainly less than 0.5mm, sparse sub-angular chert or quartzite up to 1mm. The matrix contains moderate angular quartz up to 0.1mm and sparse white mica up to 1mm. It is variegated with thin streaks of brown ?iron ore/clay and whiter clay.

Thin-section JUB 155:2 (Fig. 23, No. 44; MOL TS. No. 1048).

**BADOB**—Fine Badorf-type ware; a fine yellow-buff to orange ware with a sandy feel. Some sherds in this group have an ashy grey, slightly fused surface; these are similar to sherds from Fishergate, York (buff wares 7 and 9; Mainman pers. comm.).

JUB 29:2 (Fig. 23, No. 43; MOL TS. No. 55).

**FORMS:**

One jar in BADOA, with incised or brushed lines around the rim (JUB Fig. 23, No. 44); bowls and jars/amphorae in BADOB, notably several sherds from a large vessel found at Maiden Lane in ditch (292), and a cooking pot or jar with rilled and knife-trimmed outer wall and traces of ?red slip internally (JUB Fig. 23, No. 43). The jar with an applied thumbled strip (MAI Fig. 27, No. 55) is in a more sandy variant of BADOB; the

base sherds (MAI Fig. 27, Nos 53, 54 ?bowls) are in a finer variant similar to York buff ware 3 (Mainman, pers. comm.).

**JUBILEE HALL: THE STRATIGRAPHIC DISTRIBUTION OF THE POTTERY****Introduction**

The excavations at Jubilee Hall, 1985, produced a total of 353 sherds (2.35 EVES) weighing *c.* 8.80kg (including twenty-six unstratified Saxon sherds). With the exception of fourteen Roman sherds, all the stratified material is domestic pottery of 7th- to 9th-century date. The pottery is in generally good condition, apart from the chaff-tempered and shell-tempered wares, some of which have laminated or crumbled. The distribution of the pottery is according to the stratigraphic sequences described above, and summarised in Table 1. The codes used in the pottery catalogue (Tables 4, 5, 6, 7) are listed in the key below.

**KEY TO DESCRIPTIVE CODES USED IN THE POTTERY ANALYSIS****Form: BOWL = bowl**

CP = cooking pot

CUP = cup

JAR = jar

JUG = jug

PTCH = pitcher

SJ = storage jar

SPP = spouted pitcher.

**Sherd: B = base**

R = rim

S = sherd (handle not listed in comments).

**Deposits (working from external to internal):**

B = brown

DE, DI, DEDI = deposit: external, internal, or both surfaces

F = food

L = localised

P = purple

S = slight

SE, SI, SESI = sooting: external, internal or both surfaces

W = white

Y = yellow.

**Surface (working from external to internal):**

ABRE, ABRI, ABR = abraded: external, internal, or both surfaces

BURE, BURI, BUR = burnishing: external, internal or both surfaces

EROE, EROI, ERO = eroded: external, internal or both surfaces

KNE, KNI, KN = knife-trimming: external, internal, or both surfaces

SME, SMI, SMESMI = smoothing: external, internal, or both surfaces

WE, WI, WEWI = wiping: external, internal, or both surfaces.

Decoration: APP = applied  
BUR = burnished  
INCS = incised  
MULT = multiple  
ROUL = rouletted  
STAM = stamped  
TINF = tinfoil.

Comments: CF = internal parallels  
GRAFF = graffiti  
HAND = handle  
OXD = oxidised throughout  
OXD EXT = oxidised externally  
OXD INT = oxidised internally  
RDCD = reduced  
SHL = sherd link.

#### Stratigraphic distribution

##### *Pottery from the west-east section A-C.*

The earliest ground occupation (1) and pit (3) each produced only a few small sherds of chaff-tempered ware. Pit (8) contained two joining sherds of North French black ware (Fig. 22, No. 31; Table 6).

The grey earth (15), which sealed the earliest features produced one sherd of shell-tempered ware, suggesting a date after *c.* AD 750 for this deposit. Pit (19), which cut this layer, contained one sherd of Roman pottery and one of ?Kentish sand-tempered ware. Pit (28), which appeared to post-date layer (15), contained one sherd of Roman pottery, one chaff-tempered, and one of Badorf ware (Fig. 23, No. 43; Table 7), which suggests a 9th-century date for this feature.

##### *Pottery from the SW part of the main excavation area*

The early ground surfaces (38) produced three sherds, two chaff-tempered and one of sandy-organic ware (SLGSC) possibly from Surrey. Cutting this deposit was the grave (39), which contained two sherds, one chaff-tempered and one from a jar with incised decoration, of ?Seine Valley ware (NFSVA, Fig. 23, No. 38; Table 7). The burial has been dated by C-14 to AD 630-675 (calibrated, one sigma; see p. 56). The beamslot (47) contained one sherd of Samian ware, and one of ?Surrey ware (SLGSB); posthole (76) produced one chaff-tempered sherd. Pit (50) contained one chaff-tempered rim sherd (Fig. 20, No. 1; Table 4).

The brickearth floor (51), which appeared to seal these features, contained a similar group of fifteen sherds, ten chaff-tempered, one possibly from Surrey (Fig. 22, No. 23, SLGSC; Table 6) and three ?Seine Valley as above (Fig. 23, Nos 38, 39, probably from the same vessel; Table 6).

The gravel surface (52), over (51), contained four chaff-tempered sherds and two of SLGSC. Pit (55) and posthole (54), which cut (52), contained two sherds of chaff-tempered ware and one small chip of Badorf-type ware respectively.

Pit (57), which cut these deposits, contained eleven sherds, one chaff-tempered (Fig. 20, No. 3; Table 4), the rest non-local or imported. These comprise Ipswich fine ware, sand-and-shelly limestone tempered ware (SSSL), a number of different shell-tempered wares (including Fig. 22, No. 26; Table 6), two igneous rock-tempered (MSIG), possibly from the East Midlands, and one sherd from Northern France (Fig. 23, No. 38; Table 7). The high proportion of shell-tempered ware, and the presence of a handled comb (Fig. 38, No. 6) in

Table 4: (Fig. 20) Jubilee Hall: catalogue of chaff-tempered wares (by fabric; rim diameters in mm)

No.	Feature	Context	Fabric	Total sherds	Rim Diam.	EVE	Comments
1	Pit 50	50	CHAF	1	120	11	SME; WI
2	Pit 57	57	CHAF	1	290	5	SMESMI
3	Floor	51	CHAF	1	250	5	SMESMI
4	Pit 59	61	CHAF	1			SMESMI
4	Pit 59	64	CHAF	1			SMESMI
4	PH 71	71	CHAF	1			SMESMI
4	Pit 154	156	CHAF	1			SMESMI
5	Pit 59	59	CHAF	1	140	11	SE, WEWI
6	Well 121	124	CHAF	2	150	20	
7	Pit 140	140	CHAF	1	—	—	WEWI; ?perf lug
8	Pit 158	159	CHAF	1	100	8	WEWI
9	U/S	—	CHAF	1	—	—	SMESMI

Table 5: (Fig. 21) Jubilee Hall: catalogue of Ipswich wares (by fabric; rim diametres in mm)

No.	Feature	Context	Fabric	Total sherds	Rim Diam.	EVE	Comments
10	Well 117	120	IPSC	1	240	13	SESI
11	Well 121	123	IPSC	1	160	8	SE(P)
12	Well 121	124	IPSC	2	170	44	
13	Well 121		IPSC	1			SE, incised '+'
14	Pit 126	128	IPSF	5			Vert/horiz burnish
15	Pit 157	157	IPSC	2	160	12	
16	Pit 158	160	IPSF	1	250	15	DI(W); stamped triangles
17	Pit 158	160	IPSF	1			DI(Y-W); BUR
18	Pit 158	160	IPSF	1	140	12	SE (slight)
19	Pit 158	160	IPSF	1			
20	Pit 158	159	IPSC	1			DI(P-W) madder?
21	Pit 158	160	IPSF	1			DI(B); BUR
22	Pit 162	162	IPSF	2			BUR

this pit suggest that it dates to the late 8th or 9th century.

Pit (58) contained one sherd of sand-and-chaff-tempered ware and one of North French grey ware with horizontal burnish. Pit (134) contained one sherd of chaff-tempered ware.

Pit (59), which cut pit (134), produced the largest group of pottery on the site, seventy-four sherds (1353g). Of these the great majority are chaff-tempered (sixty-one sherds including Fig. 20, Nos 4, 5; Table 4). Other fabrics comprise ?Surrey ware (two sherds SLGSC); North French black ware (Fig. 22, No. 28; Table 6), North French grey (including Fig. 22, Nos 32, 35; Table 6), ?Seine

Valley ware (Fig. 23, Nos 38, 40, probably the same vessel; Table 7), and one sherd of Roman pottery. An analysis of the vertical distribution of the pottery in the twelve pottery-producing layers showed that the different wares were scattered evenly throughout the pit, and sherds from a number of different vessels appeared in different layers. Two joining sherds from layers (61) and (64) in the pit also join with a sherd from posthole (71) (Fig. 20, No. 4; Table 4), and are very similar to sherds from pits (126) and (154). A number of sherds are either eroded or abraded on one or both surfaces, suggesting that these may have been deposited elsewhere before arriving in the pit,

Table 6: (Fig. 22) Jubilee Hall: catalogue of non-local and north French black, grey and red wares

No.	Feature	Context	Fabric	Total sherds	Rim Diam.	EVE	Comments
23	Gravel	52	SLGSC	2			DE (F); WEWI
24	U/S		SLGSA	3	220	10	WE
25	Pit 154	155	SLGSA	1	70	15	WEKNI; ABRI, BUR (light)
26	Pit 57	57	MSSB	1	250	5	
27	Pit 162	162	MSSF	2	160	7	EROI
28	Pit 59	59	NFBWB	2	70	100	Vert BUR panels
29	Well 117	120	NFBWA	1			BUR
30	Pit 130	131	NFBWA	2	100	17	BUR
31	Pit 8	8	NFBWA	2			BUR; horiz cordons
32	Pit 59	68	NFGWB	1			BUR; horiz cordon
33	Well 117	120	NFGWA	1			Vert BUR panels
34	Well 117		NFGWF	1	300	8	Laminated DEDI (iron)
35	Pit 59	59	NFEB	1			ROUL
35	U/S		NFEB	1			ROUL
36	Well 117		NFRW	1	100	5	Horiz BUR
37	Pit 136	137	NFRW	1	100	40	Vert BUR

which also contained a fragment of an early glass palm cup (Fig. 34, No. 1).

The beamslot (96) contained two chaff-tempered sherds similar to five chaff-tempered sherds from the nearby gully (100).

*Pottery from isolated features.*

The sequence of pits and wells in the NE corner of the site produced forty-three sherds, of which thirty-eight were found in well (117). The earliest pit (107) (fills (108), (109)), contained two sherds of fabric SSSL; the pit or well (111) (fill (113)) contained one sherd of shell-tempered ware.

The lower fills of well (117) (fills (118), (119)) produced a small but interesting group of four sherds: two chaff-tempered (one apparently also grog-tempered), one chalk-tempered, and the rim of a spouted pitcher in a red-burnished ware, probably from Northern France (Fig. 22, No. 36; Table 6). The chalk-tempered sherd, the only one on the site, is from a large storage jar which has been burnt, giving it a distorted shape and vitrified outer surface. Most of the pottery in the well was found in the upper fill (120), which contained twenty-five sherds in association with a series V *sceat*, dating to AD 720-725. These comprise four Roman sherds; seven chaff-tempered; five sherds of SSSL; four of Ipswich-type ware including Fig. 21, No. 10 (Table 5); three North French, two black and one grey (Fig. 22, Nos 29, 33; Table 6), and one base sherd probably North French (NFSVB) but possibly Rhenish (Fig. 23, No. 41; Table 7). Other sherds recovered from the general fill of the pit include the rim of a very large ?North French grey ware jar (Fig. 22, No. 34; Table 6). Above this, layer (104) contained four chaff-tempered sherds and

one of SSSL; all sherds in fabric SSSL from the well appear to be from the same vessel.

Well (121) is one of the few features in which the amount of Ipswich ware (all coarse) and chaff-tempered ware is equal (eight sherds of each). The latter include Fig. 20, No. 6 (Table 4). The former, mostly with external sooting, include Fig. 21, Nos 11, 12; Table 5) and one sherd from a cooking pot with an incised cross (Fig. 21, No. 13; Table 5). One sherd of shell-tempered ware is also present. The burnt clay spread (106) which was cut by well (121) produced one sherd of chaff-tempered ware.

A total of five chaff-tempered sherds was recovered from the gully or beamslot (100). Pit (129), which cut feature (100), contained only two sherds, one of ?Surrey ware (SLGSC) and one chaff-tempered. Pit (130) (fill (131)), which cut pit (129), produced four chaff-tempered sherds (two joining), and two joining sherds from a North French black ware pitcher (Fig. 22, No. 30; Table 6).

The primary fill (127) of pit (126), which also cut feature (100), contained only two sherds of chaff-tempered ware; the upper fill (128) contained two chaff-tempered sherds, one possibly from Fig. 20, No. 4 (Table 4) (see pit (59)); ten of Ipswich ware (both fine and coarse), five of which derive from a large burnished fine ware pitcher (Fig. 21, No. 14; Table 5); one sherd of sand-tempered ware (burnt) and one non-local sherd (fabric SGFM), probably from the East Midlands.

Pit (133) contained one chaff-tempered sherd and four small fragments of ?Surrey ware (SLGSB). Postholes (71) and (134) each contained one chaff-tempered sherd.

Pit (135) contained eleven sherds: nine of

Table 7: (Fig. 23) Jubilee Hall: catalogue of Rhenish and French buff wares (by fabric; rim diameters in mm)

No.	Feature	Context	Fabric	Total sherds	Rim Diam.	EVE	Comments
38	Grave 39	40	NFSVA	1			INCS
38	Floor	51	NFSVA	1			INCS
38	Floor	51	NFSVA	1			INCS
38	Floor	51	NFSVA	2			INCS
38	Pit 57	57	NFSVA	1			INCS
38	Pit 59	59	NFSVA	1			INCS
39	Floor	51	NFSVA	1			Strap handle
40	Pit 59	62	NFSVA	1			Strap handle
41	Well 117	120	NFSVB	1			
42	U/S		BEARP	1			KNE; red-painted
43	Pit 28	29	BADOB	1			SEDI; WEKNE; red slip spots
44	Pit 154	155	BADOA/WALB	2	260	7	EROE

Ipswich-type ware (mainly fine), one sand-and-chaff-tempered, and one of early Badorf-type ware; these suggest that this is a 9th-century feature.

Pit (136) contained the base of a burnished red-ware jug or pitcher from Northern France or Belgium (Fig. 22, No. 37, very similar to No. 36; Table 6).

Pit (140) layers (141), (142), a possible cesspit, produced twelve sherds: eight chaff-tempered, two of SSSL, one shell-tempered and one North French grey ware from a vessel which may have had vertical bosses in the style of the Maiden Lane urn (Fig. 28, No. 56; Table 12). The chaff-tempered sherds include a rim sherd, from a small vessel which probably had perforated lugs on the rim (Fig. 20, No. 7; Table 4).

*Pottery from features outside the main excavation area.*

Well (150) (fill (152)) contained only two sherds of chaff-tempered ware from the same vessel.

Pit (153) contained two chaff-tempered sherds, one with oxidised internal surface, one with additional sand, and one sherd of Ipswich fine ware.

The fill (156) of pit (154) contained four sherds of chaff-tempered ware; the pit-lining (155) produced part of a small bag-shaped pot in a fine sandy fabric, possibly from Surrey (Fig. 22, No. 25; Table 6) which is very similar to a small jar found on the site of the Savoy (see p. 82), and part of a jar in early Badorf-type ware (Fig. 23, No. 44; Table 7), which suggest a late (9th-century) date for this feature.

Pit (157) contained two joining sherds of Ipswich ware (Fig. 21, No. 15; Table 5); pit (158) (fill (160)), which cut pit (157), produced nineteen sherds, of which sixteen are of Ipswich ware, one is of North French black ware and two are chaff-tempered. The Ipswich wares include sherds from a number of different cooking pots and pitchers (Fig. 21, Nos 16–21; Table 5) including one with stamped decoration of opposing triangles (Fig. 21, No. 16; Table 5; see p. 86).

Pit (161) contained only one sherd of chaff-tempered ware. Pit (162) produced twenty-two sherds, two chaff-tempered from the lower fill, and twenty assorted wares from the upper fill, of which seven (including Fig. 20, No. 8; Table 4) are of Ipswich fine ware. Eight sherds from the same vessel are shell-tempered (Fig. 22, No. 27; Table 6), one is sand-tempered, and six are chaff-tempered.

Pit (163) contained one sherd of Roman pottery.

Feature (164) contained three sherds of sand-and-chaff-tempered ware, possibly from Surrey.

The unstratified material includes one sherd of North French/Belgian ware (Fig. 22, No. 35; Table

6), and one sherd of Beauvais red-painted ware (Fig. 23, No. 42; Table 7).

## MAIDEN LANE. THE STRATIGRAPHIC DISTRIBUTION OF THE POTTERY

### Introduction

The excavations at Maiden Lane produced a total of 724 sherds (12.217kg, 5.90 EVEs) of which forty-seven are prehistoric or Roman and five are medieval or post-medieval. The Saxon material includes twenty-five unstratified sherds.

As at Jubilee Hall, Ipswich wares are clearly dominant by weight, but chaff-tempered wares are the most common in terms of numbers, with thirty-eight chaff-tempered rim sherds to only fifteen Ipswich ware rim sherds. The chaff-tempered sherds however are generally small (282 sherds weigh 10g or less, 61 sherds weigh between 10–15g), although a few larger sherds are present, with sherd weights rising to 99g. The Ipswich wares are generally larger and heavier, with most over 10g; the heaviest sherd is 205g. The imports occur in approximately the same proportions as at Jubilee Hall in terms of sherd counts, but the weight of the North French wares is distorted by the near complete urn (Fig. 28, No. 56; Pl. 5), which weighs c. 2kg. The distribution of the pottery is discussed according to the stratigraphic sequences in the different areas of the site. The assemblage is summarised in Table 1. The fabric codes are listed in the Key on p. 83.

### Area A.

The pottery in this area comprises mainly chaff-tempered wares (47 sherds), of which eleven, probably from the same pot, have distinctive quartz grits (fabric CHFQ). Four of these sherds were found in two of the earliest postholes, (171) and (172) (two sherds in each); one sherd was found in gully (180), and three in pit (182), one of which joins with a sherd from pit (181). Two sherds were found in layer (184), which sealed these features, and one in pit (185) which cut this layer.

The other chaff-tempered wares were scattered throughout a number of features. Sherds of interest include a sherd of sand-chaff-tempered ware from pit (185) (Fig. 24, No. 1; Table 8), decorated with a comb or roulette stamp, apparently with four teeth (Briscoe category N1b); a very small jar (Fig. 24, No. 2; Table 8) from pit (177) fill (178); and two small cooking pots or jars (Fig. 24, Nos 3 and 4; Table 8) from slot (191) and gully (180). Stratigraphically the earliest sherd is a jar or cook-

ing pot with roughly wiped surfaces from posthole (171) (Fig. 25, No. 25; Table 9). Pit (177) also contained one sherd of Roman pottery and one sherd of limestone-tempered ware (SSSL), two further sherds of which were found in layer (184).

Layer (186) contained one sherd of 16th- to 17th-century Border ware, presumed intrusive.

The deposits in the northern part of Area A produced only two sherds of chaff-tempered ware, including a small cooking pot or jar (Fig. 24, No. 11; Table 8) from layer (198).

One of the latest features in Area A is pit (199), which probably dates to the late 8th or 9th century. The fills between the edge of the pit and the lining, (201) and (203), produced one abraded sherd of Ipswich coarse ware, two chaff-tempered sherds and one sand-tempered. In the main fill (206) were one sherd of sand-chaff-tempered ware, one of Ipswich coarse ware, and one of ?early Badorf-type ware with an applied thumbled strip (Fig. 27, No. 55; Table 11) from an amphora or wine jar (see p. 92). Another late feature is pit (210), layers (211) (212), which produced three sherds of Ipswich ware.

An unusual sherd from a post-medieval pit (not published) in Area A, appears to be from a ?hand-made costrel or bottle (Fig. 27, No. 49, fabric

SSANC; Table 11). The upper part of the body has an irregularly grooved surface, but whether this was intended as decoration is unclear. A similar ware has been found on the Peabody site, and this may be a residual Saxon sherd (see above).

#### Area B.

The northern part of the site was the richest in terms of ceramic finds, but the distribution of the pottery varies greatly: several features have only one or two sherds, and most have less than twenty, while 198 sherds were found in ditch (292). The features cut by the ditch produced 255 sherds, in addition to many sherds and flakes from a near complete North French grey ware urn found in pit (267) (see below). A further seventy-five sherds were recovered from the isolated pits and stake-holes in this area.

Pit (214) contained twenty sherds. Of these, sixteen were in the lower fill (215), which also contained some unfired ?potter's clay. With the exception of one sherd of Roman pottery and one of North French black ware in fill (215), and one of North French grey ware in the upper fill (216), all the pottery is chaff-tempered.

Pit (220) produced fourteen sherds, including chaff-tempered ware and a number of flakes from

Table 8: (Fig. 24) Maiden Lane: chaff-tempered wares (by fabric; rim/base diameters in mm)

No.	Area	Feature	Context	Fabric	Total sherds	Rim diam.	EVE	Comments
1	A	Pit 185	185	CHFS	1			Comb stamp
2	A	Pit 177	178	CHFI	1	80	10	Part OXD
3	A	Slot 191	191	CHAF	1	100	9	WEWI
4	A	Gully 180	180	CHAF	2	130	5	WEWI
5	B	Ditch 292	323	CHSF	1	110	5	SME; WI
6	B	Layer	285	CHFS	1	140	6	WEWI
7	B	Ditch 292	313	CHFS	1	120	6	SME; WI
8	B	Ditch 292	313	CHAF	4	130	7	SE, WEWI
9	C	Layer	344	CHFS	2	100	7	Perf lug
10	C	Layer	337	CHAF	1	150	6	SI, SME; WI
11	A	Layer	198	CHAF	1	100	11	SE, WEWI
12	B	Pit 221	229	CHFS	1	100	25	SE, WEWI
13	B	Pit 221	230	CHAF	3	140	14	SIDI(W), WEWI
14	C	Layer	337	CHAF	1	140	7	SE, SME; WI
15	D	Layer	365	CHAF	1	140	6	WEWI
16	C	Layer	340	CHAF	2	110	24	SMESMI
17	B	F. 247	249	CHAF	1	120	9	SME; WI
18	C	Layer	343	CHAF	1	140	8	SMI, BUR
19	C	Layer	341	CHAF	1	140	7	SI, SMI, BUR
20	B	Pit 237	241	CHAF	1	120	18	Laminated, WE; EROI
21	B	Ditch 292	323	CHFS	1	100	5	SME; ABRI
22	C	Layer	337	CHFS	1	100	14	DI, WEWI

Table 9: (Fig. 25) Maiden Lane: Chaff-tempered wares (by fabric; rim diameters in mm)

No.	Area	Feature	Context	Fabric	Total sherds	Rim diam.	EVE	Comments
23	B	Pit 237	241	CHAF	1	160	10	SMESMI
24	C	Layer	339	CHAF	1	180	7	SMESMI
25	A	PH 171	171	CHAF	1	200	13	WEWI
26	B	Pit 261	264	CHFS	1	240	10	WE; ABRI, OXD EXT
27	C	Layer	344	CHAF	1	240	8	WEWI; ABRI
28	C	Layer	339	CHAF	1	220	9	SME; WI
29	B	Pit 267	268	CHAF	1	300	6	SME; ABRI

a wheel-thrown vessel with cordons in a fine sandy oxidised ware, probably a variant of the North French grey wares (NFGWD).

Only three of the many fills in Pit (221), fills (228)–(230) contained pottery, a total of thirteen sherds in all. With the exception of one small knife-trimmed base sherd of Badorf-type ware in fill (229) (Fig. 27, No. 54; Table 11), and one of North French grey ware with vertical burnishing, all the pottery is chaff-tempered or sand-and-chaff-tempered; these wares include a small thick-walled jar or cooking pot and a bowl (Fig. 24, Nos 12, 13; Table 8).

Layers (235) and (236) which sealed a group of stakeholes, together produced nine sherds including chaff-tempered ware and four joining sherds of residual Alice Holt grey ware from layer (235).

The features cut by the ditch and the ditch itself produced the best ceramic sequence on the site, which benefits from the coin date from pit (261).

Pit (237) appears to have been open in the late 8th or 9th century. The pit contained forty-one sherds, of which twenty-seven, all chaff-tempered, were found in the lowest fill (240). The next fill, (241) contained three chaff-tempered sherds including an unusual base sherd with finger impressions showing how the footring was formed by pinching around the base angle (No. 20), which again appears to be a late form; and a bowl or jar (Fig. 25, No. 23; Table 9). The subsequent fill (242) contained no pottery, but the next deposit (243) contained one sherd of shell-tempered ware and two chaff-tempered sherds. The pottery from the upper fill (244), is different from that in the preceding deposits, with two abraded Roman sherds, no chaff-tempered ware, and six sherds of Ipswich ware, including one from a burnished jar or pitcher, and two with stamped impressions (Fig. 26, Nos 41, 42; Table 10). However, as the stamps are plain circles which could have been made with

Table 10: (Fig. 26) Maiden Lane: Ipswich wares (by fabric; rim diameters in mm)

No.	Area	Feature	Context	Fabric	Total sherds	Rim diam.	EVE	Comments
30	B	Pit 261	266	IPSM	1	180	13	DI(Y), WEWI
31	B	Ditch 292	318	IPSM	1	160	8	
32	B	Pit 261	265	IPSM	1	160	4	SE
33	B	Ditch 292	316	IPSC	1	210	12	OXD INT EXT
34	B	Ditch 292	306	IPSM	1	160	10	
35	B	Ditch 292	306	IPSF	1	220	8	
36	A	Pit 210	211	IPSC	1	200	5	RDCD EXT
37	A	Pit 261	266	IPSC	1	170	13	WEWI
38	B	Ditch 292	318	IPSM	1	160	12	
39	B	Pit 261	266	IPSM	1	280	18	WEWI
40		U/S		IPSC	2	100	35	SE, WEWI
41	B	Pit 237	244	IPSM	1			WI, STAM, OXD BURE WI, STAM, RDCD BURE
42	B	Pit 237	244	IPSM	1			
43		U/S		IPSF	6	300	9	
44	B	Pit 261	265	IPSC	3	240	9	SESI, WEWI
		Pit 261	266		1			



any tubular object, they cannot be usefully paralleled or dated. This type of stamp falls into Briscoe category Albi.

Pit (246) produced one sherd of sand-and-chaff-tempered ware.

The fill (248) of the sub-rectangular cut feature (247) contained thirteen sherds of chaff-tempered ware, including many joining base sherds. The two dumped deposits (249) and (250) contained two and thirty-nine sherds respectively, which with the exception of four sherds of sandy-gritty ware, are all chaff-tempered. These include a small jar with an unusual flat-topped rim (Fig. 24, No. 17; Table 8) and a number of sherds from (250) which join to form a substantial part of the base and wall of a large cooking pot, probably the same vessel as that found in (249).

Pit (251), which cut these layers, contained eighteen sherds: one Roman, the rest chaff-tempered, with several joining sherds from the same vessel in the second fill, layer (253).

Layer (260), which was cut by pit (261), contained one sherd of sand-and-chaff-tempered ware.

Pit (261) produced seventy-four sherds, most of which were found in the upper fills (265) (twenty-four sherds) and (266) (thirty-two sherds). Joining sherds between these upper fills indicate that they were deposited in close succession. The distribution of the fabric types is similar to that in pit (237). The lower fills (262)–(264) contained Roman pottery,

chaff-tempered wares, one sherd of SSFL, and a few small sherds of North French blackware, but no Ipswich ware. The chaff-tempered wares include the rim of a large jar, apparently copying an Ipswich ware form (Fig. 25, No. 26; Table 9). In the next fill (265), chaff-tempered ware and Ipswich ware (which includes part of Fig. 26, No. 44; Table 10) each account for approximately one third of the pottery; other wares comprise one sherd of Roman date, one of ?Kentish sandy ware, two sherds of shelly ware and one North French and one of fine Badorf-type ware, from the same vessel as that found in ditch (292). In the upper fill (266), the distribution of the wares is reversed, and 87.5% of the pottery is of Ipswich-type, including both small and large cooking pots/jars (Fig. 26, Nos 30, 32, 37, 39; Table 10) with one probable storage jar (Fig. 26, No. 44, joining sherds from (264) and (265) (Table 10)). Minority wares comprise two sherds each of chaff-tempered and shell-tempered ware, one of coarse Badorf-type and one with both organic inclusions and crushed Roman tile (the only one of its kind on the site). These were found together with a coin of Coenwulf (AD 796–805), which clearly dates this feature to *c.* AD 800 or later.

The material from the pre-ditch features includes the most spectacular find from the excavation, a near complete North French grey ware urn found in the lowest fill (268) of pit (267) (Fig. 28; Pl. 5;

Table 11: (Fig. 27) Maiden Lane: non-local and imported wares (by fabric; rim diameters in mm)

No.	Area	Feature	Context	Fabric	Total sherds	Rim diam.	EVE	Comments
45	B	Ditch 292	323	SSANB	1	180	8	WEWI
46	D	Layer	369	CHF1/ SLGSB	11	90	42	WEWI; Vert grooves
	D	Layer	365		1	90	18	
		U/S			1			
47	D	Layer	376	SLGSA	1	120	10	DEDI
48	B	Ditch 292	316	SSFL	2			
			318		2			
			313		4	140	15	SME; WI
			310		2	140	10	
			307		1			
49	A	U/S		SSANC	1			WEWI, INCS
50	B	Layer	285	NFGWE	3			SME
51	B	Ditch 292	323	NFBWC	1			
52	B	Ditch 292	318	NFEB	1	160	15	BUR
53	B	Ditch 292	318	BADOB	1			KNE; WEWI
54	B	Pit 221	229	BADOB	1	60	25	SI; KNE; WEWI burnt?
55	A	Pit 199	206	BADOB	1			ABR; thumbd strip; ?burnt

Table 12). The upper body of the urn is both burnished and elaborately decorated with slight vertically elongated bosses at intervals, over which is an interlocking and repeating design of stamped segmented arcs, both standing and inverted (Briscoe category G2c). The burnishing has caused the already laminated fabric to spall, and many flakes from this vessel were recovered by sieving the fill of this pit. Sherds with very similar stamped decoration have been found at the Peabody site, at Barking (Redknap pers. comm.) and at Fishergate, York (Mainman, pers. comm.).

Also found in fill (268) was part of a very large chaff-tempered bowl or storage jar with a heavy flat-topped rim and burnished surfaces (Fig. 25, No. 29; Table 9), which appears to be a developed late chaff-tempered form, and two sherds of mixed grit-tempered ware (fabric MSFG); a third sherd was also found in the subsequent fill (269). The three other sherds from this pit were all of chaff-tempered ware. Pit (267) is one of the earlier features in this area, but it is suggested that it is of later 8th-century date.

Fill (281) of pit (279), which cut pit (267), contained only two sherds, one of Ipswich coarse ware, and one of burnished North French grey ware from a vessel very similar to the urn.

The two metallised surfaces (285) and (286) contained eleven and seven sherds respectively, some joining; all are chaff-tempered (including Fig. 24, No. 6; Table 8) apart from two sherds of sandy-gritty ware from (286), and three from a small North French grey ware jar from (285) (Fig. 27, No. 50; Table 11). This has a biconical profile and corrugated upper body in the Merovingian tradition, and would appear to be of 6th- or 7th-century date.

Fill (291) of ditch (287) contained only two sherds, one chaff-tempered, and one small chip of fine Badorf-type ware. The main ditch (292), which is probably of mid 9th-century date, produced a total of 198 sherds (3.26kg).

The pottery from the lower fills of the ditch includes one prehistoric sherd from a lower fill (296), five sherds from a fine Badorf-type ware amphora (also found in pit (261)), and flakes derived from the urn in pit (267), which was cut by the ditch. Ipswich ware is absent from the

primary fills in ditch (292), but is present in almost every layer above (302); all other wares, including Roman pottery (nineteen sherds), are distributed throughout, and sherds from the same pots (eg. Fig. 27, No. 48; Table 11) frequently occur in different layers. This is the only feature in which Ipswich ware (seventy-four sherds) is more abundant than chaff-tempered ware (fifty sherds). The latter include a range of small cooking pots/jars (Fig. 24, Nos 5, 7, 8, 21; Table 8). The Ipswich wares (mainly coarse), include a number of medium-sized cooking pots/jars (Fig. 26, Nos 31, 33–35, 38; Table 10). Non-local fabrics include: three sherds of shell-tempered ware, two sherds possibly from Surrey, a fine micaceous ware with sparse flint grits (eleven sherds Fig. 27, No. 48; Table 11), three types of sand-tempered ware (four sherds including Fig. 27, Nos 45 and 49; Table 11), and one sherd of coarse gritty ware (fabric SGFM) possibly from the East Midlands. Imports comprise fifteen sherds of North French pottery, both grey and black, including a base sherd (Fig. 27, No. 51; Table 11), a grey-ware strap handle, and part of a burnished strap-handled jug from Northern France/Eastern Belgium (Fig. 27, No. 52; Table 11), and thirteen sherds of Badorf-type ware (BADOB), including seven from the vessel noted above, and a base sherd (Fig. 27, No. 53; Table 11).

The upper fill of the ditch, layer (323), contained two sherds of medieval pottery and a fragment of field tile.

#### Area C.

This area was less productive than Area B, with most pottery coming from the dumps in the depression (332). The earliest features produced only one residual sherd from a Verulamium ware flagon (from pit (327)). Pit (329) contained three sherds of chaff-tempered ware.

Most of the fifty-nine sherds found in the depression came from the middle fills (339) (twenty-seven sherds) and (340) (twenty-five sherds), with a few joining sherds from the different deposits. The bulk of the pottery (forty-eight sherds) is chaff-tempered, including two sherds with an iron-rich fabric, and eleven with additional sand. The latter include three sherds from a small vessel with a

Table 12: (Fig. 28) Maiden Lane: north-French ware (by fabric; rim diameters in mm)

No.	Area	Feature	Context	Fabric	Total sherds	Rim diam.	EVE	Comments
56	B	Pit 267	268	NFGWD	—	156	85	ROUL; BUR

perforated lug(s) (Fig. 24, No. 9; Table 8), and a flat base sherd (Fig. 24, No. 22; Table 8). The standard chaff-tempered wares include a cooking pot/jar (Fig. 24, No. 10; Table 8), a bowl (Fig. 24, No. 14; Table 8), a necked jar (Fig. 24, No. 16; Table 8), and two rims (possibly from the same vessel) from a bowl or jar with an unusual closed rim form (Fig. 24, Nos 18, 19; Table 8). Larger pots include cooking pots/jars (Fig. 25, Nos 24, 27; Table 9), and a probable storage jar with a closed form (Fig. 25, No. 28; Table 9). Other wares comprise seven sherds of Roman pottery, two sherds of limestone-tempered ware, one shell-tempered sherd and one sherd of burnished North French grey ware. Pit (349), which cut through layer (337) in the depression, contained only five sherds of chaff-tempered ware.

#### Area D.

The earliest feature, stakehole (354) contained only two sherds, one chaff-tempered, and one burnt sherd of micaceous sand-tempered ware.

Three of the dumps over this (364) (365) (369) yielded thirty-one sherds of chaff-tempered ware, of which twenty-six came from layer (369). These include Fig. 24, No. 15 (Table 8), and twenty-three sherds from a jar or bottle (Fig. 27, No. 46; Table 11) decorated with panels formed by shallow vertical grooves at regular intervals around the pot; although in a heavily chaff-tempered iron-rich fabric this may be a Surrey product.

The later dumps (373) (374) (376) (379) contained twenty-two sherds, thirteen of which were found in (376): With the exception of one sherd of North French black ware, and two small sherds of sandy-gritty ware, all the pottery is of chaff-tempered type, with three sherds of sand-and-chaff-tempered ware and one possibly from Surrey (Fig. 27, No. 47; Table 11).

## DISCUSSION

### Dating

Dating the pottery from these sites is difficult for several reasons:

1. The geographical dispersion of the key sites, Southampton, Canterbury, London, Ipswich, York, each of which has its own local pottery and a different range of non-local material.
2. The lack of good published sequences. In London, *Hamwic* (Timby 1988, 111) and York (Mainman, pers. comm.) most pottery comprises single sherds from different vessels and most comes from stratigraphically discrete features; the best sequences are those at Canterbury (eg Wilson 1983; Tatton-Brown and Mac-

Pherson-Grant 1985), many of which are still being analysed.

3. The difficulty of distinguishing between contemporary and redeposited material if the latter is not noticeably abraded.
4. The longevity/curation of the imported finer wares.
5. Different functional uses of different wares which may have affected their distribution within the settlement.
6. Personal preferences of the occupants of the settlement for different wares (see also Timby 1988, 111).

Nonetheless, some general observations have been made on the Middle Saxon ceramic chronology, against which the London evidence, as it is currently understood, may be compared.

Chaff-tempered ware appears to have continued in use from the later 5th century to the 9th century. It is the dominant ware at Early-Middle Saxon sites such as Mucking and West Stow, and seems to have been most popular in the 7th century, but in most areas was superseded by other fabrics in the later 8th century. On the evidence from Portchester and from *Hamwic* available at the time, Cunliffe (1970, 72–3) suggested that chaff-tempered wares had probably been abandoned in favour of the gritty wares by the mid 8th century. The same conclusion was reached by Hodges (1981, 46) and by Timby (1988, 111), who suggests that there is a transition from thick-walled vessels in the Early Saxon tradition with a dense organic temper to a much finer, sandier fabric. In Canterbury it appears that this ware was declining by the late 7th century, and that it had virtually disappeared by c. AD 725, being replaced by more sandy local wares (MacPherson-Grant, pers. comm.). In Ipswich the situation is rather different, and chaff-tempered ware disappears in the very early 7th century.

Ipswich ware is conventionally dated to c. AD 650–850. This ware was widely distributed along the East Coast, reaching as far as York, where it occurs in small amounts from c. AD 700 onwards at Fishergate (Mainman, pers. comm.). Ipswich ware is present on a very small scale in some late 7th-century groups in Canterbury, but is most common there from c. AD 775–850 when it accounts for up to c. 40% of the pottery recovered (MacPherson-Grant pers. comm.). The ware has been found on many sites in East Anglia and in the Lower Thames Valley, and also occurs in Aylesbury (Bucks), and Winchcombe (Glos.). The *Hamwic* collection also appears to include some Ipswich-type ware, although this remains to be confirmed.

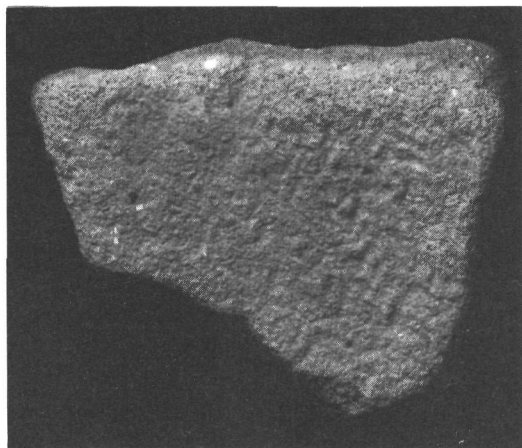


Plate 4. Maiden Lane: Textile impression on a sherd of Ipswich fine ware.

Of the non-local wares, most occur in such small amounts and with such regional clustering that inter-site comparisons are not easy. At present the shell-tempered wares appear to be the most useful for dating purposes in Southern England. At Canterbury a few shell-tempered wares have been

found in contexts dating to the period *c.* AD 450–750, but these are rare and some may be late or sub-Roman; it is not until the second quarter of the 8th century that they become more common. At *Hamwic* also shell-tempered pottery is more frequent in the upper fills of features, being found together with the mixed grit wares which by then may account for up to 50% of the later pottery (Timby 1988, 114). Shell-tempered wares continue throughout the entire Saxon sequence in Canterbury, albeit on a very small scale, but become more common in the second quarter of the 8th century.

The imports should offer a better means of comparing the trends on different sites, but here again regional patterns prevail. At *Hamwic* there is a much stronger bias towards Northern France than the Rhineland, whereas in York a wider range of Rhenish wares is present. In Canterbury (Wilson 1983, 232) and London pottery is coming in from both areas, although the distributions may vary on different sites and with time. At *Hamwic* it has been suggested (*ibid.*, 114) that the North French black wares are more common in the earlier deposits, while the grey wares and white wares such as Beauvais are more common in the later Middle Saxon groups.

Badorf-type ware certainly occurs in England in the first half of the 9th century, but whether it

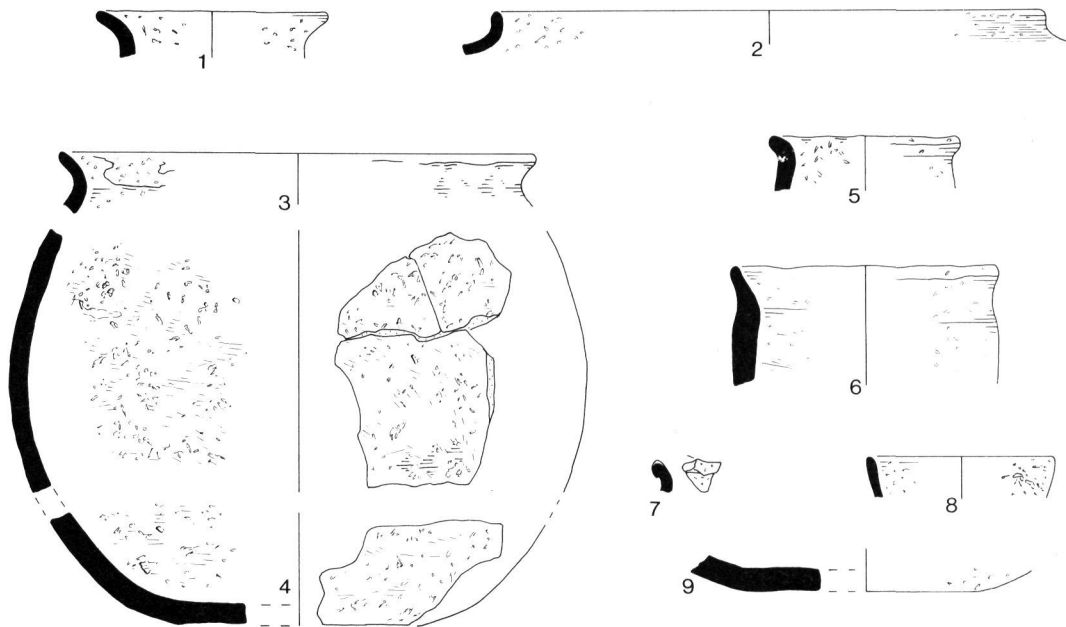


Fig. 20. Jubilee Hall: The chaff-tempered wares.

was imported before this is not certain; it is not impossible that it was reaching England in small quantities from *c.* AD 750. At Dorestad it was suggested that production of relief band amphorae in the classic later Badorf fabric, formerly thought to date to *c.* AD 825, may have started in the second half of the 8th century, and that the rouletted jars were of a similar date (Van Es and Verwers 1980, 68; 77-8).

#### The London Sequence

The ceramic distribution at Jubilee Hall and Maiden Lane may be summarised as follows.

Chaff-tempered pottery is scattered across both sites, although the main concentration at Jubilee Hall was in the area of pit (59). At Maiden Lane the lower fill of pit (237) contained twenty-seven chaff-tempered sherds, pit (214) contained eighteen sherds and pit (251) contained seventeen sherds; forty-nine sherds were found in ditch (292) and eighteen in pit (261), ten of which were in the upper fills. Most other features on both sites contained less than five sherds of chaff-tempered ware. Ipswich wares have a more limited distribution. At Jubilee Hall, with the exception of one sherd in pit (153), Ipswich-type wares were found only to the east of an imaginary north-south line



Plate 5. Maiden Lane: The North French bossed and stamped jar (height *c.* 300mm). (Photo: Museum of London, Jon Bailey).

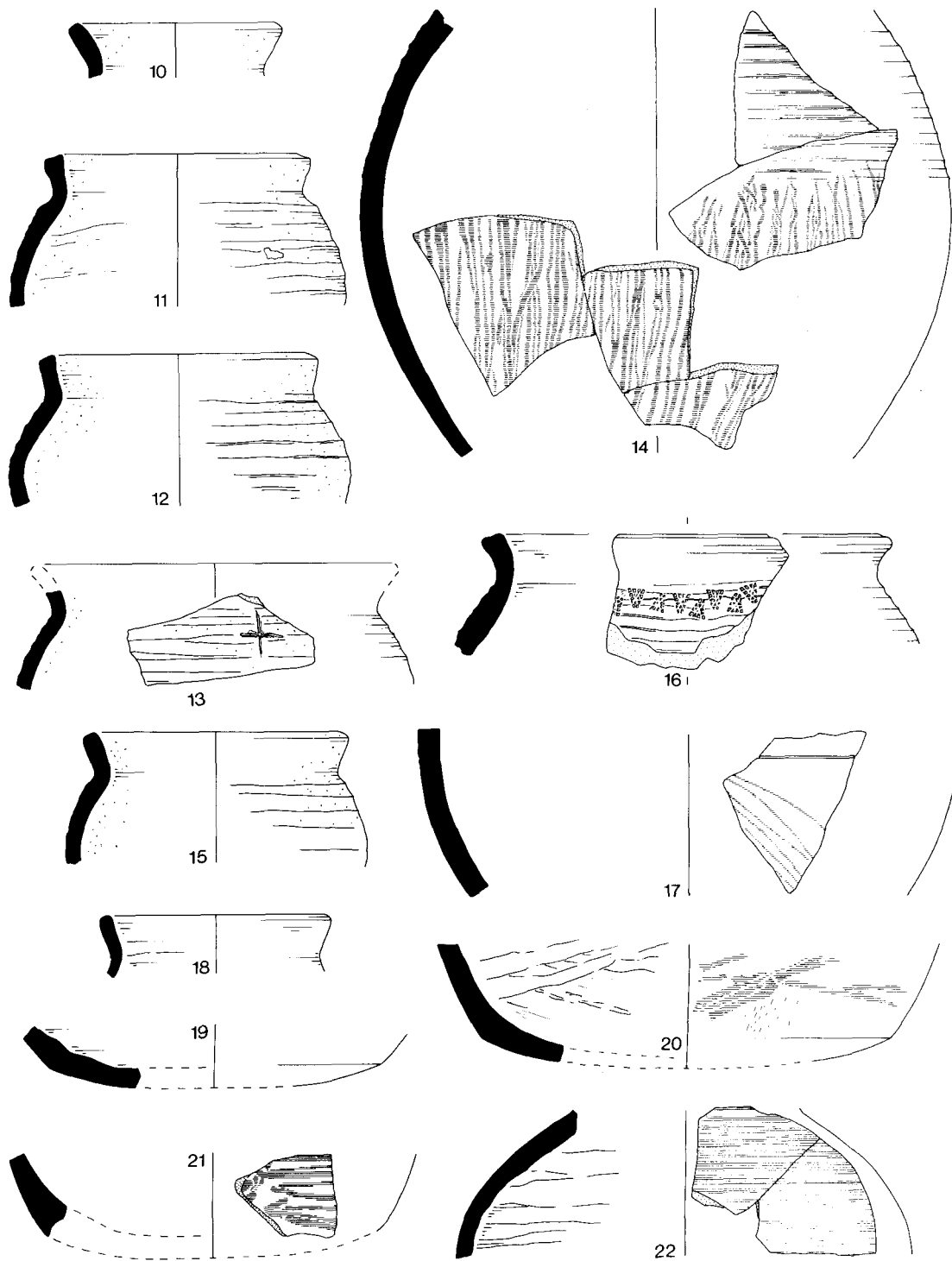


Fig. 21. Jubilee Hall: The Ipswich wares.

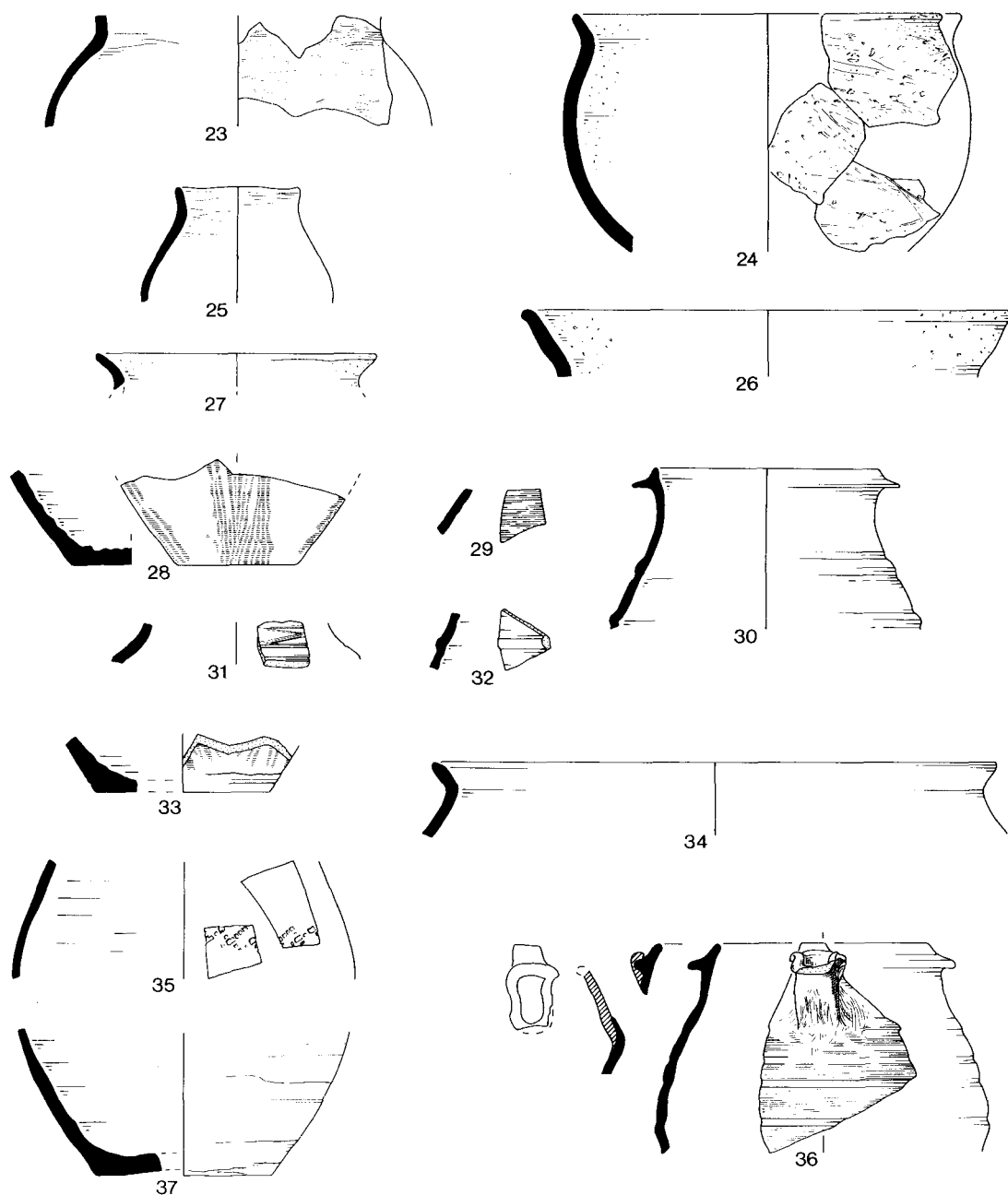


Fig. 22. Jubilee Hall: Non-local and imported pottery (Nos. 23-25 ?Surrey; Nos. 26-27 shell-tempered; Nos. 28-31 North French black ware; Nos. 32-34 North French grey ware; No. 35 North French/Eastern Belgian; Nos. 36-37 North French red burnished ware).

which roughly bisects the site. On both sites Ipswich-type ware only occurs in features which cut other features, and/or in the upper fills of pits or wells which have more than one layer, suggesting that these may have been left partially filled, or that slumping has occurred. Two such features have associated coin dates; that from well (117) at Jubilee Hall (a series V *sceat* dated *c.* AD 720–725) may be residual, but the presence of a coin of Coenwulf (AD 796–805) is important for establishing an approximate date for pit (261) at Maiden Lane and for the ditch cutting this pit (one of the few features on this site where Ipswich pottery is the dominant ware). Shell-tempered wares are more limited but follow the same pattern as Ipswich ware. North French black and grey wares occur in all areas, and it is not possible as yet to test the *Hamwic* evidence with this material. However, Seine Valley ware (NFSVA) is usefully dated to the mid 7th century by association with the C-14-dated burial, while Badorf-type ware is clearly confined to the later features.

This confirms the hypothesis (Vince 1984b, 433; 1990, 98–9) that there are two main ceramic phases. The first (pre-Ipswich ware) phase perhaps

dates from the 7th century to *c.* AD 750; the second, with Ipswich ware, from *c.* AD 750–850. Chaff-tempered wares are still well-represented in these apparently later groups, and the residuality factor is unclear since certain forms from Maiden Lane are quite developed (perhaps copying Ipswich wares), and may be contemporary with the deposits in which they are found. If so this suggests that these features may date to the mid 8th century, and that there is some overlap of the two 'ceramic phases'. The current absence of the North French/Low Countries trellis burnished pitcher, which occurs in later 9th- and 10th-century deposits in Canterbury (Wilson 1983, Fig. 97, No. 325), and which has been found within the City of London, is of interest, and lends support to a mid 9th-century end date for the Strand settlement.

While remembering that the absence of Ipswich ware or other fabric types in features may reflect factors other than chronology, it would appear that the following features on each site (and thus all those that cut them) belong to the second ceramic phase (MSS = Middle Saxon shelly; IPS = Ipswich-type; BADO = Badorf-type; BEAV, BEARP = Beauvais):

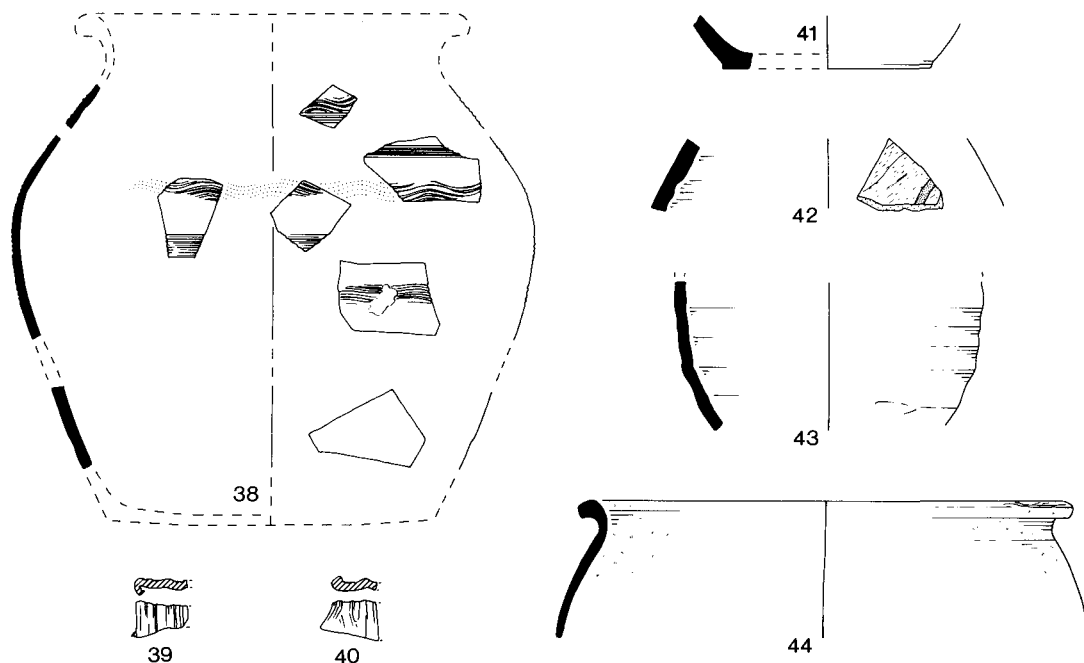


Fig. 23. Jubilee Hall: The imported pottery (Nos. 38–42 North French white wares; No. 43–44 Badorf-type).



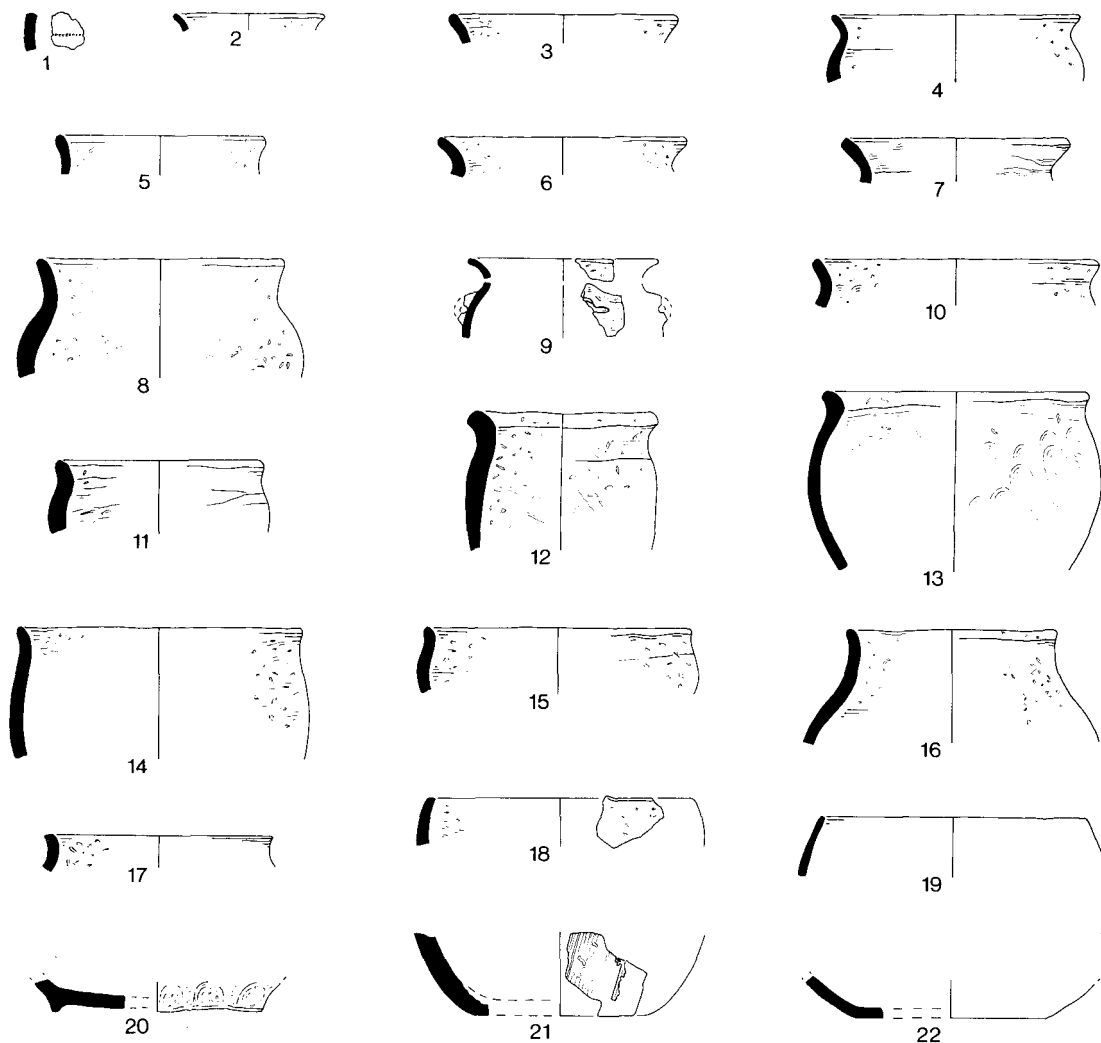


Fig. 24. Maiden Lane: The chaff-tempered wares.

Jubilee Hall: pits (140) (111) (MSS); pit (57) (MSS, handled comb); pit (126), well (117) (IPS: upper fill; *sceat*); pit (153) (MSS, IPS: upper fill); pits (157) (IPS); pit (162), well (121) (MSS, IPS); pit (135) (IPS, coarse BADO); pit (154), posthole (54) (coarse BADO); pit (28) (BADO).

Maiden Lane: pits (237), (261) (MSS, IPS: upper fill); pits (210), (279) (IPS) pit (221) (BADO middle fill); ditch (287) (BADO) pit (199), ditch (292) (IPS, BADO amph).

To conclude, this study has formed a good basis on which to develop future fabric analysis and classification in the London area. However, the numbers of sherds in most fabric groups is small, while the bulk of the material is derived from stratigraphically isolated features. Only when more sites with a better stratigraphic sequence have been excavated will it be possible to answer the many questions currently posed regarding residuality, and the currency and quantity of different wares at different times.

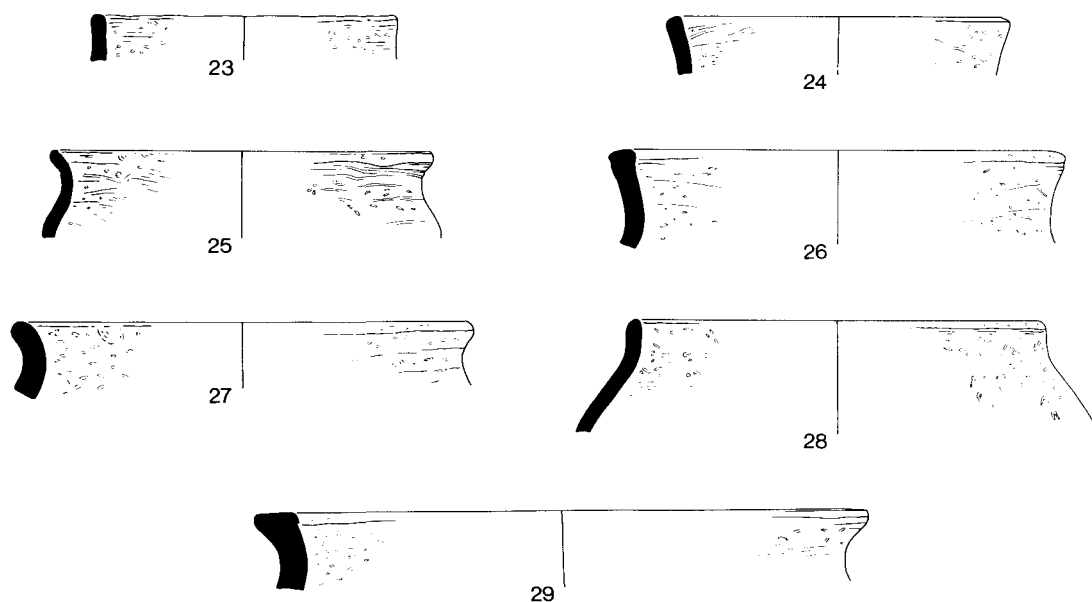


Fig. 25. Maiden Lane: The chaff-tempered wares.

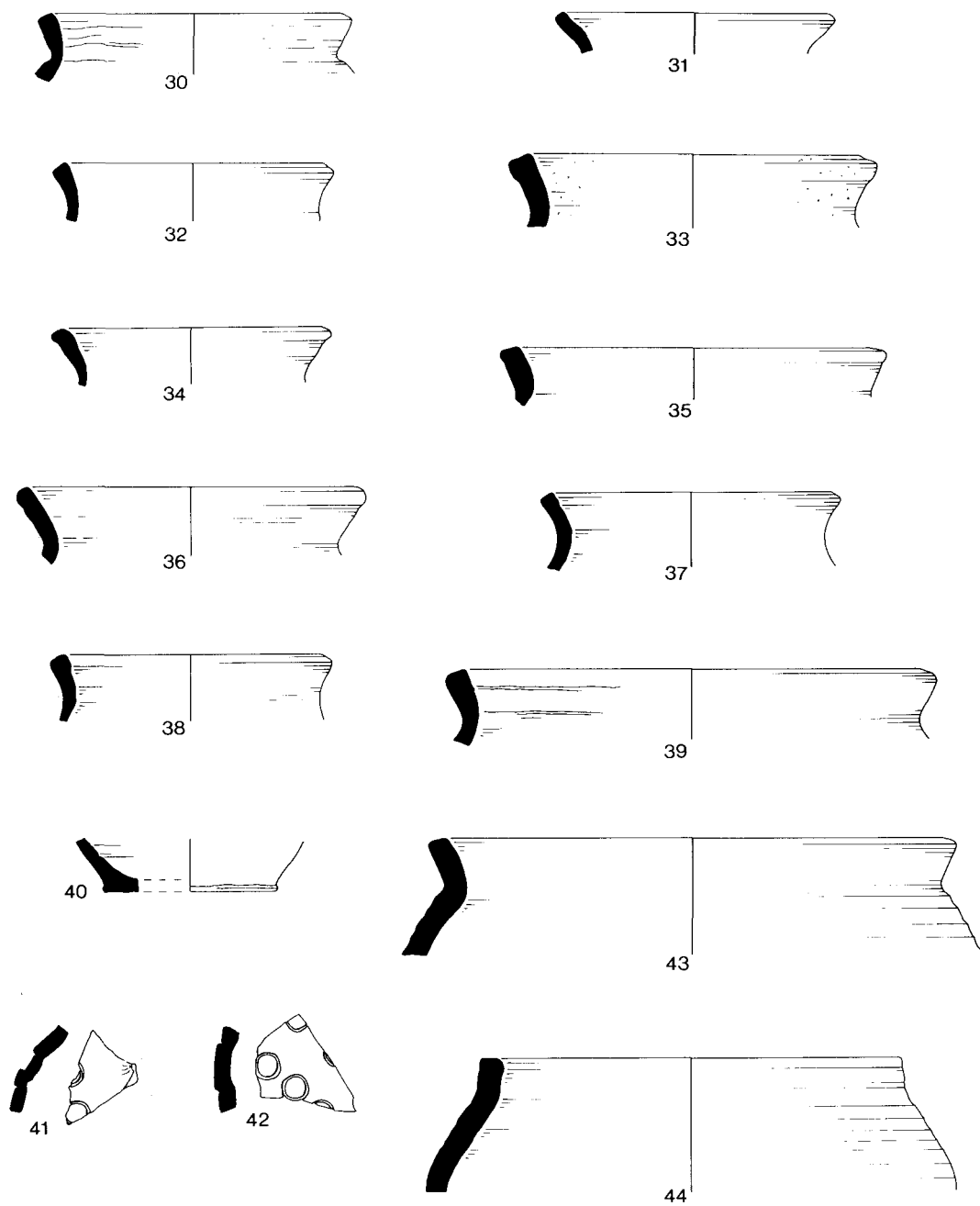


Fig. 26. Maiden Lane: The Ipswich wares.

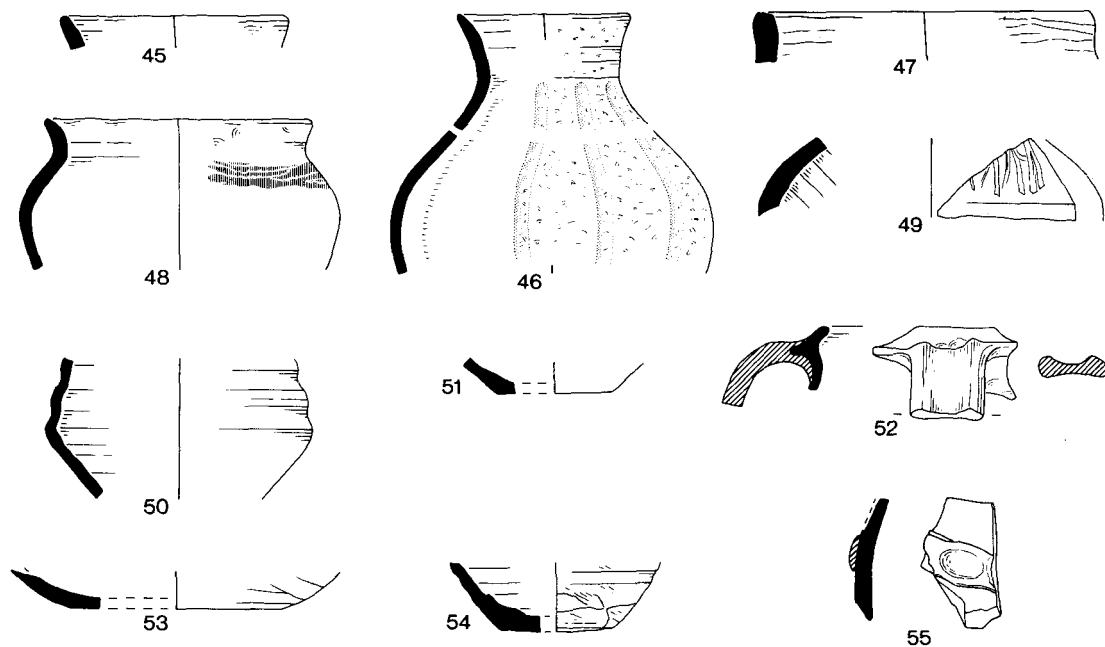


Fig. 27. Maiden Lane: Non-local and imported wares (Nos. 45–47 ?Surrey; No. 48 fine flint-tempered; No. 49 sand-tempered; Nos. 50–51 North French grey wares; No. 52 North French/Eastern Belgian; 53–55 Badorf-type).

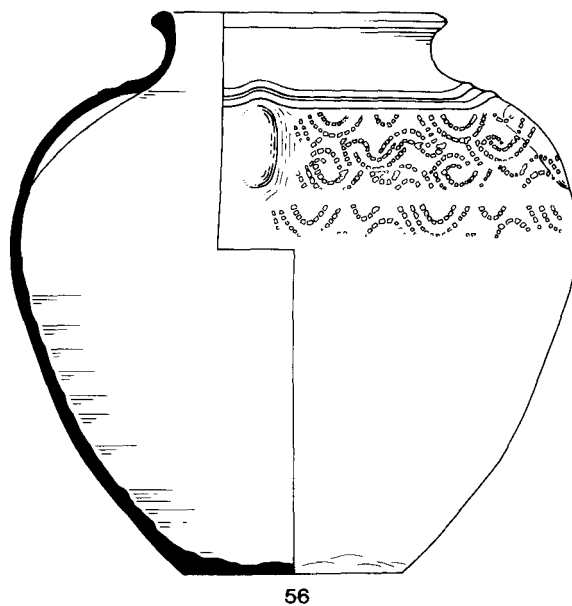


Fig. 28. Maiden Lane: The North French bossed and stamped jar.

## THE LOOMWEIGHTS AND SPINDLEWHORLS

by Lyn Blackmore

Although Middle Saxon loomweights have been found on a number of sites, little work has been done on them apart from an early classification by Hurst (1959, 24). The excavations at Jubilee Hall and Maiden Lane have afforded the opportunity to study these finds in greater detail.

### THE FABRICS

Two broad fabric types are present, with sub-groups as described below, although the fabrics vary from one weight to another, blurring the 'edges' of the fabric groups and suggesting that the weights were made as required rather than in large batches. All fabric types are represented on both sites (see Table 13). No examples of unfired loomweights are present, and although two lumps of unfired clay similar to fabric 1a were found at Maiden Lane (context 243), these could equally be associated with daub production (see above).

*Fabric 1a:* A fine micaceous fabric, with some organic content, probably an intrinsic part of the clay matrix. The inclusions comprise moderate/abundant very fine quartz sand up to 0.5mm, scattered larger grains of rose and milky quartz, sparse/moderate rounded black iron ore, sparse angular flint inclusions up to 5mm, occasional large flint inclusions (maximum 17 × 7mm), and very sparse white mica. Larger organic inclusions are evident as impressions and voids where they have burnt out in the firing. Several weights bear stem impressions: at Jubilee Hall one (SF.84) contains a stem impression 31 × 5mm, another (SF.76) contains a large fragment of carbonised twig in a diamond-shaped void 14 × 7mm. Both of these were found in well (117). A third fragment (MAI 364 SF.133) has two woody inclusions, one 15 × 5mm. Most of these weights are poorly made; the clay is poorly prepared, with numerous air-pockets, and is low-fired, so that the weights are soft and friable, with a tendency to laminate or crumble. They normally have a reduced core and oxidised surface, but some have a partly reduced surface; very few are oxidised throughout (eg MAI 264 SF.154). The surface is usually smoothed, but may have a rough sandy feel.

Thin section: JUB 54 SF.133.

*Fabric 1b.* As above, but finer and denser. This fabric has some organic inclusions, but they are both smaller and sparser, and the number and size of the voids are correspondingly reduced. The other inclusions are as above,

but all are sparse, although the flint inclusions may be large. One weight contains a large fragment of animal bone in addition to the other inclusions (MAI 376 SF.158). Firing appears to be at a higher temperature than group 1a. One weight (Fig. 29, No. 1, JUB layer (164) SF.63) has an impression of ?comb teeth.

*Fabric 1c.* Similar to fabric 1b in manufacture and firing, but coarser. One weight has abundant sand and finely crushed flint (JUB 162 SF.102), another (JUB 137 SF.74) has quartz grits up to 5mm and numerous large pebble inclusions. This weight bears the impression of a twig or plant stem (30 × 6mm) on the upper surface near the central hole.

*Fabric 1d.* Similar to fabric 1a, but much coarser, with abundant sand and moderate angular white flint inclusions up to 10mm which protrude from the surface. This fabric is rare on both sites.

*Fabric 2a.* A fine brickearth matrix with abundant fine quartz sand giving an abrasive surface, sparse/moderate fine flint inclusions; one weight (JUB 128 SF.69, Fig. 29, No. 2) contains a large gravel flint pebble 30 × 12mm. These weights are oxidised throughout; the outer surface is not smoothed.

*Fabric 2b.* As above, but with moderate to abundant fine to medium flint grits, and frequent larger flint pebble inclusions. One weight in this group has deep stab marks (JUB 162 SF.104, Fig. 29, No. 6). The surfaces of these weights are generally smoothed.

### THE TYPES

Being hand-made, most weights are extremely irregular both in section and in form. Very few are completely circular, and many have a slightly triangular shape. On the basis of this sample, three main groups have been defined on the basis of the cross-section (although it should be noted that this can vary considerably from one side of the weight to another, as in Fig. 29, No. 3):

Group 1: flattened/annular with horizontal U-section (Fig. 29, Nos 1, 2),

Group 2: rounded with D-section (Fig. 29, Nos 3, 4, 5),

Group 3: roughly biconical with C-section (Fig. 29, Nos 6, 7).

Group 1 weights are annular in form; the height (average 40mm) generally being less than the thickness of the ring, and the width of the hole greater than the thickness of the ring.

Group 2 weights fall into two sub-groups: those with an average central height of c. 40–50mm, and those with a central height of 51–60mm. In most

Table 13. The distribution of fabric types (excluding very small fragments from samples)

	1a	1b	1c	1d	2a	2b	Total	Weight
Jubilee Hall	38	18	2	2	1	6	66	11.741kg
Maiden Lane	13	7	2	3	3	3	31	3.891kg

cases the height is greater than the radius of the weight, while the diameter of the hole is the same as or less than the thickness of the ring.

Group 3 weights are normally the largest and the heaviest (Fig. 29, No. 7 is an unusual variant of this type); the central height averages *c.* 60mm and is greater than the radius of the ring. The diameter is normally *c.* 140mm, and the projected total weight would be *c.* 1000g. This form is found at Dorestad.

### DIAMETER

Due to the irregular shape of the weights it is impossible to assign individual fragments to precise diameters. However, where possible, each fragment was measured on a rim chart in order to gain an approximate guide to the original size of the loomweights. This showed that most weights fall within 110–120mm, with a smaller group at 130–140mm. No pattern was observed in the relationships of diameter, profile and fabric.

Some loomweights may have been formed from a ball of clay, but other examples such as Fig. 29, No. 4 have cracks or have broken in such a way as to suggest that they were made from two sausages of clay. Additional features such as comb stamps and stabbing are discussed below.

### DATING

The three broad groups correspond with those first identified by Hurst (1959, 23–5), who suggested on the evidence available at the time that the annular weights appeared to be of Early Saxon date, the D-sectioned 'intermediate' weights were of Middle Saxon date, the biconical 'bun-shaped' type of Late Saxon date. Further research has shown that this general pattern holds good, and at West Stow, most of the illustrated loomweights appear to be of the annular type (Group 1), although the section is described as D-shaped (West 1985, 138; Fig 297). However, as noted by Hurst, there do seem to be a number of intermediate types, and there are problems in that the annular shape, although typical of the Early Saxon period, is also found on the 9th-century site at Whitehall (Huggins, forthcoming). The early weights tend to have a large central hole, while the Whitehall examples have a small hole, but if only fragments are found it will be impossible to date this type securely. On the present evidence it would seem that in London at least all three types were in use at the same time, and that the different proportions of the different shapes reflect the function of the weight as much as a real chronological development.

### USE

Loomweights such as these were used on a warp-weighted loom (Wilson 1976, 271; Owen-Crocker 1986, 175–7; 180–4; Fig. 180). In some Anglo-Saxon settlements, it appears that weaving was carried out in specific buildings, and not in the general living quarters, although this has been questioned (Wilson 1976, 271). At West Stow it was suggested that some of the looms may have been free-standing rather than attached to posts set in the ground, and moved from one building to another, so that the presence or absence of loomweights in a building cannot be used as more than an indication of the extent of weaving in a settlement (West 1985, 138). No obvious evidence for looms was found at either Jubilee Hall or Maiden Lane. At West Stow (*ibid*), Grimstone End, Pakenham (Brown *et al* 1957), and Mucking (Jones and Jones 1975, 155, 161, Fig. 52) it has been suggested that some loomweights were used in an unfired state, although the possibility remains that they were merely being stored ready for firing when they were accidentally burnt. The lack of loomweights in the Late Saxon period has been attributed to a change from the warp-weighted loom to a horizontal or beam-tensioned loom (Wilson 1976, 271).

### JUBILEE HALL: THE LOOMWEIGHTS.

A total of 66 fragments (11.44kg) was recovered from 23 different contexts at Jubilee Hall. The main concentration of large fragments was in well (117) (forty-one fragments, twenty-five (85g) recovered by sieving); pit (135) and pit (162) each contained five fragments. Most contexts contained only one or two fragments, and although in some cases the numbers are inflated by a quantity of fragments recovered by sieving, the weights involved are small. The fabrics and shape types are described above. Most of the weights fall into Group 2.

#### Additional features

One weight bears an impression of comb teeth (Fig. 29, No. 1). This feature has also been found at West Stow, where a weight has two parallel rows of impressions of comb teeth, one on either side of the hole (West 1985, Fig. 297, No. 14).

A number of weights have stabbed impressions, probably to aid the firing process. The first, a complete weight (Fig. 29, No. 3, pit (135), SF.56), has three impressions made with a pointed object approximately 3mm in diameter. These are all on the same surface, and form an approximate triangle; two are 10mm deep, the third, on the rounded edge of the weight, is *c.* 4mm deep. Another weight (Fig. 29, No. 6, pit (162), SF.104) also probably had three stabbed impressions; two survive, one *c.* 20mm deep. Two other fragments (well (117), SFs.79 and 80)

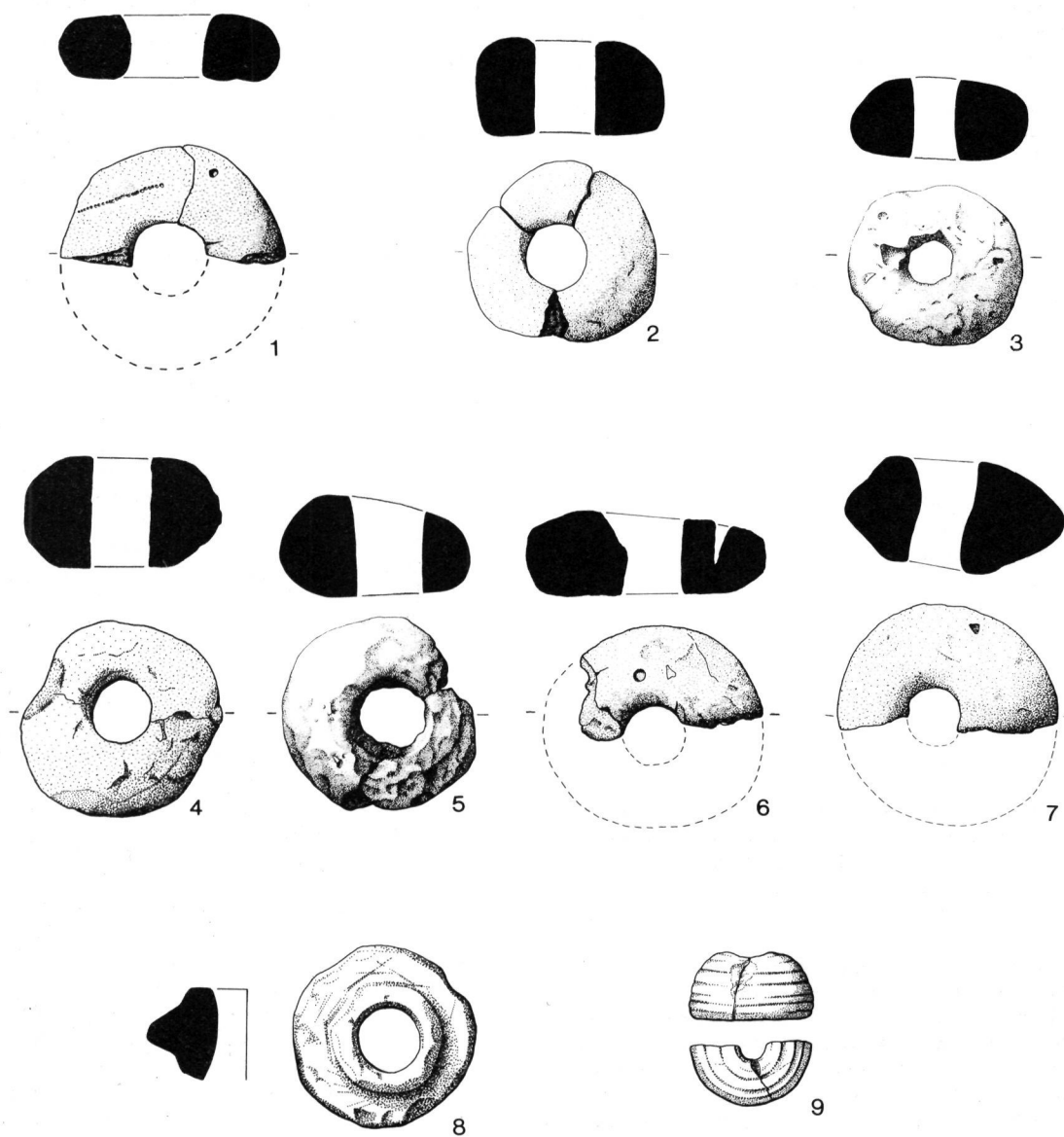


Fig. 29. Jubilee Hall and Maiden lane: The loomweights and spindlewhorls (Nos. 1-3, 5-8 Jubilee Hall; Nos. 4, 9 Maiden Lane).

each have one large oval impression  $15 \times 10$ mm; that on SF.80 has a maximum depth of 15mm, the other is slightly less. These two fragments are probably from the same weight, although they do not join. Stabbed impressions have also been noted at Mucking (Jones and Jones 1975, 161, Fig. 55, No. 13).

One weight (Pit (158), SF.93) has a white surface deposit inside the hole and over the fracture which is similar to the white surface on many of the daub fragments. This weight also has a small splash of what appears to be a green glaze inside the hole and over the white deposit. Both features are almost certainly accidental and acquired after the weight was broken.

#### MAIDEN LANE: THE LOOMWEIGHTS.

A total of 37 fragments from *c.* 31 weights was recovered from 17 stratified contexts, with one unstratified fragment; the total weight is 3.85kg, including one complete weight weighing 581g. Given the size of the site and controlled nature of the excavation, the number of loomweights recovered is low compared to that from Jubilee Hall. On the evidence of the spindlewhorls and woolcomb (see below) it would appear that wool and possibly other fibres were prepared on the site, but it is possible that the cloth was mainly woven in another area of the settlement.

Most contexts contained only one or two loomweight fragments, and with one exception, none have more than three fragments; layer (337) in Area C produced nine fragments, but these weigh only 252g. Pits (237) and (261) in Area B, and layer (376) in Area D each produced three fragments. Those in layer (376) comprise a complete weight (Fig. 29, No. 4), part of a biconical weight and part of a large Group 2 weight with a height of over 60mm. Pit (237) also contained fragments of two large biconical weights. Pit (261) contained one fragment which appears to have been burnt after being broken.

As at Jubilee Hall, where profiles survive most of the weights are of Group 1 or 2. Most weights are *c.* 120mm in diameter; of the seven fragments which are *c.* 140mm in diameter, three are biconical in section (Group 3). The average height is *c.* 40–50mm, but five are over 60mm, while the three 140mm diameter biconical weights from pit (237) and layer (376) are between 65–70mm. Most pieces represent about 20–25% of the original circumference; apart from the one complete weight (Fig. 29, No. 4), only two fragments represent over 25%, one from fill (306) in ditch (292) is 55%, and one from layer (340) is 30%. A number of small fragments weighing *c.* 6–15g are also present.

#### Additional features.

Of some interest are two unfired lumps (219g) of clay from fill (243) of pit (237). The fabric is very similar to

fabric 1a above, but as organic inclusions were also present in some of the daub samples, the waste clay may have been intended for either purpose. The complete weight and one other piece appear to have been made of two half rings of clay joined together (see above).

One fragment from feature (247) ((fill (248)) in Area B appears to have a white slip over the surface inside the central hole; unfortunately most of the outer surface of this weight is missing so it is not known whether the entire weight was dipped in slip or whether this is some sort of scale, as noted on other Saxon sites in London (Williams, forthcoming; see also Jubilee Hall).

#### SPINDLEWHORLS

In the Anglo-Saxon period all spinning was carried out by hand, using a wooden distaff, spindle and a whorl or fly-wheel made of wood, pottery, bone or of a bead (Owen-Crocker, 1986, 177–8). Despite the large number of loomweights, only one spindlewhorl was found on each site.

The Jubilee Hall example is in a pinkish-white very hard chalk (Fig. 29, No. 5, well (121), SF.127), with an irregular, faceted edge to the flange, and knife marks on either side of the flange and around the central hole from the carving process.

At Maiden Lane one half of a chalk spindlewhorl was found in one of the fills of the depression in Area C (Fig. 29, No. 6; context (345), SF.41). This has a simple domed profile, with a flat base 32mm in diameter, and flattened upper surface; the height is 17mm, the diameter of the central hole 7mm. The surfaces are all decorated with incised concentric rings. An almost identical chalk spindlewhorl was found at Whitehall (Huggins, forthcoming).

#### THE SAXON DAUB

by Richenda Goffin

At Jubilee Hall 6.95kg (approximately 529 fragments) of daub were recovered, but there was no systematic sampling policy. At Maiden Lane 21.75kg (approximately 977 fragments) of daub were recovered. Here daub fragments were usually retained, especially if they had impressions or lime-wash, but not when they were very small or degraded. A considerable amount of daub was retrieved from sieve residues.

#### INTRODUCTION

Initially the number, weight and fabric types of daub fragments from each context were noted on the standard Building Materials sheet used by the Museum of London. A second form was devised to record the fabric, weight and colour of fragments displaying characteristics such as impressions, limewash, corner pieces etc. The measurements of



wood impressions, the thickness and number of layers of limewash, and other features of interest were described; the fragments were sketched and recommendations for illustration or photography made. The text of each individual report, with the catalogue and the illustrations and photographs is included in the archive.

### THE FABRICS

Two main fabrics were identified from both sites by visual examination; a fine sandy one, tempered with organic material, and one containing coarser sand. In some cases the dividing line was not clear, making it difficult to assign fragments to a fabric group.

An examination of samples submitted for thin sectioning and petrological analysis confirmed this basic distinction (Williams, 1989). Samples from Fabric 1 show a groundmass of frequent angular to subangular quartz grains predominantly under 0.20mm, with a scatter of larger grains ranging up to 1.20mm across. Also present are a few pieces of flint (generally small but with at least one fragment over 2mm in length), flecks of mica, some iron oxide, a few well-rounded reddish to light brown and opaque grains of glauconite, and occasional elongated voids suggesting vegetable matter, probably chaff or grass. At least one fragment from Maiden Lane shows evidence of a seed or seed casing from a cereal or grass. Pieces of shell were also observed in a few fragments from this site, and in one instance a piece of bone 18mm in length. Fragments from Fabric 1 are often uniformly brick red in colour and baked quite hard. Others have buff and/or dark grey patches and tend to be more crumbly. Most fragments from both sites belong to this fabric group; 6.15kg (88.5% by weight) from Jubilee Hall, and 21.39kg, (98.4% by weight) from Maiden Lane.

Fabric 2 is characterised by closely-packed grains of angular and subangular quartz in the range of 0.10mm–0.60mm, with fragments of flint ranging up to 2mm in length, flecks of mica, iron oxide and some well-rounded reddish to light brown opaque grains of glauconite. An important feature of this variant is the lack of organic voids and impressions that are so common in Fabric 1. One fragment from Maiden Lane has a scatter of clay pellets up to 5mm in length. The daub is brick red to light brown in colour, although some fragments also have dark grey patches. A total of 794g (11.5% by weight) from Jubilee hall, and 358g (1.6% by weight) from Maiden Lane belong to this group.

Since the two sites are close to each other the fact that the daub fabrics are the same is not

surprising. Both sites are located on the natural brickearth overlying terraced gravels, which has been used from Roman times as a convenient source of building material. The daub had a similar range and number of mineral inclusions as a sample of the local brickearth, suggesting that this was the source of the clay used (Williams, 1989). There was no evidence of organic material in the brickearth, so it seems likely that it was added to Fabric 1, perhaps in the form of animal dung, to improve the raw brickearth. This would have reduced the risk of cracking once the daub had dried (Williams-Ellis 1947, 89). There are also indications that more sand had been added to the daub mixture. Further analysis might provide more information about the preparation of the raw material.

### LIMEWASH.

Three fragments from Jubilee Hall have a layer of limewash rendering between 1mm and 5mm thick applied to the outer surface. Other pieces which were obviously part of the smooth facing of a wall, show no definite signs of limewash.

At Maiden Lane ninety fragments with limewash were recovered. Again, some pieces have flat surfaces, which may once have been treated in this way, although no evidence of it now remains. The limewash is off-white to pale buff, although on a few fragments the bottom part is pale orange, perhaps discoloured by heat. The wash was crudely applied in a single coat varying in thickness from



Plate 6. Maiden Lane: Daub fragment with textile impression.

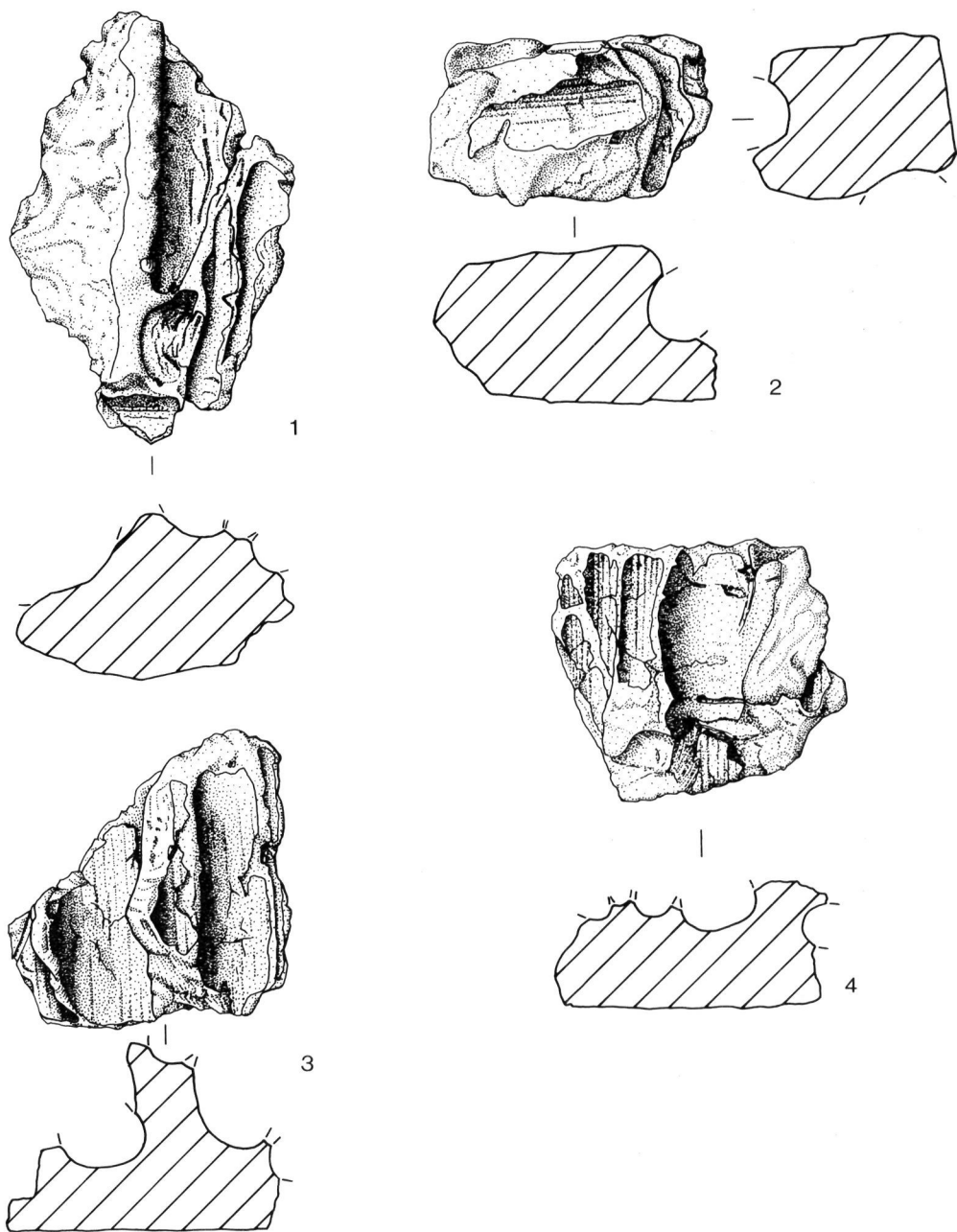


Fig. 30. Jubilee Hall and Maiden Lane: Daub fragments with structural impressions (No. 1 Jubilee Hall; Nos. 2-4 Maiden Lane).

1 to 5mm. Most (eighty-one fragments) of the limewashed pieces are from the northern end of the site; twenty-three are from ditch (292), and fifty-eight from pits (237), (245), (251) and (261) which are cut by the ditch. One small fragment came from the midden in Area C.

Some form of coating for external structures would have protected walls from the elements. However, preliminary examination shows no evidence of renewal, although further analysis is being undertaken.

### TEXTILE IMPRESSIONS

Two pieces from Maiden Lane bore textile impressions, which have been identified by F. Pritchard. The first, from ditch (292), has the impression of a 2/2 twill weave, with 7/8 threads per 10mm (Pl. 6); the second piece, from pit (245), is of an open textured tabby weave, with 8/9 threads per 10mm. Although the twist of the yarn cannot be identified in either case, the second impression is of a finer grade than the first. In both examples the cloth had not been filled.

Textile impressions have also been found at *Hamwic* (F. Pritchard, pers. comm.). It may be that woven material was used to cover apertures such as windows and doors.

### TIMBER AND WATTLE IMPRESSIONS

#### Jubilee Hall

Clear indications of wattle and/or timber impressions were observed on forty-eight fragments from Jubilee Hall. Out of the seventy-five impressions that are measurable, 43% are between 10 and 15mm in diameter, and were probably used as wattle infill. In three instances both horizontal and vertical impressions have survived on the same fragment. The thickness of these pieces (c. 40–45mm) suggests that these walls were between 80 and 100mm thick.

One fragment (Fig. 30, No. 1) has wattle impressions next to a ridge and a concavity which suggests a more substantial timber impression. A third impression of a rod 15mm in diameter at right angles to the wattling, passes in front of it into the possible timber impression. These impressions could be interpreted in several ways. One possibility is that they represent the junction between a panel of vertical wattling and a wooden upright, with the rod inserted into the timber to provide stability. A parallel for this method of construction comes from the Roman site at Newgate Street in the City of London (Perring and Roskams, forthcoming), where daub from the destruction debris of Building J (c. AD 100–125) apparently has impressions of vertical rods woven around hori-

zontal lath-like members. It is suggested that such fragments come from panels which fitted into timber uprights with slots, similar to the stud excavated at Pudding Lane (Milne 1981, Area F). A similar technique may have been used at Jubilee Hall, the difference being that the horizontal members were wattle rods of similar thickness to the vertical ones, rather than more substantial laths. If this was so, it is likely that a ground timber was used to provide stability with perhaps another beam running across the top of the wall.

A second, less likely interpretation is that the wattle panel was connected to a more substantial plank running vertically into a ground timber. Examples of this method of construction have been found at Cowdery's Down, where six out of twelve structures of this phase may have been built in this manner (Millett 1983, 228–9). It is also possible that the wattle ran horizontally into the framework.

#### Maiden Lane

Impressions of wattle and more substantial timber post/stakes were found on 184 fragments. Details of surface characteristics such as faint bark impressions and vessels are discernible, although it is not possible to identify species from such slight evidence (Ian Tyers, pers. comm.).

Of the impressions that can be measured, 43% are between 10 and 15mm in diameter, suitable for wattle infill. Several pieces show clearly the pattern of interwoven withies or rods (Fig. 30, No. 2). Others show the impressions of rods with a diameter of 25mm (Fig. 30, No. 3). One fragment has the impression of a rod 20mm in diameter with three smaller rods of 10mm, 10mm and 5mm running parallel to it (Fig. 30, No. 4). The spacing between the rods varies between 2mm and 30mm. As at Jubilee Hall, it appears that the overall thickness of the walls was between 80 and 100mm. Several fragments have a thickened edge, so that they are slightly concave in shape; and may come from junctions between floors, ceilings, walls or windows. One fragment shows evidence of a possible corner (Fig. 31, No. 5); it has a thickened ridge of clay between two limewashed surfaces at right angles to each other. There are two parallel impressions of 18mm diameter, interspersed with two impressions of 18mm at an angle of 45 degrees. These angled impressions may represent rods passing behind a thicker rod, for which we have no evidence.

Three similar pieces from Maiden Lane show impressions of wattle rods of between 10 and 15mm in diameter lying between 40 and 50mm from the limewashed surface; in front of these, between 5 and 15mm from the outer facing, a small post or

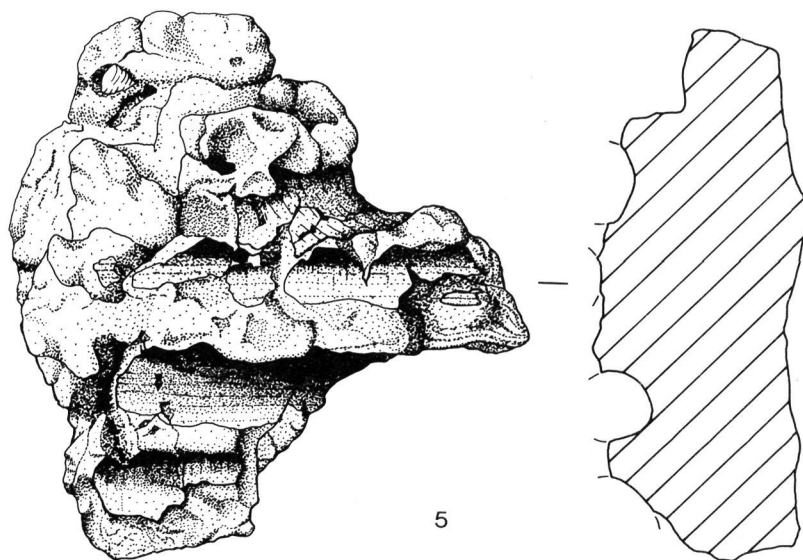


Fig. 31. Maiden Lane: Daub fragment with structural impressions.

rod (diameters between 22 and 40mm) has been set in the same direction as the wattle impressions (Fig. 32, Nos 6–7). It seems likely that these pieces are from a structure made from two wooden components, the wattling and a supporting framework. It may be that a core of wattle was set up against uprights either placed on one side, or on both sides running parallel front and back, or positioned

alternately. This was probably set into a slot in the ground or into a beam to provide greater stability.

The structure was then covered with daub and given a coat of limewash. This pattern seems to have been fairly common. For example, a Late Saxon building at Well Court, in the City, had a double row of postholes *c.* 150 × 100mm, with a line of stakeholes running between them, sug-

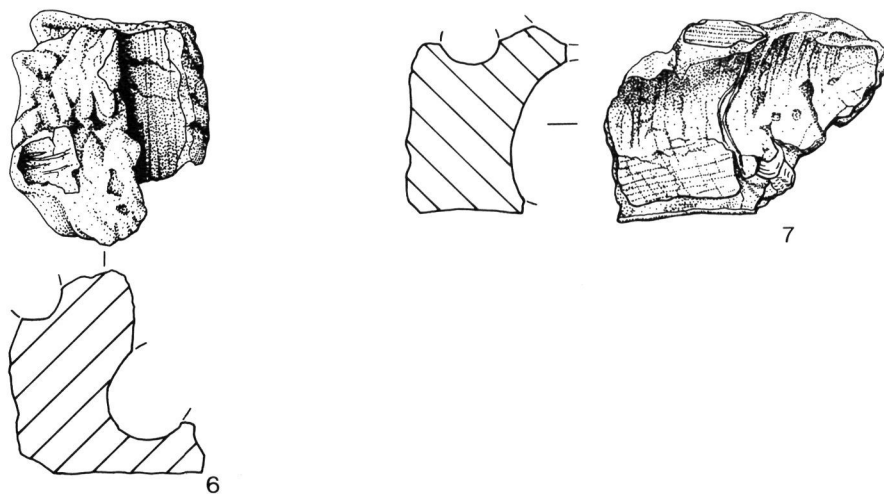


Fig. 32. Maiden Lane: Daub fragments with structural impressions.

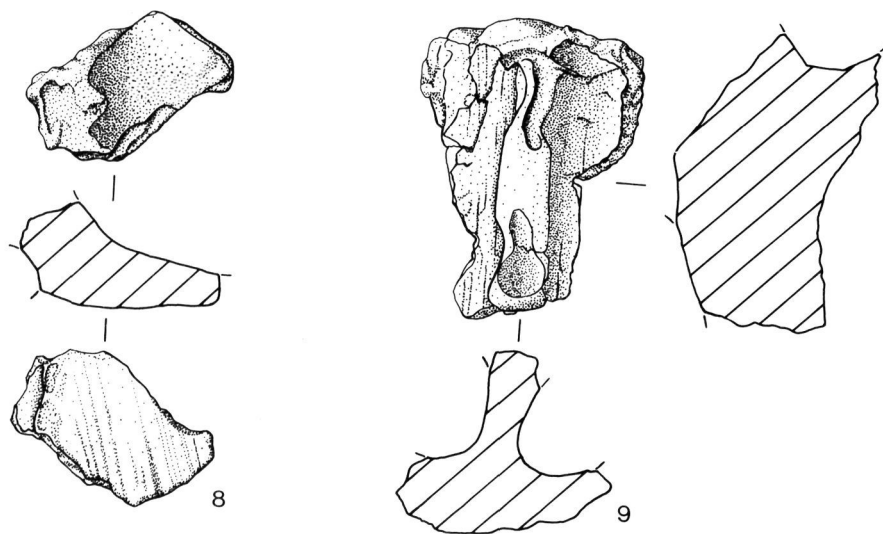


Fig. 33. Maiden Lane: Daub fragments with structural impressions.

gesting a wattle wall held in a framework which had been set in a foundation slot packed with building material and clay (Allen 1988, 61-2).

A second example comes from the internal dividing walls of Building I at Melbourne Street, Southampton, where wattle panels had been set between stakes (Holdsworth, 1976). Another variation was to use planks rather than posts as a framework for the wattling: at Cowdery's Down both B4- and C12-type wall panels were constructed in this way (Millett and James 1983, 227-32), and at Chalton it is suggested that horizontal planking was used instead of wattle in Buildings A1 and A2, clasped between vertical posts in continuous slots, and in fences A4 and A5 (Addyman *et al.* 1972, 17-25).

Two other fragments show wattle and timber in the same construction. One has the impression of a flat piece of timber *c.* 35mm wide with a shallow impression of wattle 11mm wide running almost parallel (Fig. 33, No. 8); on the second two closely spaced rods *c.* 24mm and 30mm in diameter run at right angles to a wood impression with angled sides and an almost flat bottom 25mm in width (Fig. 33, No. 9).

## DISCUSSION

The evidence for timber-framed structures and possible clay floor surfaces at Jubilee Hall has already been discussed; no burnt daub was recovered which could definitely be associated with

any of these features. The majority of the material was redeposited, and may be demolition material cleared from nearby buildings.

No structural features can definitely be attributed to Saxon buildings at Maiden Lane. One heavily truncated feature (283) in Area B could possibly have been the remains of a sunken building, but no building material was recovered from it. Most, of the daub (80.6% by weight) from Maiden Lane was recovered from ditch (292) and the pits it cut. Substantial amounts also came from an upper layer (347) in the midden in Area C and from a series of dump layers in Area D. Structures made from wattle, timbers and daub would by their very nature be extremely vulnerable to fire, especially if they were thatched, and were probably frequently renewed.

## THE GLASS

by Vera I. Evison

Most of the glass fragments from Maiden Lane have suffered from burial in the soil and are not in very good condition, the surfaces being dull, iridescent or weathered in streaks. There are fourteen pieces of vessel glass, of which ten show some indication of features, and there are also beads, two of glass plus one fragment, and one amber bead. One piece, No. 26, is of probable Roman date. From Jubilee Hall there are six fragments,

most in better condition and distinctive types, and one bead fragment.

Fragment No. 1 (Fig. 34), represents the earliest of these glass forms. In the late 6th and 7th centuries the rim of one type of palm cup was folded outwards so that it was hollow-rolled at the top and continued downwards in a folded band which partly merged into the wall of the vessel. This wall descended in an S-curve to a rounded base. On this fragment the wall and fold have merged together at the top, but the join is clearly visible between the lower part of the wall and the smoothed edge of the fold. The beginning of the S-curve can be distinguished in the angle of the wall (Harden 1956, Fig. 25, X a ii 4, b1. d2, plates XVII Ae, XVIII m, o, p).

The frequent occurrence of this form in pagan Anglo-Saxon graves and in Merovingian graves on the Continent shows that it began well before the end of pagan burial. The palm cup continued to develop in the 8th and 9th centuries into a more elongated form, but how long a deeply folded rim continued to be produced, and whether it survived the 7th century, is not known. A similarly broad folded rim on a blue vessel occurred at *Hamwic*, where most of the finds belong to the Middle Saxon period. The publication is confusing, however, as the drawing shows it as an out-folded rim on a bowl, whereas the description states that the rim is folded inwards (Hunter 1980, 59, Fig. 11, 2, 8).

Amongst the vessel glass there are two light blue-green rims, Nos 4 and 5 (Fig. 34), which are folded inwards, leaving a hollow space throughout. Rolled and folded rims, which began to appear on vessels at the end of the Early Saxon period, particularly on palm cups, were continued as the palm cups became taller in shape in the 8th century. There are few published illustrations and descriptions of glass sherds which clearly show the rim forms, but narrow, infolded rims like No. 5 are evident on palm cups from a Dutch collection (Ypey, undated, 382ff., aff. 11, 13, 14 and 15), and at Southampton (Hunter 1980, 63, Fig. 11, 3, No. 15).

Two other rims in light blue-green, No. 6 (Fig. 34), and a light green, that is nearly colourless, No. 7 (Fig. 34), are simple and smoothed, no doubt belonging to funnel-beaker shapes which represent a later development of the palm cup form (Ypey 1962-3, Abb. 40).

The striking vivid green-blue colour of the rim No. 2 (Fig. 34) does not appear in post-Roman times earlier than the 7th century, as in the claw-beaker in grave 6 at Valsgarde in Sweden (Ard-widsson 1942, 70, Taf. 31 right). A fragment of similarly vivid green-blue colour was found at Whitby, where it was probably part of the rim of

a squat jar (Peers and Radford 1943, 73, Fig. 22, 1).

The funnel-beaker shape was widespread in northern Europe, fragments being found, for instance, at Dorestad (Isings 1980, 227, Fig. 153, 3), and Southampton (Hunter 1980, eg. Fig. 11, 3, 5), while complete examples occur amongst those which were deposited in graves at Birka in Sweden in the 9th century (Arbman 1940, Taf. 189, 2; Taf. 190, 2-4; Taf. 191, 1-3; Baumgartner and Krueger 1988, 60-64).

A light green wall fragment, No. 8 (Fig. 34), is decorated with moulded vertical ripples, and begins to curve in and thicken, suggesting a position near the base of a palm cup, possibly like the palm cup with out-folded rim found at St. Martin-in-the-Fields near the Strand (Harden 1956, Pl. XVIII, e), or a taller version (Ypey undated, 383, Afb. 13). The light green-blue fragment No. 9 (Fig. 34) thickens from 1mm to 4mm, and belongs near the base of a tall palm cup. One other wall fragment, No. 24, a very light blue-green, is decorated with a very fine trail in glass of the same colour. The rather spherical shape indicated by the light blue fragment No. 26 is more likely to be part of a Roman than a Saxon form. The rest of the formless vessel fragments are in more distinctive colours which do not occur in the Early Saxon period but which first appear in the 8th century: No. 23 is very thin, light blue and streaky, the fragments No. 21 are very dark, opaque brown although only 1 to 2mm thick, and No. 22 is 1mm thick and a very dark olive.

Fragment No. 3 is of a hollow-blown linen-smoother (Fig. 34), a patch of parallel scratches in one part of the outer surface showing the effects of the rubbing use to which it had been put. Spherical glass linen-smoothers continued in use until the 18th and 19th centuries. They were found frequently in late Viking graves in Norway, mostly female, and twenty-eight were listed by Petersen (1951, 328-9, Fig. 178) with only one dated as early as the 9th century. These are of solid glass, but one of blown glass was found in an earlier context, a Frankish woman's grave of the 7th century at Worrstadt, Rheinhessen (Haevernick and Haberey 1963, 131, Taf. 24, 3).

Both types of spherical linen-smoother occurred at Birka, solid forms in black or brown-green glass, or hollow-blown in lighter, translucent colours, with one of a different, oval shape. Many fragments of linen-smoothers, both solid and blown, have been found at Dorestad (Isings 1980, 233, Fig. 156, 1-4), and the general distribution appears to be confined to countries situated north of the Alps (Haevernick and Haberey, 1963, 135). Examples

found in Viking contexts in the British Isles were listed in 1963 (Haevernick and Haberey 1963, 133-4). Among subsequent finds in England there were four fragmentary examples of solid linen-smoothers at Thetford (Harden 1984, 116, Fig. 151, 3-5), and another solid glass version has been found in London in a late 9th-century deposit (Pritchard 1984, 67, Fig. 18, 13).

A second colour appears on fragments No. 15. Basically a light blue-green, they have the bright opaque yellow trails which were a common form of decoration in the mid-Saxon period, and which were frequently carried right up to the edge of the rim. These fragments could have been part of the vertical rim of a squat jar. Fragment No. 19 is in similar colours.

Fragment No. 10 (Fig. 34) is the most distinctive piece. The wall of this vessel is light green, extremely thin, with a slightly curved profile, i.e. it must be part of a bowl with a vertical wall. Applied vertically to this is a light green and opaque yellow reticella rod with a regular twist. The vessel is therefore identifiable as one of the most ornate produced in the Middle Saxon period, of which a complete example was found in grave 6 at Valsgarde (Arwidsson, 1942, colour plate Taf. 30; Baumgartner and Krueger 1988, 70, No. 12), demonstrating that the reticella trails were applied both horizontally round the body and vertically from the base. The same pattern of trails also

occurs less often on squat jars of the same colouring (Baumgartner and Krueger 1988, 73, No. 15).

Decoration of vessels by the application of reticella trails is an important feature of glass production in the Middle Saxon period, and the process has attracted a considerable amount of discussion (Hunter 1980; Evison 1983a, 1983b; Nasman 1986, 76ff; Baumgartner and Krueger 1988, 69ff; Koch 1987, 1, 265-7). The latest find is that furthest north, in the Lofoten Islands (Munch *et al.* 1986). Fortunately the vessels ornamented by reticella trails stand a good chance of survival, at least as fragments, as the trails themselves are sturdy and they often acquired increased solidity when applied close together in parallel lines. In the case of the Valsgarde bowl type the rim was equally distinctive as yellow trails were applied right up to the lip, and then the rim was folded over outwards, enclosing the applied yellow trails and a hollow space inside. Fragments of the Valsgarde type of bowl have also been found at Dorestad, Holland (Isings 1980, Abb. 8), Eketorp II and Helgo, Sweden (Nasman 1986, 76ff.), Esslingen, Germany (Haevernick 1979, pl. 1, 2), and in England at Whitby, Yorkshire (Evison 1988b, Fig. 6), Wicken Bonhunt, and Barking, in Essex (Evison 1988b, Fig. 7) and Ipswich and Brandon in Suffolk. It is likely that there are others at sites which have not yet been published.

The distribution of reticella threads on vessel

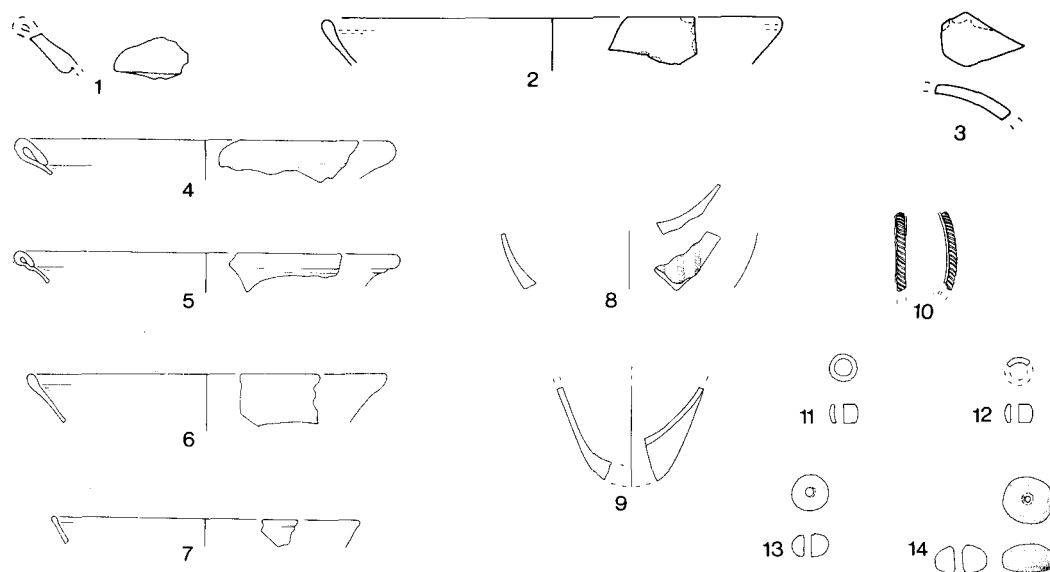


Fig. 34. Jubilee Hall and Maiden Lane: The glass (Nos. 1-4 Jubilee Hall; Nos. 5-16 Maiden Lane).

glass is so far centred mostly at sites in the vicinity of the North Sea and the Baltic (distribution maps: Evison 1983a, Fig. 2; 1983b, Fig. 7; Nasman 1986, Fig. 9; for recent additions see Evison 1988b, 240; and Baumgartner and Krueger 1988, 69). The dates of the find contexts belong in the main to the 8th or 9th centuries, but cannot be more precisely established. The earliest datable occurrences may have been in Sweden in the middle of the 7th century, which is regarded by Nasman as the date of the well-furnished grave 6 at Valsgarde, and of the second phase of the settlement at Eketorp (Nasman 1986, 80ff). A recent discussion of the probable place of manufacture by Nasman was too early to take account of the preliminary publication of the excavation at San Vincenzo in Italy, where a glass oven was found in company with reticella rods, vessel fragments and a crucible containing glass in a context so far identified as being 9th century (Moreland 1985). Although therefore this discovery suggests the possibility that reticella rods were actually made in Italy in the 9th century, the time when it began and whether there was continuity from the Roman period is not yet clear, and the source of supply in the 8th century is still in question, although fragments of the specific Valsgarde 6 bowl type are so far more numerous in England.

The Jubilee Hall fragments are types which belong to the late 7th to 9th century. The forms of glass vessel found at Maiden Lane are therefore the unstratified reticella bowl and possible squat jars Nos 15 and 16, which belong to the 7th or 8th century; tall palm cups, Nos 3, 5, 9 and 19, which were current mostly in the 8th century; funnel beakers, Nos 6 and 7, which belong mostly to the 9th century; and dark brown and dark olive colours, which occur in Middle Saxon contexts. The typological sequence of the tall palm cups and funnel beakers accords at Maiden Lane to some extent with the dating indicated by the coin of Coenwulf (AD 796–c. 805) found in the fill of pit (261) containing the palm cups and one funnel beaker, for the pit pre-dates the 9th-century ditch containing another funnel beaker.

The monochrome barrel- and disc-shaped beads, Nos 11–13 (Fig. 34), are common types which have a long life, occurring in the Early Saxon period as well as later. The forms appeared regularly in pagan cemeteries, such as the Buckland Estate, Dover (Evison 1987, barrel—Text Fig. 11, B10; disc—Text Fig. 11, B01), and continued into the Viking period, as may be seen from the beads in the 9th-century Hon Hoard in Norway (Graham-Campbell 1977, plate 2). Amber beads continued in use from the early to the Middle Saxon period,

although the usually rough shapes found in the pagan graves gave way to more carefully worked shapes like the smooth disc of No. 14 (Fig. 34).

The glass fragments found at these two sites are in relatively small numbers and scattered, and so cannot represent any commercial activity such as manufacture or an importing warehouse centre, either of which would be appropriate to the emporium of Anglo-Saxon London. They appear rather to represent domestic use over a period of a hundred years or more.

## CATALOGUE OF GLASS

Measurements given are maximum length and thickness (in mm):

1. (Fig. 34). Light blue-green, small bubbles, one large bubble in fold. The lower edge of a deep folded rim of a palm cup.  $22 \times 1.5$ mm, diameter of mouth c. 90mm. JUB (60), SF. 122.
2. (Fig. 34). Vivid green-blue fragment of rim slightly thickened and turned in, small bubbles, scratched surface.  $24 \times c. 1$ mm, diameter of mouth c. 100mm. JUB (51), SF. 121.
3. (Fig. 34). Light blue-green fragment of spherical shape, minute bubbles. Scratches on part of outer surface.  $21 \times 2.5$ –3mm. JUB (120), SF. 120.
4. (Fig. 34). Light blue-green, hollow rim folded to the inside; palm cup.  $37 \times 1$ mm. Diam. c. 100mm. MAI (376), SF. 105.
5. (Fig. 34). Light blue-green, hollow rim folded inwards, elongated palm cup.  $29 \times 1$ mm. Diam. c. 100mm. MAI (266), SF. 75.
6. (Fig. 34). Light blue-green, slightly thickened rim; funnel beaker.  $24 \times 1$ –2mm. Diam. c. 80mm. MAI (266), SF. 126.
7. (Fig. 34). Very light green—colourless, small bubbles, smoothed rim; funnel beaker.  $10 \times 1$ mm. diam. c. 80mm. MAI (311), SF. 29.
8. (Fig. 34). Light green, small bubbles, vertical rippling; probably near the base of an elongated palm cup.  $19 \times 1$ –3mm. MAI (375), SF. 120.
9. (Fig. 34). Light green-blue, iridescent, base of elongated palm cup.  $28 \times 1$ –4mm. MAI (265), SF. 77.
10. (Fig. 34). Light green vessel, very thin wall slightly curved, vertical applied light green and yellow reticella rod regularly wound; bowl shape.  $21 \times 2.5$ mm. MAI unstrat., SF. 6.
11. (Fig. 34). Blue-green bead, barrel-shape. MAI (175), SF. 60.
12. (Fig. 34). Green bead fragment, barrel shape. MAI (250), SF. 74.
13. (Fig. 34). Dark blue or black bead, iridescent, disc-shaped. MAI (345), SF. 39.
14. (Fig. 34). Amber bead, disc. MAI (376), SF. 110.
15. Light blue-green, two fragments, one a simple, smoothed rim, the other a wall fragment. The surface is roughened and the shape twisted by heat. Decoration by fine, opaque yellow horizontal trails to the edge of the rim. 19mm and 13mm  $\times$  2–2.5mm thick. JUB (162), SF. 35.



16. Light blue-green, globular form, top of vertical looped trail.  $15 \times 1.25$ mm. JUB (15), SF. 142.  
 17. Light blue-green, small bubbles, iridescent.  $23 \times 1$ mm. JUB (109), SF. 141.  
 18. Green bead fragment. JUB (18), SF. 6.  
 19. Light blue-green, small bubbles, remains of yellow trail in near-empty channel.  $10 \times 1$ mm. MAI (318), SF. 150.  
 20. Light yellow-brown, ?fluted moulding.  $8 \times 0.5$ mm. MAI (318), SF. 151.  
 21. Two fragments, dark brown opaque.  $14 \times 2$ mm,  $10 \times 1$ mm. MAI (219), SF. 128.  
 22. Dark olive.  $16 \times 1$ mm. MAI (243), SF. 97.  
 23. Light blue streaky.  $7 \times 0.5$ mm. MAI (293), SF. 33.  
 24. Very light green, iridescent, one fine trail.  $10 \times 1$ mm. MAI (174), SF. 32.  
 25. Light blue-green, ?near base of palm cup.  $21 \times 5-6$ mm. MAI (253), SF. 90.  
 26. Light blue-green, iridescent, bubbly, spherical shape.  $355 \times 2-4.5$ mm. MAI (337), SF. 61.

## SCIENTIFIC ANALYSIS OF THE GLASS FROM MAIDEN LANE USING INDUCTIVELY COUPLED PLASMA SPECTROMETRY

by Michael Heyworth and Stanley Warren

The analytical technique of inductively coupled plasma spectrometry (ICPS) is currently being applied to the study of Saxon and early medieval glasses in a major research Project at the University of Bradford. This analytical programme includes a small number of fragments of glass from recent excavations at Maiden Lane. The results have yet to be assessed in the overall context of the current work and what follows is a preliminary interpretation of the London glass data.

Table 14. Composition of the glass fragments from Maiden Lane

		No 25a	No 25b	No 8	No 26	No 9	No 6	No 4	No 5
Al <sub>2</sub> O <sub>3</sub>	(%)	2.80	2.85	2.80	1.68	2.95	3.10	2.80	2.89
Fe <sub>2</sub> O <sub>3</sub>	(%)	0.69	0.71	0.89	0.70	1.08	1.26	0.96	1.10
MgO	(%)	0.91	0.91	0.78	1.76	0.84	0.85	0.82	0.87
CaO	(%)	7.37	7.54	7.21	7.23	7.35	7.37	6.92	7.12
Na <sub>2</sub> O	(%)	15.7	15.7	15.7	18.0	15.4	14.4	15.6	15.2
K <sub>2</sub> O	(%)	1.40	1.33	1.18	1.70	1.42	1.57	1.36	0.59
TiO <sub>2</sub>	(%)	0.11	0.11	0.12	0.15	0.14	0.16	0.14	0.15
P <sub>2</sub> O <sub>5</sub>	(%)	0.16	0.16	0.40	0.30	0.45	0.65	0.46	0.47
MnO	(%)	0.30	0.31	0.43	0.09	0.48	0.45	0.48	0.53
Pb	(%)	0.04	0.04	0.18	0.00	0.64	0.59	0.67	0.62
Sb	(%)	0.03	0.03	0.13	0.00	0.19	0.20	0.23	0.22
Ba	(ppm)	2440	2470	2430	1450	2890	2920	2690	2950
Ce	(ppm)	21	21	24	20	27	29	23	26
Co	(ppm)	8	8	12	5	16	15	22	19
Cr	(ppm)	20	19	20	23	20	28	27	22
Cu	(ppm)	721	738	4490	96	3550	6200	4480	4080
La	(ppm)	1	1	1	1	1	1	1	1
Li	(ppm)	456	467	722	266	760	836	722	874
Nb	(ppm)	3	3	3	3	4	4	4	4
Ni	(ppm)	29	20	23	15	25	27	24	27
Sc	(ppm)	2	2	2	2	2	2	2	2
Sr	(ppm)	463	467	445	569	430	411	428	434
V	(ppm)	18	18	20	17	23	24	23	24
Y	(ppm)	9	9	10	6	11	12	10	10
Zn	(ppm)	52	35	110	25	101	123	98	106
Zr	(ppm)	46	46	47	6	56	53	42	61
SiO <sub>2</sub>	(%)	70.1	69.9	69.4	68.2	68.3	68.4	68.7	68.4
Colour		Light Blue/ Green	Light Blue/ Green	Light Green	Light Blue/ Green	Light Blue/ Green	Light Blue/ Green	Light Blue/ Green	Light Blue/ Green
Fe/Mn ratio		2.3	2.3	2.1	7.8	2.3	2.8	2.0	2.1
Vessel type		Palm Cup	Palm Cup	Palm Cup	Roman form	Palm Cup	Funnel beaker	Palm Cup	Palm Cup

The ICPS technique gives compositional data for a wide range of elements at the major, minor and trace levels. This is particularly important for the analysis of glass where major and minor elements determine the general type of glass and minor and trace elements have an important influence on its colour. In the present programme data was obtained for 27 oxides and elements:  $\text{Al}_2\text{O}_3$ ,  $\text{Fe}_2\text{O}_3$ ,  $\text{MgO}$ ,  $\text{CaO}$ ,  $\text{Na}_2\text{O}$ ,  $\text{K}_2\text{O}$ ,  $\text{TiO}_2$ ,  $\text{P}_2\text{O}_5$ ,  $\text{MnO}$ ,  $\text{Pb}$ ,  $\text{Sb}$ ,  $\text{Ba}$ ,  $\text{Ce}$ ,  $\text{Co}$ ,  $\text{Cr}$ ,  $\text{Cu}$ ,  $\text{La}$ ,  $\text{Li}$ ,  $\text{Nb}$ ,  $\text{Ni}$ ,  $\text{Sc}$ ,  $\text{Sr}$ ,  $\text{V}$ ,  $\text{Y}$ ,  $\text{Zn}$ ,  $\text{Zr}$  and  $\text{SiO}_2$ . The figure for silica was obtained by difference as the silica is removed in the sample preparation procedure, described in Heyworth *et al.* forthcoming.

Eight analyses were undertaken on seven glass fragments from the Maiden Lane excavations (one fragment was sampled twice to check analytical reproducibility). The full compositional data are contained in Table 14. All the glass is of the durable, soda-lime-silica type, with some variations in composition.

Of particular interest is the composition of fragment No. 26 which Evison (in this report) suggests may be a Roman vessel form. The composition of this fragment is different from all the other fragments in having significantly higher levels of magnesia, soda and potash and lower levels of alumina, iron oxide and silica. These oxides are considered to be associated with two major components of the glass; the sand and the alkali. This would suggest that the sherd was made of different raw materials to the other fragments.

The other fragments are from palm cup/funnel beaker forms (Evison, this vol., p. 120). The one funnel beaker sherd (No. 6), which is typologically later than the other fragments, can be distinguished from the earlier palm cup sherds on the basis of the lower soda content and higher iron and phosphorus oxide levels. The palm cup fragments are more similar, though fragment No. 25 (analysed twice) has a much lower copper and lead content.

The colours of the fragments are all very similar lightly tinted blue-greens, though fragment No. 8 is rather greener. There is much evidence for the use of manganese as a decolouriser in the post-Roman period (Sayre 1963) and it is interesting to note the lower manganese oxide content of fragment No. 26. The colour of these lightly tinted glasses is largely controlled by the iron and manganese contents, together with conditions in the furnace when the glass is made. The iron gives the colour and manganese acts as a decolourant. The Fe/Mn ratio for the palm cup fragments cluster within the range 2.0–2.3, whilst the ratio for the funnel beaker sherd is rather higher at 2.8. This

further supports the argument for the typological distinctions between the sherds.

Further work is now underway to compare the glass from London with contemporary glass from other sites in Britain. This work will be published in due course.

## THE ROMAN COINS

by M. J. Hammerson

Two Roman coins were recovered from Saxon deposits. Roman objects, including coins, are known from Saxon contexts in England (see p. 77). The function of Roman coins during the Saxon period is problematical. The rarity of the excavated evidence suggests that there is little that can, at present, usefully be said on why Roman coins might have been used during the Saxon period.

It would appear that coinage as a means of exchange was reintroduced in England in the late 7th century. It is unlikely that the Saxons would have relied for supplies of coinage on casual finds of Roman coins or hoards. There is little evidence of how such chance finds were used; although on the Continent they were sometimes used in jewellery.

If any understanding is to be gained of what appears to be little more than a casual practice of keeping accidentally-discovered antiquities, it is necessary to collect all available data as to the numbers, dates and contexts of Roman coins from Saxon sites. The author would be glad to receive details of any such finds.



Plate 7. Maiden Lane: A coin of Constantinopolis; obverse and reverse.

## CATALOGUE

1. House of Constantine, AE3, reverse type of GLORIA EXERCITVS (1 standard), AD 337–41 (Carson *et al.*, 1965, No. 87). The coin is heavily corroded and it is impossible to determine either its state of wear or whether it was a regular or an irregular coin. Its diameter, at 18mm, is large for this type, and it is therefore likely to be an official coin. JUB well (117) SF. 5.
2. Irregular copy, House of Constantine, AE 15mm, produced c. AD 340–46 (Pl. 7). This is a hybrid type, with obverse copying the VRBS ROMA issue of AD 330–35 (Carson *et al.*, 1965, No. 51) and reverse copying the contemporary CONSTANTINOPOLIS issue (Carson *et al.* 1965, No. 52). MAI context (283) SF. 84.

## THE MID-SAXON COINS

by Peter Stott

The present contribution discusses mid-Saxon coins from the first controlled excavations to indicate that, in the three centuries or so prior to Alfred's seizure of London in 886, the area along the north bank of the Thames to the west of the present City contained considerable habitation and activity. Before the results of work at the sites of Jubilee Hall and Maiden Lane put flesh on the bones of supposition, the evidence of coin-finds had been used to direct the course of future investigations. Martin Biddle (Biddle 1984), who helped to pioneer the idea of 'London on the Strand', noted the significance in this respect of coin hoards from the Middle Temple and Waterloo Bridge (Blackburn and Pagan 1986, nos 50 and 65). The 'Thames Hoard' and other *sceattas* from the Roach Smith collection may be demonstrated as originating probably from the Thames at the City of London. There is certainly no evidence to suggest, as Biddle has, that they were discovered or deposited in the northern foreshore between Blackfriars and Charing Cross (Rigold and Metcalf 1984, 254; Stott, 1991). Biddle also noted a lone single find, a 'Witmen' tremissis found in 1848 at Blackfriars (Sutherland 1948, 90, No. 62a; Stott 1991, No. 1).

Further coins exist which were discovered prior to 1984 and which are relevant to these investigations, but their significance has only emerged in retrospect as a result of the increased interest.

A hoard of coins of Burgred appears to have been discovered c. 1895 at Westminster Bridge, although doubt has been cast over whether this can be distinguished from the find at Waterloo Bridge (Blackburn and Pagan 1986, No. 68; Pagan

1965, 24). Whatever the actual findspot, a coin of Burgred in an American collection is recorded as having been found at Westminster Bridge and may be from this hoard (Brady 1982, No. 207), while an anomalous *sceat* in the Waterloo Bridge hoard is probably best regarded as a separate, single 8th-century deposit discovered coincidentally with the 9th-century hoard (Metcalf 1986, 2).

Known single finds are a series T *sceat* from Lambeth Bridge (Metcalf 1986, 2; Stott 1991, No. 42), a coin of Coenwulf from Fleet Street (Blunt, Lyon and Stewart 1963, 51, No. 11; Stott 1991, No. 56), of Baldred from Lambeth Bridge (Blunt 1974; Stott 1991 No. 61), of Burgred from Northumberland Avenue (Pagan 1965, 22; Stott 1991, No. 65) and of Alfred ('Lunette' type) from Lambeth Bridge (Stott 1991, No. 67). At the time of writing, a further four *sceattas* and a coin of Ecgerht of Wessex, all from excavations conducted by the Museum of London in the so-called Strand area, have been discovered since the three coins under consideration here, but these will be discussed in a future publication (the Ecgerht is included in Stott 1991, No. 62).

Coin finds alone, therefore, provide an impressive group of evidence for activity, possibly commercially based, in the area to the west of the City in the mid-Saxon period. This is particularly remarkable when compared with finds of coins of the post-Alfredian period, which reveal an almost exclusive concentration within the intra-mural City, and a total absence from the Strand area. It should, however, be noted that this situation was not reversed in the mid-Saxon period, for coin finds of the time are known from the City area. It cannot thus be claimed that the area occupied by Roman London was completely deserted by succeeding inhabitants in favour of the Strand area (Stott, 1991).

Finds of *sceattas* from London have been listed elsewhere (Rigold and Metcalf 1984, 254–255; Stott 1991, 305–8). The present two finds have the distinction of being the first found as a result of archaeological excavation in central London, and thus the first with indisputable, precise findspots where the context of deposition can be held under close scrutiny. Collectively, finds of *sceattas* from London complement the evidence of discovery elsewhere by demonstrating that, in comparison with coinages of the succeeding two centuries, the currency of *sceattas* was very large, which apparently suggests that their period of production witnessed a wider acceptance of a money-based economy than either the preceding post-Roman period or the succeeding period up to Eadgar's reform (Stott 1991). They also show London to have been one

of the main centres of the money-market in the south and south-east of England, although, if the rate of discovery is at all representative, the town's success in attracting custom must be qualified when compared with *Hamwic* and the East Kent ports (see below; Rigold and Metcalf 1984; Stott 1991, 282). There has been far more extensive excavation of *Hamwic* than of mid-Saxon London, which may suggest that this comparison is not entirely fair. However, given that only a small proportion of the total likely area of *Hamwic* has been investigated, and that further archaeology would probably yield similar quantities of *sceattas*, the primacy of *Hamwic* in relation to London and elsewhere in this respect should not seriously be doubted (Metcalf 1988, 17–18).

## CATALOGUE

### 1. *Sceat*

#### Series V (Type 7)

O: Bird and vine

R: She-wolf and twins

1.17g

Fill of a well, Jubilee Hall, Covent Garden, 1985

JUB 85 (120) SF2.

This is a corroded example and appears also to be worn, although the extent of wear is difficult to determine.

This *sceat* is probably of the mid-Secondary phase and is dated towards the end of the first quarter of the 8th century (Grierson and Blackburn 1986, 182 and 188). Finds of series V have previously been concentrated in East Kent, although finds from elsewhere at Bitterne, Southampton, Reading and now London equal these in number. However, the geographical concentration in

Kent still suggests that the mint for the series may have been in that vicinity (Metcalf 1984, 44). The she-wolf and twins design on the reverse is derived from Roman issues and is depicted again in the late 8th century on a coin of Aethelberht, King of East Anglia (North 1980, No. 431). Indeed, the scene appears to have been particularly associated with East Anglia (Campbell 1982, 67), and it has been suggested that it was a punning emblem adopted by the Wuffingas, the East Saxon royal house. However, the distribution of series V does not indicate an East Anglian origin.

### 2. *Sceat* (Pl. 8)

#### Series D (Type 8)

O: Cross with letters (undecipherable)

R: Standard

1.20g

Maiden Lane 1986

MAI 86 (216) SF8.

This example exhibits minimum wear.

The distribution of finds of series D indicates a continental, very likely Frisian, origin (Op den Velde, De Boone and Pol 1984, 127–128). A number of single finds have been made in England, but the bulk of the series from this country comes from the Aston Rowant hoard (*Coin Hoards I*, 1975, 87) where it accounts for 179 of the full hoard of 324 coins. Both on the continent and in England, Type 8 is less common than Type 2c, the other type included under series D. In the Aston Rowant hoard, for example, there were 17 examples of Type 8 against 162 of 2c. The geographical distribution of Type 8 mirrors that of 2c, while in England, with the exception of Aston Rowant, it is notably limited to the east coast, with finds from Yorkshire, East Anglia, Kent and London providing no clue to any mint-site in this country and reflecting a likely origin across the North Sea (Op den Velde, De Boone and Pol, *ibid*). Type 8 may be regarded as, a double-reverse issue as it is related to its series D companion by the use of the 'cross-and-letters' reverse, while the standard is used as a reverse on series C and E. It is dated to the first two decades of the 8th century (Grierson and Blackburn 1986, 188).

Finds of foreign currency, where they occur in significant numbers, may be taken as an indicator of international trade, and there are sufficient finds of foreign *sceattas* to demonstrate that there must have been few, if any, restrictions on the circulation of foreign currency in England. This appears to be the first series D to have been found in London, and on the assumption that London was a major international port, more might have been expected prior to this. However, finds of foreign *sceattas* in London interestingly fall short of those found in *Hamwic* and East Kent. The three main series of continental *sceattas* distinguished by Metcalf, series D, E and X, account for approximately 15% of the total number of *sceattas* found singly in London, whereas in both *Hamwic* and East Kent, the proportion is in the region of 25% (Metcalf 1984a, 161; the London proportions are according to Rigold and Metcalf 1984, with the addition of the present example, a series E from Barking Abbey—Stott 1991, No. 15, and a series X from Rotherhithe—*Brit Num Journ* 57, 137.). This evidence adds further weight to the proposition made elsewhere (Stott 1991, 282) that, on the

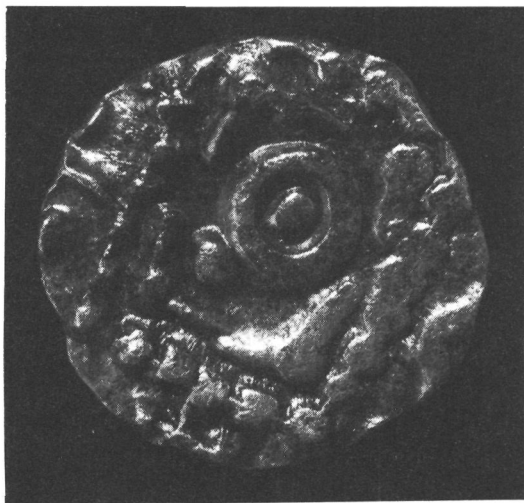


Plate 8. Maiden Lane: A series D type 8 sceat (photo: Museum of London, Louise Woodman).

basis of the volume of *sceatta*-finds, London appears to have played a role in the money-market, both locally and internationally; that was secondary to that played by *Hamwic* and the East Kent towns.

### 3. Coenwulf

Group I (796–c. 805)

O: M in centre (for Mercia)

COENVVLFRFX

R: Tribrach moline of three lines

IB./:B./:A.

Ibba, London

(cf Blunt, Lyon and Stewart 1963, Cn16)

1. 09g; 225

Pit of domestic refuse, Maiden Lane, 1986

MAI 86 (266) SF68.

This coin has no wear, but is slightly bent.

Two others of the same variety and moneyer have been found previously. One is from Breedon-on-the-Hill, Derbyshire, while the other is possibly from Shropshire. This second coin shares the same obverse die as the present example (Blunt, Lyon and Stewart 1963, 51). On the basis of this distribution alone, there would be an inclination to relate the moneyer Ibba to a probable mint at Tamworth, the centre of Mercian royal power. However, it would appear that, from the time of Offa and through the 9th century, coin production for both Mercia and Wessex was concentrated in the south-east (Blunt, Lyon and Stewart 1963; Pagan 1986) and Stewart has demonstrated why Ibba should be associated with a mint at London (Stewart 1986, 29–33).

## THE METALWORK

by Lyn Blackmore

### COPPER ALLOY

1. (Fig. 35, 1). Key comprising a square-sectioned shaft and a flattened baluster terminal (7mm) decorated with three grooves. A little below the mid-point of the shank (41mm and 51mm below the terminal) are two further grooves. The key was bent in antiquity above the prongs, which are 15mm long and 6mm apart. Keys are rare in stratified Saxon deposits apart from graves, although several examples have been found, notably at the settlement site of West Stow (West, 1985). The Jubilee Hall find is rather delicate for a key; the most common type has a more substantial 'T' shape similar to the girdle hanger. JUB pit (28) fill (29) SF. 7.

2. (Fig. 35, 2). Perforated object of unknown function, made from a single strip of copper alloy 41mm long and 2mm thick, which tapers slightly from 10mm at the rounded, perforated end, to 7mm at the broken end. The decoration on both sides comprises three parallel lines across the approximate mid-point of the surviving portion, below which is a diagonal cross. The fact that the object is decorated on both sides, and moreover broken, suggests it may have been part of a key or girdle hanger rather than a strap end (L. Webster pers. comm.). JUB pit (4), SF. 1.

3. (Fig. 35, 3). Mount with attachment loops, 45mm long with a maximum width of 18mm; the 'butterfly' shape is approximately symmetrical, with two rounded lobes or 'wings' on either side of a roughly square centrepiece. This is indented at top and bottom, while each lobe has a small projection at the midpoint of the curve. The cast decoration is indistinct due to corrosion, but appears to be in the 'chip-carved' style, with two diamonds enclosed by an arc at either side. This may be from a belt or a harness. The form appears to be a North European type, and similar objects have been found at Birka, but no exact parallels are known (L. Webster pers. comm.). MAI layer (338), SF. 57.

4. (Fig. 35, 4). Buckle plate(?) comprising a rectangular plate with two rivet holes at the corners, and a ? third rivet through the centre and two prongs. MAI ditch (292) layer (295), SF. 28.

5. (Fig. 35, 5). Pin or toilet implement with perforated head for attachment to a chain, of which one link remains in place. Surviving length 44mm. MAI layer (344), SF. 55.

6. (Fig. 35, 6). Pin or toilet implement with perforated head (slightly bent). Length 53mm. MAI layer (344), SF. 42.

7. (Fig. 35, 7). Part of a chain with two types of link, a flat 'S' and a twisted 'S'. MAI layer (344), SF. 144.

The function of the above three items is uncertain; the two pins may have been 'link pins' or 'union pins' joined by the chain to form a late example of a form of dress accessory found in earlier Saxon graves, for example in the 7th-century cemetery at Long Wittenham (S. Ross, pers. comm.). However, as part of a third pin was found in the same feature (No. 13) it is possible that these were all part of a set of toilet articles suspended from the belt on a chatelaine chain. A typical set of toilet implements comprises one or two pin-like tools for cleaning the nails and teeth, and a spoon-shaped 'ligula' for cleaning the ears. The chatelaine is most common in the 7th century, although the practice of carrying toilet articles and tweezers appears less common in 7th- to 9th-century graves than previously; tweezers are more commonly found in male than female graves (Owen-Crocker, 1986, 47). It is suggested that the fashion for chatelaines died out in the 8th or 9th century (*ibid.*, 101).

8, 9. (Fig. 35, 8, 9). Two dress or garter hooks, one (SF. 100) with seven perforations, the other (SF. 101) with eight. Such hooks date from the 7th-9th centuries, but the type continues into the 12th century. Anglo-Saxon examples have been found in cemeteries in Cambridgeshire, Oxfordshire and at Winchester, where they were found at the head or hip as well as at the knees (Owen-Crocker, 1986, 92; 126). A similar hook found at Schouwen in Holland has an all-over ring and dot decoration (Capelle 1978, Fig. 16, No. 80). MAI context (245) SFs. 100, 101.

10. (Not illustrated). Composite object of unknown function, possibly a box fitting or from a musical instrument. X-radiography suggests that this comprises a piece of wood c. 2mm thick (now carbonised) between two copper alloy plates held together by two nails. At the exposed end the wood is 'rounded' as if complete. There is wood on both outside surfaces, but whether this is intentional

or from burial is unclear (H. Ganiaris, pers. comm.). JUB pit (59) fill (63), SF. 4.

11. (Not illustrated). Strip with rounded, perforated ends; no decoration. Length 49mm, width 5mm, thickness 1mm. MAI pit (237) fill (242), SF. 106.

12. (Not illustrated). Four fragments, 30 × 5mm and 50 × 5mm (two joining). The curving, expanding shape of these fragments suggests that they may derive from a miniature pair of shears, but one of the two non-joining fragments appears to be from a composite copper alloy/iron/wooden object, and has traces of replaced wood adhering. MAI pit (261) fill (264) SFs. 115, 116.

13. (Not illustrated). Shaft and point of a pin, surviving length 41mm. MAI pit (261) fill (265), SF. 87.

14. (Not illustrated). Three small fragments of pin shaft. MAI layer (276), SF. 104.

15. (Not illustrated). Shaft and point of a pin, surviving length 13mm. MAI ditch (292), layer (323), SF. 12.

16. (Not illustrated). Shaft and point of a pin, surviving length 10mm. MAI layer (339), SF. 143.

17. (Not illustrated). Two fragments of very fine wire found in the uppermost layer of the midden may be of Saxon or later date. MAI layer (348), SF. 172.

## LEAD

1. (Not illustrated). One small fragment of lead waste, bent back on itself. MAI ditch (292) layer (311), SF. 30.

## IRON

1. (Fig. 35, 10). Five joining fragments from a dish or frying pan with slightly convex base, c. 220mm in diameter, with a shallow rim c. 10mm. Made from a single iron sheet, surviving thickness 5mm; the underside is in very poor condition. Frying pans were used from the Roman period onwards, but are rarely found, and the interpretation of fragmented vessels relies heavily on finds from cemetery sites. In England the most common metal vessels in graves are hanging bowls of copper alloy. At Krefeld-Gellep, Germany, however, a range of well-preserved metal cooking vessels was found. These include a 3rd-century iron frying pan, and a copper alloy dish/bowl with loop handles from a late 6th/early 7th-century grave (Zabern 1986, Fig. 55; Fig. 164). A perforated sheet from *Hamwic* has been interpreted as part of a sieve colander (Hinton 1980, 75). JUB well (121), SF. 3; dump layer (51), SF. 8; pit (130), SF. 11; pit (116), SF. 12.

2. (Fig. 36, 1). Axe head, with traces of wood surviving inside the socket; the dimensions after conservation are 200mm across the upper edge, 60mm across the slightly rounded cutting edge. The depth of the socket is c. 55mm, the socket itself 40mm × 50mm. In form this resembles Wheeler's Type I woodsman's axe, a type which seems to have altered little from Roman times onwards (Wheeler 1927, 23, Fig. 6, Fig. 8, No. 1). The size of the blade, however, suggests that this may have been a finishing tool rather than a chopping implement (D. Bateman, pers. comm.). JUB pit (153), SF. 13.

3. (Fig. 36, 2). Knife blade with tang; total surviving length including tang 120mm, length of blade c. 72mm; the blade width is 15mm. This would appear to be an angled-back knife of West type D (West 1985 124, Fig.

240, Nos 18–28), although the poor state of preservation makes it difficult to be certain. The illustration is taken from the X-ray. JUB pit (107) layer (110), SF. 44.

4. (Fig. 36, 3). Large rivet with rounded head c. 30mm in diameter, rounded shank c. 10mm in diameter, and diamond-shaped rove 50 × 30mm in place. Length 75mm; the timbers held in place would have been c. 500–550mm thick. Although not as large as the possible boat nails from *Hamwic* (Hinton 1980, 75), it is nonetheless suggested that this may be from a small boat. Loose lozenge-shaped rivets have also been found at *Hamwic* (*ibid*). MAI ditch (292) layer (306), SF. 125.

5. (Fig. 36, 4). Composite wood and iron woolcomb, comprising a wooden block 12mm thick cased in iron, with a double row of staggered iron teeth. The original width of the mount was probably c. 40mm; the length is unknown. In all eleven teeth survive on each side, the longest being 78mm (ie. a total length of 90mm). There is no evidence for a handle. MAI context (284), SF. 83.

The structure of these tools did not change much from the Saxon period to the 18th century (Hoffman 1964, 284–6, 381–3, Figs 117–9). They were used in pairs, each comb consisting of one or two rows of pointed iron teeth, which may be straight or slightly curved, attached to a narrow wooden mount. The handle is fixed at right angles to the centre row of the teeth, which are normally 100–120mm long. The sequence of construction for this example would probably have been as follows:

1. Wooden block cut to size and holes drilled for the teeth.
2. Iron plate cut to size and holes made for the teeth.
3. Iron teeth inserted through the iron plate and through the entire thickness of the wood.
4. Iron plate wrapped around the wood and probably welded to the teeth on the upper side.

If found loose and fragmented, the teeth from such combs would be extremely difficult to distinguish from nails. A number of pointed iron objects found at Shaken-oak and at West Stow have however been provisionally identified as woolcomb teeth (Brodribb *et al.* 1972, 115; West 1985, 124); complete carding combs have been found at Wicken Bonhunt (West 1985, 124) and *Hamwic* (Pay 1987, 10).

Besides the knife (No. 3) fragments of four other knives were found:

6. (Not illustrated). Five joining fragments of blade and tang in very poor condition; insufficient survives to be sure of the profile. JUB gully (100), SF. 113.

7. (Not illustrated). The tip of the blade (surviving length 55mm); this appears to be of West type B (West, 1985, 124) with the back and cutting edge curving to a point. JUB unstratified, SF. 119.

8. (Not illustrated). The tip of an angle-backed knife blade, surviving length 45mm, maximum width 18mm. MAI pit (261) fill (265) SF. 78.

9. (Not illustrated). Two joining fragments from a knife with a rounded end and tang with twisted square section. Surviving length c. 82mm (tang c. 17mm, blade 65mm). The fracture suggests that the blade was formed by folding a sheet of iron around itself three times. This object is in very poor condition. MAI layer (376), SF. 111.

Both angle-backed knives and knives with curved backs

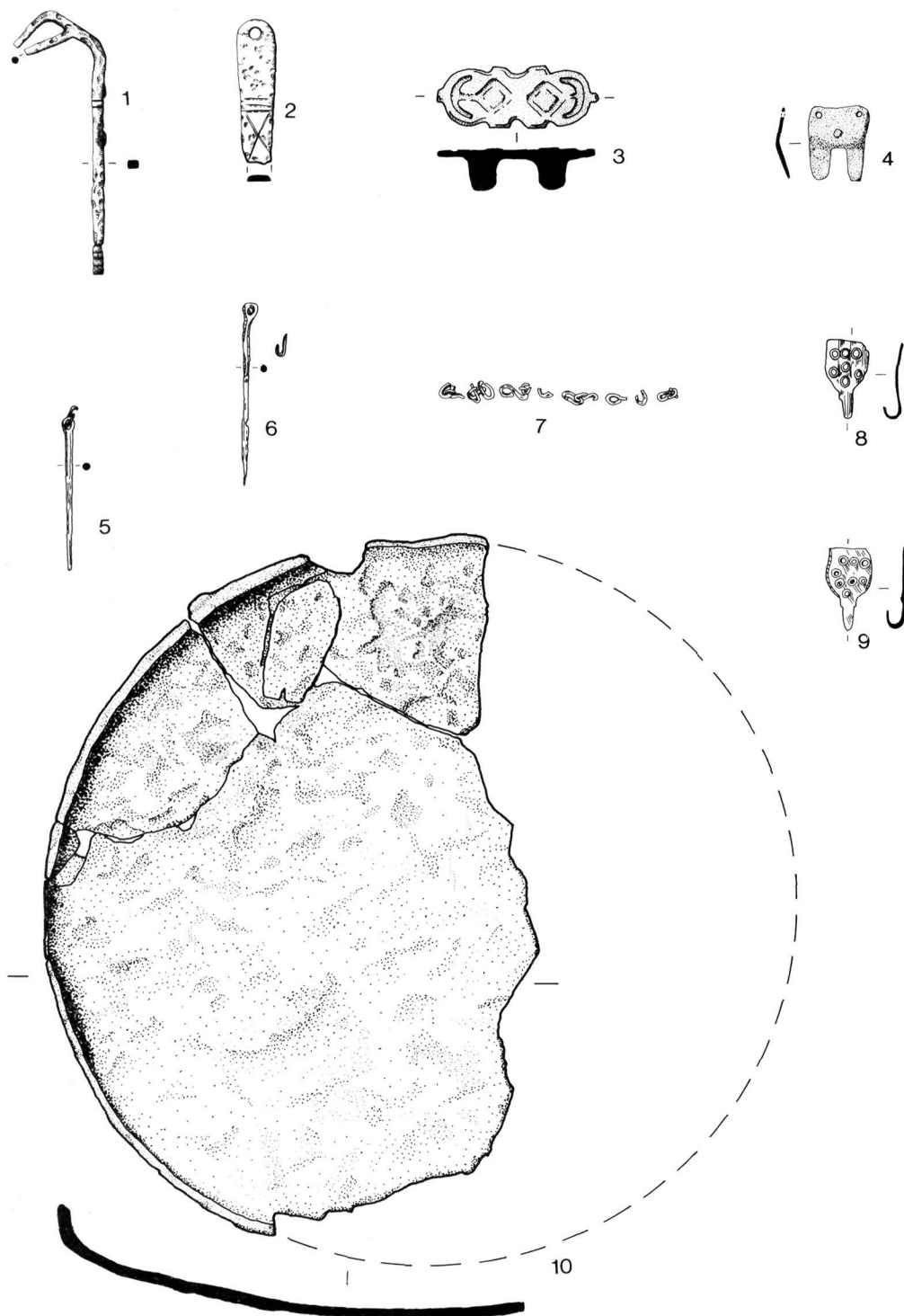


Fig. 35. Jubilee Hall and Maiden Lane: The copper alloy (Nos. 1-2 Jubilee Hall; Nos. 3-9 Maiden Lane).  
The iron frying pan (No. 10 Jubilee Hall).

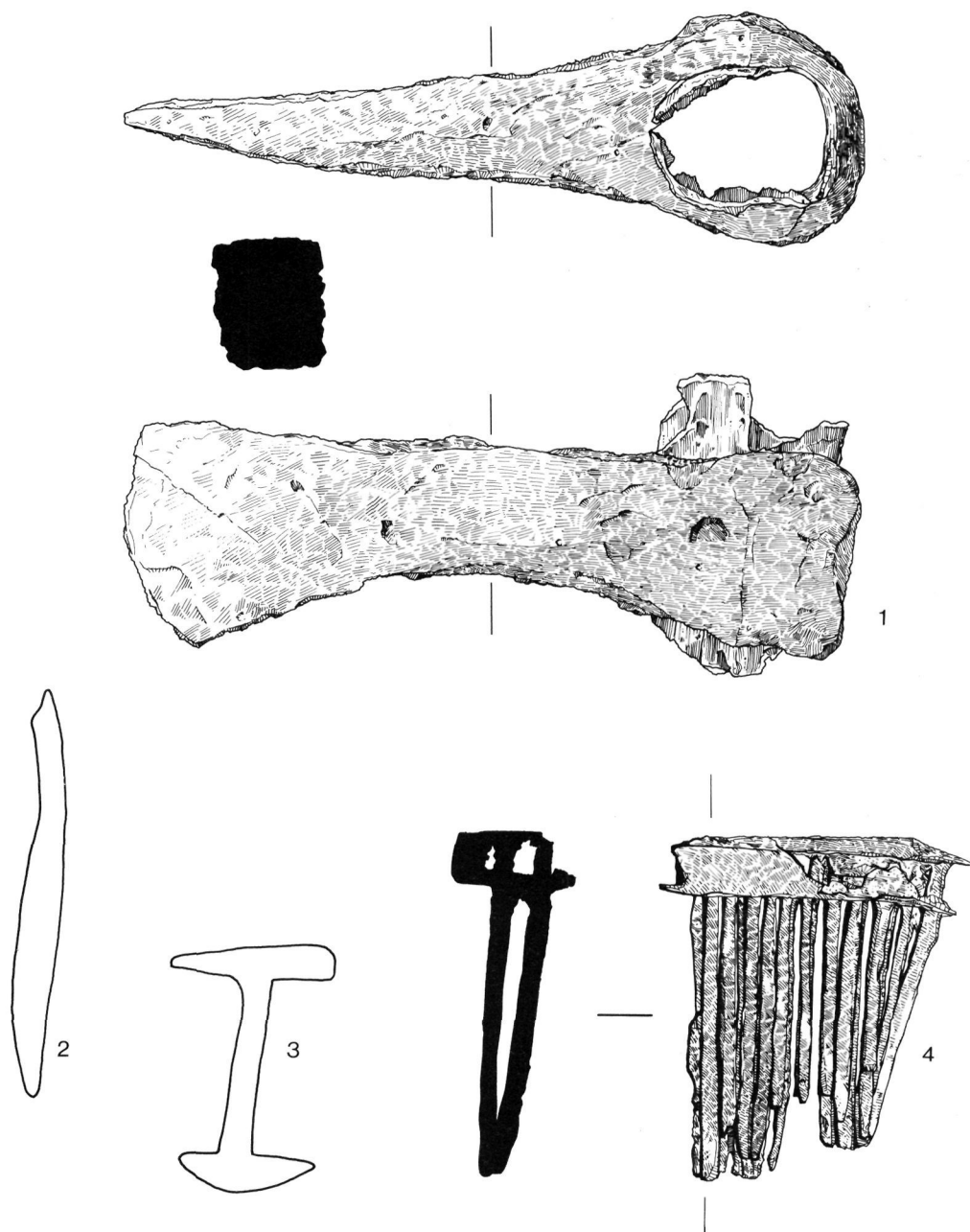


Fig. 36. Jubilee Hall and Maiden Lane: The iron (Nos. 1-2 Jubilee Hall; Nos. 3-4 Maiden Lane).



and blades are found at *Hamwic* (Addyman and Hill 1969, 65; Holdsworth 1980, 74). An angle-backed knife from Whitehall (Huggins, forthcoming) has a groove along the edge of the blade in the Late Saxon tradition, a trait also seen at Portchester (Cunliffe 1976, 200; Fig. 133, Nos 23–25).

The iron finds also include a number of large nails and other objects possibly associated with building work such as spikes and staples.

10. (Not illustrated). One 'L-shaped' ?bracket fragment. JUB well (111) fill (114), SF. 43.

11. (Not illustrated). Three fragments, two joining, of a rod 7 × 8mm in diameter, slightly curving, and possibly expanding at one end. JUB well (121) fill (124), SF. 116.

12. (Not illustrated). Three fragments from an unidentifiable flat object; one fragment of nail with head and part of the shank; one ?nail fragment. JUB pit (124), SFs. 41, 42.

13. (Not illustrated). Nail head with part of shank, and broken fragment of shank. JUB pit (126) fill (127) SF. 115.

14. (Not illustrated). Part of a staple. JUB pit (136) fill (137), SF. 118.

15. (Not illustrated). Head and shank of a very large nail or spike, surviving length 140mm, diameter of head *c.* 30mm, and the shank and point of a nail or spike, surviving length 72mm. Possibly from the same object. MAI pit (261) fill (265), SFs. 80, 81.

16. (Not illustrated). Staple; the lengths of the prongs are 45mm and 55mm respectively. MAI pit (237) fill (244), SF. 95.

17. (Not illustrated). Part of a staple, broken at the curve; surviving length 60mm. MAI unpublished context, SF. 127.

18. (Not illustrated). Nail head with part of shank; surviving length *c.* 50mm. MAI Ditch (292) layer (310), SF. 141.

19. (Not illustrated). Part of a spike; surviving length 90mm. MAI layer (339), SF. 51.

20. (Not illustrated). Part of a spike; surviving length 80mm, the diameter tapers from 30mm to 10mm. MAI layer (380), SF. 98.

21. (not illustrated). Roughly diamond-shaped sheet, slightly bent; dimensions 55 × 50mm × 10mm. MAI layer (376), SF. 107.

Other finds not included in the above categories are:

22. (Not illustrated). Part of a mount or socketed object with a projected diameter of 50mm, heavily encrusted on the outer surface with corrosion products, which contain some organic matter. This object is of most unusual construction, comprising a curved rivet plate *c.* 25mm across (surviving height 25mm) with two rivet holes, which has been folded back over itself concealing the rivets. The rivets would appear to have been copper alloy. JUB pit (19) fill (20), SF. 114.

23. (Not illustrated). Fitting or part of a key, surviving dimensions 30mm long with a squared end 10mm across. MAI layer (341), SF. 44.

## THE TECHNOLOGICAL MATERIAL

by Michael Heyworth and Paul Wilthew

Both the excavations at Jubilee Hall and Maiden Lane produced some technological material. However, the small quantity recovered does not suggest that any industrial activity was taking place on these sites. The material probably represents a background scatter of material such as is commonly found on settlement sites of all periods.

The site at Jubilee Hall produced a total of 2554g of technological material, most of which is iron-smithing slag. The smithing slag, which is produced during blacksmithing, was scattered over the site in pits (57), (59), (135), (139), (162) and well (117). Fragments of hearth lining, the vitrified clay lining of a hearth used at high temperatures and usually associated with ironworking, were found in pits (57) and (162). A small amount of fuel ash slag was found in pits (133), (136), and in well (117). Fuel ash slag is the result of a high temperature reaction between ash and silica-rich material such as sand or clay and is not necessarily associated with metalworking.

Evidence for non-ferrous metalworking was recovered from the site at Jubilee Hall in the form of a lump of lead-rich material which also contained copper and may be part of a litharge cake associated with refining precious metals. Two clay crucible fragments used in copper alloy working were also found in pit (126) and in the 'dark earth' (181). The crucible fragments were analysed using qualitative X-ray fluorescence and showed traces of copper, zinc and tin, which suggests that a gunmetal-type alloy was being melted. Some lead was also detected, which is likely to have been in the alloy as a minor component. This type of mixed alloy is common on mid-Saxon sites in southern England (Bayley 1988). The crucible fragments were too small to allow any reconstruction of their original form.

The excavation at Maiden Lane produced *c.* 300g of technological material. This was mainly iron-smithing slag and fuel ash slag from the 9th-century ditch (292) (fills (305)(306)(310)(324)), which also contained a fragment of hearth lining (fill (314)). Fuel ash slag was also found in layer (345) of the midden in Area C, while fragments of hearth lining and fuel ash slag were also found in pits (237) and (261), which pre-date the ditch.

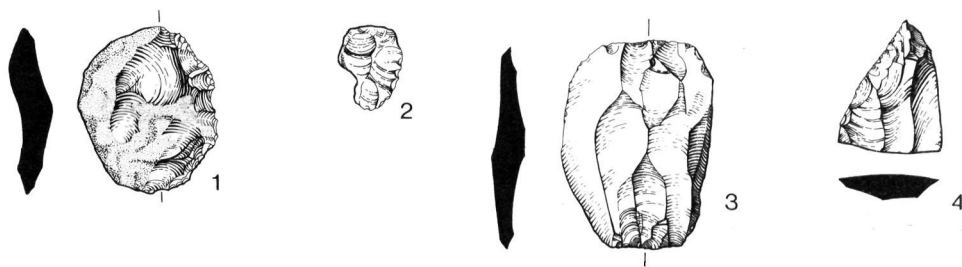


Fig. 37. Jubilee Hall and Maiden Lane: The flints (No. 1 Jubilee Hall; Nos. 2–4 Maiden Lane).

## THE FLINT

by N. Merriman

At Jubilee Hall a side scraper (Fig. 37, 1) was recovered during excavations. It is a residual find, and not diagnostic.

At Maiden Lane fourteen flint artefacts, probably all residual, were recovered. They comprise thirteen struck flakes (Fig. 37, 2, 3, 4), three with retouch, and one axe fragment re-used as a scraper. All of the flint used could have been derived locally from the river gravels.

As with many other residual flint finds in the London area, the assemblage could span several periods, from the Mesolithic to the Bronze Age. None of the finds, however, are exclusively diagnostic of a particular period, and it is most likely that they represent losses over a long time. The main significance of the assemblage is that it adds to the accumulation of evidence that the northern banks of the Thames in central London were definitely occupied at various stages before the Roman period (Merriman 1987).

## THE STONE

by Lyn Blackmore and David Williams

### INTRODUCTION

Fragments of worked imported stone were found on both sites, most of which derive from querns or hones. A few unworked fragments were also found. The petrological identifications were carried out by David Williams, whose full reports are available in the archives. The geological descriptions are incorporated at the relevant points below.

The majority of quernstone fragments are of volcanic rock from the Mayen-Niedermendig area of the Eifel Hills of Germany, a region well-known in both Roman and Saxon times for supplying

millstones and quernstones (Parkhouse 1976; Kars 1980; Peacock 1980). A few fragments made of non-local English stone, probably from Kent, are also present. While the possibility remains that these may be re-used Roman querns, the general lack of other Roman material on these sites makes it more likely that they are of Saxon date, and thus a further indicator of (?Anglo-Frisian) trade connections in the 7th-9th centuries, the more so as quernstone fragments from the same sources have subsequently been found at several other Saxon sites in the area, such as the Peabody site (Whytehead, forthcoming), the National Gallery (Cowie, forthcoming), Southampton Street, and Shorts Gardens (Connor 1990). A number of important questions, however, remain at present unresolved. It is not known, for example, if the querns imported into London were solely for use there, or if/how they were also distributed to other sites. Neither is it certain that the querns arrived ready-made. It is possible that they were imported half-finished for manufacture in London, as was the case at Dorestad, Haithabu, and possibly *Hamwic* (Parkhouse 1976, 185). At Dorestad, a number of highly abraded thick fragments of lava were interpreted as ballast which would have had a commercial value as well as a practical use (Parkhouse 1976, 186).

A study of the Dorestad lava querns showed that the stones may have been arranged in a number of ways (Parkhouse 1976). Two types of quern, rotating and oscillating, were defined, with five types of stone: lower stones, flangeless upper stones, flanged upper stones, and two types of upper stone with a stone rynd across the hopper. The Jubilee Hall and Maiden Lane fragments are all too small to allow reconstruction of any kind, but a few general observations are noted below.

The hones are all fragmented, but none appears to have been particularly distinctive in form. Most are of Kentish ragstone, with one possible Scandinavian import.

## GEOLOGICAL IDENTIFICATIONS

by David Williams

*Niedermendig Lava*

Most quernstone fragments are of a dark grey, fairly coarse vesicular lava, containing conspicuous dark phenocrysts of pyroxene. A small sample from each site was thin sectioned and examined under the petrological microscope. This revealed that the most prominent minerals are frequent grains of green and colourless clinopyroxene, mainly augite, set in a groundmass of small lath-shaped crystals of andesine/labradorite feldspar, opacite, leucite and some xenomorphic nepheline. The composition of the rock is particularly distinctive and it can be classified as nepheline-tephrite. This type of rock is found in the lavas of the Mayen-Niedermendig area of the Eifel Hills of Germany.

*Eidsborge schist*

One fragment of ?honestone from Jubilee Hall is a lightish grey quartz-mica-schist (origin unknown), perhaps belonging to Ellis' Type IA[1], a Norwegian ragstone from Eidsborge, Telemark, in central southern Norway.

*Grey Limestone*

A few quernstone fragments from both sites are of a grey glauconitic limestone, probably from the Hythe Beds of Kent (Smart *et al* 1966). Thin sectioning of fragments from both sites shows a granular mosaic of calcite grains with organic fragments. Glauconite and quartz occur as scattered grains.

*Glauconitic sandstone*

One ?quernstone fragment from Jubilee Hall is of a dark grey glauconitic sandstone (origin unknown).

*Grey glauconitic shelly limestone*

Two fragments of possible quernstone from Maiden Lane, possibly from the Lower Greensand of Kent (Smart *et al* 1966).

*Oolitic limestone*

One fragment from Jubilee Hall, of Jurassic origin.

*Kentish ragstone*

Three honestone fragments from Jubilee Hall and three from Maiden Lane are of a light grey sandy limestone; also one possible quern fragment from Maiden Lane. Thin-sectioning of fragments from each site shows a matrix of platy calcite crystals with frequent/abundant well-sorted angular quartz grains 0.10–0.20mm across, together with some glauconite and microfossiliferous grit. All five fragments are probably Kentish Ragstone from the Hythe Beds (Lower Greensand), which was widely used in the Roman and later periods as a sharpening stone (Moore 1983; Rhodes 1986). In his classification of Saxon and medieval honestones Ellis (1969) placed this stone in his Type IVB.

*Pennant sandstone*

Two fragments of ?honestone from Jubilee Hall are of a dark grey medium-grained sandstone containing quartz and micaceous grits. Possibly Pennant Sandstone from the Bristol and South Wales region.

*Calcareous sandstone*

One honestone from Jubilee Hall is of a well-bedded calcareous sandstone, light grey in colour, composed of angular or sub-angular quartz grains set in a matrix of platy calcite (origin unknown).

*Miscellaneous*

The few apparently unworked fragments of imported stone include a fragment of New Red sandstone, probably an erratic, and a piece of hard chalk from Jubilee Hall; from Maiden Lane are two irregular pieces of chalk, two irregular pieces of ?Lower Greensand, one piece of silica-rich rock, source unknown, and an irregular piece of shelly limestone with many fossil fragments and recrystallized calcite, possibly Purbeck Marble (from a medieval or later context).

## THE JUBILEE HALL STONE

by Lyn Blackmore

In all thirty-four fragments of lava quernstone were recovered, with a total weight of 8.895kg. No joins between contexts were found, but there are several joins within contexts, so that the maximum number of querns represented is eighteen. The fragments are generally substantial pieces from large quernstones, but the size and weight varies considerably, the lightest fragment being 48g, the heaviest (two joining fragments) 1536g.

Where both flat surfaces are present (thirteen fragments), the thickness of the quern can vary by several millimetres. It is thus difficult to draw any real conclusions, but two possible thickness groups are present. The first is 30–60mm thick, the second 70–90mm thick; these presumably represent upper and lower grinding stones respectively. Three fragments have one flat surface. Three pieces were found to have possible outer edges; the first, from fill (128) (SF. 19), comprises four joining fragments from a quern with a diameter of over 360mm. The thickness varies from 40mm at the outer edge to 50mm at inner break. The second, from pit (57) (SF. 20), is 70mm thick; the upper diameter is *c.* 360mm, the lower *c.* 380mm. The third, from pit (143) (SF. 150), is a small chip from the angle of a flat face and the outer edge, possibly burnt. One fragment from well (117) (SF. 21) appears to derive from the central hole.

The lava quern fragments were found in eight features, with most pieces coming from pit (158) (five fragments and six chips), well (117) (four fragments) and pit (163) (seven fragments). Eight possible quern fragments of sandy limestone were found, in pit (129), pit (133), pit (153) (two pieces) pit (163), and pit (161) (four pieces). This last feature also contained one ?quern fragment of glauconitic sandstone.

*The hones*

Six hones were found, of which three are of Kentish ragstone.

These are all well shaped with a rectangular or square cross-section, and were found in well (117) (SF. 38), pit (161) (SF. 26) and pit (162) (SF. 29). The others are of sandstone (well (121) SF. 32), calcareous sandstone (pit (158) fill (159) SF. 50), and Norwegian micaceous schist (pit (126) fill (127) SF. 27).

## THE MAIDEN LANE STONE

Twenty-one fragments of lava quern were recovered, with a total weight of 4.203 kg. Of these fifteen fragments were found in Area B, nine in ditch (292), four in pit (261), and one each in pits (217) and (237). Two fragments were found in Area A (pits (200) and (207)), two in Area C (layer (339) and pit (236)), and two in Area D (layers (280) and (376)). No joining fragments were found, either between or within contexts.

The fragments are generally smaller in size and more amorphous in shape than those from Jubilee Hall. No edge fragments were found, and only three pieces have two flat faces; two from pit (261) are 20–25mm and 42mm thick, the third, from layer (380), is 36mm thick. A further seven fragments have one flat face. Of these the largest, from pit (349), is over 75mm thick and weighs 862g; the flat face possibly has a white deposit and appears to be blackened. The flat surface of the smallest piece, from ditch (292), has acquired a smooth, highly polished surface through use. The remaining fragments are all very irregular, and may derive from waste chips as much as actual querns, so that it is impossible to draw any real conclusions about these pieces.

In addition to the above are one ?quernstone fragment of glauconitic limestone, probably from the Hythe Beds, from the midden in Area C (SF. 93), and two ?quernstone fragments of ?Lower Greensand (one in pit (207), the other residual).

*The hones*

Four hone fragments were found, one of fine-grained sandstone, with a hemispherical section from pit (245) (SF. 85) and three of Kentish Ragstone, from ditch (292) (SFs. 46, 185: flat rectangular section), and layer (347) (SF. 146, square section).

## THE WORKED BONE AND ANTLER

by Lyn Blackmore

## INTRODUCTION

Artefacts made of bone and antler were found at both sites, and it is clear that bone was worked within the settlement area. The number of finds from Maiden Lane, particularly antler off-cuts, is higher than that from Jubilee Hall, but the amounts involved are still small. The limited evidence from the various sites now excavated is more consistent with the general theory that bone was not worked in workshops at this time; but rather that simple domestic items such as pins were made by the individual as required, while specialist work such as comb manufacture was carried out by itinerant craftsmen (MacGregor 1989, 109–110). The most common objects are combs and pins; more unusual and important finds include a spoon and a handled comb from Jubilee Hall, and a decorated mount from Maiden Lane.

## JUBILEE HALL.

1. (Fig. 38, 1). The shaft of a highly polished bone object with a round section, made from the long bone of an ox-sized animal. Length 82mm, diameter 7mm, tapering slightly towards one end. The fracture suggests that this may originally have been a composite object such as a bodkin, but it may equally have been a bone threadpicker, a double-ended implement used in weaving (Farley 1976, 204, Fig. 18, No. 4; Fig. 22, No. 3; Fig. 25, No. 3). This would be consistent with the presence of two bone pins in the same context. Pit (135) SF. 37.

*Pins*

2. (Fig. 38, 2). Complete bone pin with perforated head, made from a pig fibula. Length 118mm. Pit (135) SF. 10.  
3. (Fig. 38, 3). Broken bone pin made from a pig fibula. Length 48mm. Pit (135) SF. 38.

This is a classic form of pin, made from a pig fibula with a perforation at the proximal end; the length of the pin depends on the size/age of the animal at death, but c. 120mm seems to be normal. The head may be unworked, as here, or rounded, as found at Walton (Farley 1976, 198, Fig. 14, no. 8). Pins of this type have been found on numerous Saxon sites, including Southampton (eg. Hodsworth 1980, 77, Fig. 15. 1).

*Combs*

Fragments from at least four combs are present, together with loose comb-teeth from pit (4) and well (111), which may derive from the combs described below.

1. (Fig. 38, 4). One tooth-plate fragment from a double-sided composite comb made of antler cortex, with large well-rounded teeth c. 20mm long surviving intact on both sides; the distance between the rows of teeth is 11mm. Pit (4) fill (5) (sieved sample), SF. 34.

2. (Fig. 38, 5). Two fragments from a double-sided composite comb made of antler. The larger comprises a complete tooth-plate secured between two undecorated, bevelled connecting plates by an iron rivet. The smaller comprises a fragment of double-sided tooth-plate with the connecting plate surviving on one side only. The tooth-plate is 30mm wide; on one side the squared teeth are large and well-spaced, up to 18mm long; on the other they are more closely spaced (none intact). The distance between the rows of teeth is c. 15mm, the ribs 14mm wide. The edges of the ribs are nicked by saw cuts made by cutting the teeth after the tooth-plate was in place between the ribs. Beamslot (47), fill (49), SF. 9.

3. (Not illustrated). One tooth-plate fragment with part of a rivet hole from a double-sided composite comb made of antler cortex, with small squared teeth c. 15mm long on one side, and 12mm on the other; the distance between the rows of teeth is c. 13mm. Well (111), fill (114) (sieved sample), SF. 36.

4. (Fig. 38, 6). Cylindrical comb handle made of antler. The surviving portion is 76mm long, but the whole comb would originally have been c. 140mm long. The section is oval, and tapers slightly from 25mm × 22mm at the end to 21.5mm × 19mm at the point where it has broken. There appears to be a perforation at the back of the base, possibly to allow suspension on a cord from a belt. On the front face, there is a notch at c. 65mm, with two smaller notches on the side for inserting and securing the lowest tooth plate. Pit (57), SF. 140.

The incised decoration comprises a central motif of two chevrons, each with three parallel lines, banded by two groups of four horizontal lines. The chevrons start at the mid-point of the handle above the hole and interlock around the circumference of the handle, with the diagonal running from bottom left to top right over that from top left to bottom right, to form a pattern of three diamonds. Around the base of the handle, c. 9mm below the central design, is a band of six incised horizontal lines. Above the central design, around the back of the handle, is a repeating pattern of widely spaced chevrons between groups of four horizontal lines.

NB. First published as a knife handle (Cowie and Whytehead 1989, Fig. 6).

Three types of comb were used in the Saxon period, single-sided composite, double-sided composite, and handled. These have been discussed by Addyman and Hill (1969, 75-7) and Roes (1963) amongst others. The first two types are of very similar construction. Early examples of single-sided combs tend to have an enlarged back, normally triangular or rounded. Later examples have a flatter back. At the Early-Middle Saxon site of West Stow (107 combs) single and double-sided combs were found in almost equal numbers (West, 1985). All three comb types are found at *Hamwic*, but the double-sided type is the most common. No single-sided composite combs have so far been recognised on any Middle Saxon site in London. Whether this is a reflection of the date of the settlement, of personal taste (or both), or survival factors is unclear; certainly fragmented examples would be hard to distinguish from double-sided combs.

The handled type of comb (which may itself be either single or double-sided) has generally been considered a

9th- to 10th-century type. This form is not common in England, with between only ninety and one hundred finds, and although the find spots are widely scattered, some forty examples nonetheless come from *Hamwic* (eg. Pay 1987, 14). The type is not unknown in London, with one example found at the Treasury site (Green and Thurley, forthcoming, Fig. 27, No. 1) and three from the Battersea area. One of these was found in the Thames at Wandsworth (Wheeler 1935, 152, Fig. 30; see also VCH London 1, plate facing p.158), another from the Middle Saxon site at Althorpe Grove, Battersea (S. McCracken, pers. comm.), and one unprovenanced from London (BM, M+LA 91, 4-18, 16 Franks collection). Another example has been found in the Thames at Runnymede (Fortnum 1886-89).

Similar combs are known on the Continent. One example has been found at Haithabu (Riddler, forthcoming), and five examples have been found at Dorestad (Roes 1965, 59, Fig. 27). It was formerly thought that these combs might be of Scandinavian or Frisian origin, but it now seems more probable that they are of English manufacture (Hodges 1980; Riddler, forthcoming). The decoration on combs of this type is quite standard, and normally consists of groups of incised grooves alternating with a zig-zag design; a small but distinctive group, which includes the Haithabu find, also has perforations through the handle (Riddler, forthcoming). It now seems likely that handled combs were made from the 7th to the 10th century, so that precise dating is difficult.

#### Other

1. (Fig. 38, 7). Small bone spoon with incised decoration at the junction of the bowl and the oval-sectioned handle, possibly made of antler. Broken at both ends; the surviving length is 45mm. This find is unique in London. Bone spoons have been found in *Hamwic* but are as yet unpublished (I. Riddler and D. Brown, pers. comm.). Well (117) SF. 126.

#### Bone and antler waste

1. (Not illustrated). One worked fragment from the mid-shaft of a long bone of an ox-sized animal, possibly an unfinished pin. Pit (140) sieved sample, SF. 124.

2. (Not illustrated). Two antler offcuts were found in well (117) (SF. 125, palm, partly sawn; SF. 123 cortex only, one end sawn), possibly from the same branch.

#### MAIDEN LANE

A total of 65 fragments of worked bone was recovered, including 29 fragments of antler waste (six fragments are possibly unworked). The worked bone was mainly concentrated in Area B, with nineteen fragments in ditch (292) (two ?unworked), ten in contexts pre-dating the ditch, and six in other features in Area B (one ?unworked). Four fragments were found in Area A (two ?unworked), seven in Area C (one ?unworked), and six in Area D.

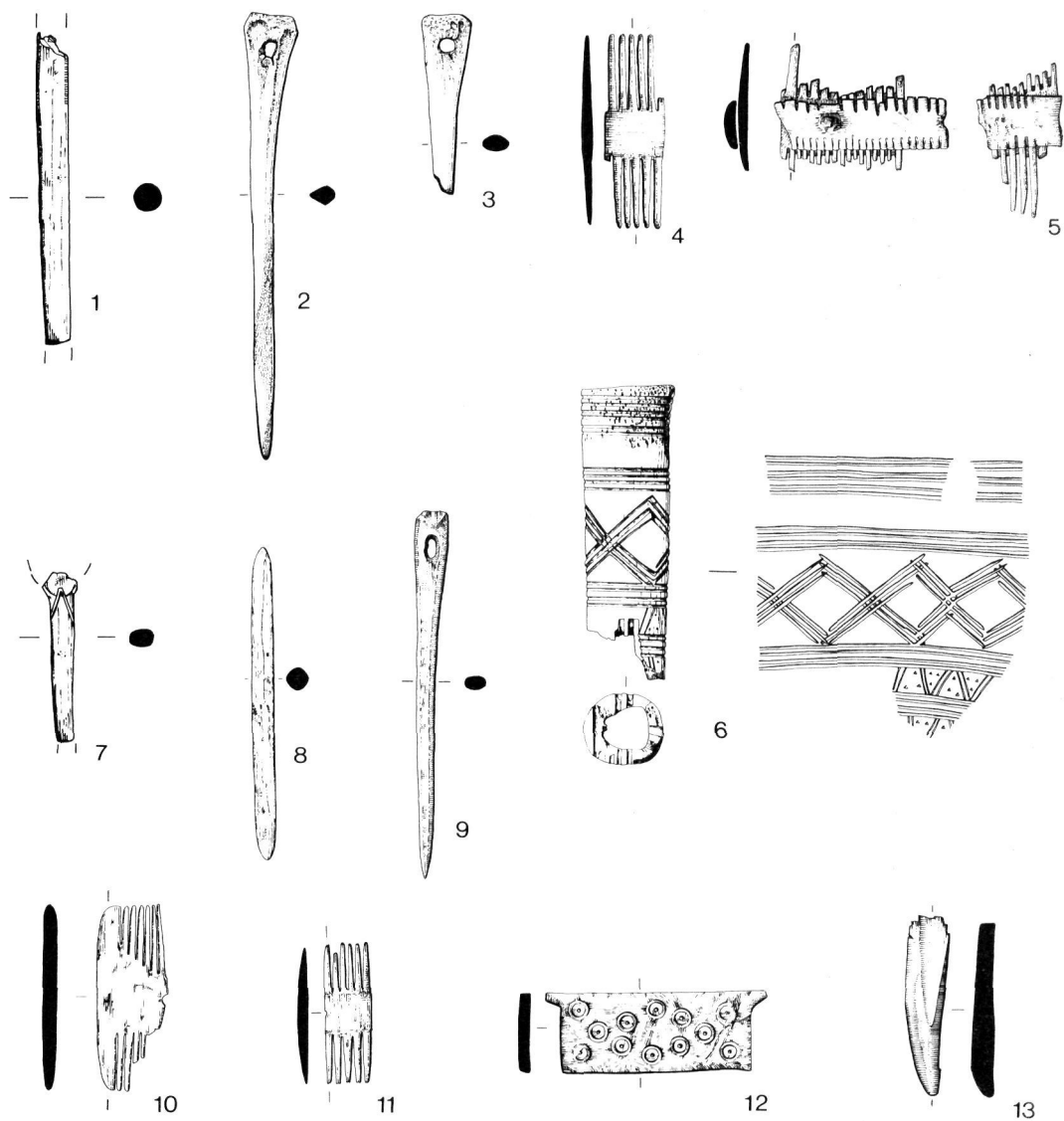


Fig. 38. Jubilee Hall and Maiden Lane: The worked bone (Nos. 1-7 Jubilee Hall; Nos. 8-13 Maiden Lane).

*Weaving tools*

1. (Fig. 38, 8). Complete pin beater, probably made from the shaft of a long bone of a cattle-sized animal, with a highly polished surface. Length 83mm, diameter *c.* 6.5mm. This type of tool is long-lived. A similar but larger example, thought to be of Early Saxon date, has been found by the DGLA at Harmondsworth, West London; mid-Saxon examples at Shorts Gardens in Covent Garden (Connor, 1990). Area B, pit (261) fill (266) SF. 76.

2. (Fig. 38, 9). Complete bone pin or needle with a very sharply pointed end and highly polished surface, made from the long bone shaft of a cattle-sized animal. Length 95mm. Area D, layer (379), SF. 134.

3. (Not illustrated). Part of the perforated head and shaft of a second pin, made from a long bone shaft. Surviving length 68mm. Area B, pit (261) layer (266), SF. 169.

*Combs*

Several comb fragments were found, but no complete or near complete examples. The larger pieces are illustrated; the unillustrated finds comprise one loose tooth (SF. 173, probably antler), and part of a connecting plate with parts of two rivet holes 15mm apart (SF. 114, antler), both from layer (379). Parts of two connecting plates with grouped incised lines were found in ditch (292) (fill (314), SF. 26; fill (307) SF. 27). Another fragment (pit (214) fill (216) SF. 167), with parts of three rivet holes 8mm and 11mm apart, may also be from a

connecting plate, although the close spacing of the rivets and thickness (3mm) are unusual. Two tooth plates with teeth on one side probably derive from single-sided composite combs (ditch (292) fill (314) SF. 17; layer (379) SF. 113, antler cortex).

Four rectangular blanks ranging from 54–56mm long and 13–23mm wide are probably unfinished tooth-plates. An unfinished connecting plate was also found (well (199) fill (201) SF. 11).

1. (Fig. 38, 10). End plate from a double-sided composite comb made of red deer antler cortex, with part of a rivet hole on the inner edge. On one side the six teeth are neatly graduated in size, rising from 10mm to 19.5mm; on the other side there is little difference in the length of the four surviving teeth. The surface of the tooth plate is slightly bevelled and polished; the underside is flat and rougher to the touch. Area C, layer (342) SF. 45.

2. (Fig. 38, 11). Tooth plate fragment with part of a rivet hole, from a double-sided composite comb made of antler. The teeth, set 8.5mm apart, are of different sizes, with five large teeth 14.5mm long on one side, to six teeth 13.5mm on the other. The upper face is convex and polished, the underside is flat and rough. Area A, pit (207) fill (209), SF. 3.

*Other*

1. (Fig. 38, 12). Decorative plate made from antler cortex, decorated with a roughly symmetrical incised ring and

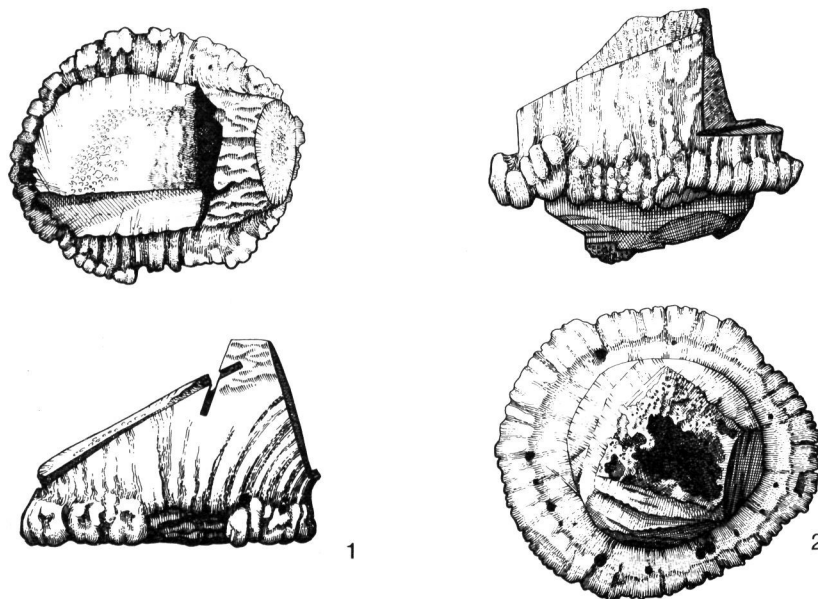


Fig. 39. Maiden Lane: The worked bone (antler offcuts).

dot design. Roughly rectangular in shape ( $50 \times 21 \times 3$  mm), the plate has two projections on one of the long sides which may have functioned as hinges. Both surfaces were originally polished, but the undecorated face is very worn. Area C, pit (349) fill (350), SF. 121.

#### *Antler tines.*

Fourteen antler tine fragments were found, ranging in length from *c.* 15 mm, a tip stained green by contact with copper alloy, to *c.* 150 mm. Two pieces of red deer tine are *c.* 80 mm long, one is 70 mm, another 60 mm. A fragment of very dense red deer tine (context (338) SF. 56), possibly impregnated with iron salts, is sawn at one end, snapped at the other. Fig. 38, No. 13 (ditch (292) fill (293) SF. 21), is an unfinished object made from a red deer tine which has been shaved to create four flat faces; a similar, slightly larger piece was found in context (264) (SF. 176).

#### *Other antler offcuts.*

Four complete burrs, two with the pedicle and part of the skull attached, and one fragment from the base of the branch were found. The remaining off-cuts comprise fragments of palm and branch.

Fig. 39, Nos 1, 2 demonstrate two methods of detaching the brow tine and the beam from the burr. On No. 1, from a shed red deer antler (Ditch (292) fill (325), SF. 14) the beam was initially sawn through from above, and then diagonally from one side to a depth of 12 mm. It was then sawn from the other side, the blade being swivelled around the branch over the first diagonal cut, creating a step where the two cuts meet. This left only a very small area to be snapped when the branch was pulled back. The brow tine was then sawn through from above, and cleanly snapped off at the base. The same technique was used on another fragment (ditch (292) fill (306), SF. 23).

On No. 2 (ditch (292) fill (310), SF. 15) the burr and branch were sawn away from the skull of a red deer using a series of tangential cuts. The beam was partially sawn through by working around the base of the branch in one cut; the brow tine was half-sawn through both horizontally and vertically. Both were snapped off at the cancellous tissue. A third burr (pit (251) fill (254), SF. 185), attached to the pedicle and skull of a red deer, was sawn in the same way. On the fourth burr (pit (237) fill (239), SF. 130), also attached to the pedicle and part of the skull of a red deer) the beam was partly cut diagonally from both sides, and the brow tine cut half-way through. It appears that both were then snapped off together.

## THE ENVIRONMENTAL EVIDENCE

by James Rackham

### INTRODUCTION

Because little is known about the Middle Saxon economy of the London region, the recovery of economic and environmental data is of major importance. On the Maiden Lane site recovery procedures were instituted for this material, and besides numerous animal bones found by the excavators, smaller faunal remains and plant material were also recovered by sieving and flotation. A limited number of samples from Jubilee Hall were also processed.

The environmental material studied for this report derives largely from rubbish discarded in pits, ditches and dumps. There is little archaeological evidence to suggest activity areas and a spatial analysis of the material has not been seriously attempted. The majority of the material studied was generated by human activity and little evidence survives that is pertinent to a more general reconstruction of the environment.

The short duration of the Jubilee Hall excavation severely limited environmental sampling. However, bulk samples were taken from fifty selected contexts, mainly the fills of pits and wells. These were later sub-sampled and assessed. Selected samples were floated in a modified Siraf tank (Jones 1983b) and the flot caught on a 0.5 mm mesh sieve. A number of samples were incorrectly wet-sieved through a 2 mm mesh without being submitted to flotation beforehand; only the material sorted from the residue was available for study, most of the items which would have been in the flot having been lost. Consequently no analysis of the carbonised plant remains was undertaken on these samples, even though some



appeared rich in cereal grains. The residue of material greater than 2mm was sorted for the small bones of fish, bird and mammal. Although the amount of environmental material recovered from the samples was therefore fairly small, it nevertheless made a useful contribution to the economic data from the site.

In contrast, at Maiden Lane there was sufficient time to undertake a systematic environmental sampling programme. Samples, comprising up to three buckets (15 litres per bucket) of soil per context, were taken from all Saxon layers and pit fills. They were mixed with water in a bucket, and after two minutes decanted onto a 0.5mm mesh sieve. The remaining dense fraction was then hosed through a sequence of 5mm and 2mm sieves, and the residues sorted. This method proved effective in retrieving a considerable quantity of faunal remains, notably fish and bird bones, as well as coprolites and carbonised plant material including cereal grains. A number of small artefacts were also found in the sieve residues from both sites. As a rule it is now recommended that a 0.25mm rather than a 0.5 mm mesh is used for catching flots.

## THE PLANT REMAINS

by Anne Davis & Dominique de Moulins

Thirty-seven samples from Maiden Lane were selected for study in the laboratory. These were chosen to represent all areas and feature types on the site. Flots were sorted at the Museum of London and identified using a modern reference collection. Samples from four contexts (268), (275), (337) and (343), were studied in depth by Catherine Rogers of the Institute of Archaeology for her MSc dissertation (Rogers 1987), and we are grateful to her for her contribution to the analysis of the site. The detailed data from these studies is being published elsewhere and is available in the archive at the Greater London Environmental Archaeology Section, Museum of London.

Plant remains from Jubilee Hall were recovered

from layers of ploughsoil, 'grey earth', wells and pits. The soil samples were taken from many different features and layers but only a few of them yielded botanical remains. No samples came from a structure or from features associated with a structure. The site was not very rich in plant remains except for one or two samples, but enough was present to give an idea of the type of site this was in relation to agricultural products.

Plant remains identified from both sites are shown in (Tables 15 and 16, and a summary Table (Table 17) shows the relative frequencies of plant groups in the richer features from both sites. Full tables of plants identified from each sample are published elsewhere.

## PRESERVATION

The overwhelming majority of plant remains recovered from both sites was preserved by charring. Many of these remains were in good condition and quite easily identifiable, but others had suffered distortion during charring, or post-depositional abrasion and breakage, making specific identification impossible in some cases.

Mineral-replaced seeds were also present in a few samples from Maiden Lane. These are preserved by the replacement of plant tissues by calcium phosphate from the surrounding medium, usually from faecal material (Green 1979a). The processing methods used on Maiden Lane were designed specifically to recover charred material. Small, dense, mineralised seeds are likely to have been lost with the discarded residue, so those species recovered from flots and the 2mm residue may not be representative. Their presence may be useful, however, in deciding the function of the features in which they were found.

A few anaerobically preserved seeds also survived in some flots from Maiden Lane. These are even more subject to the limitations of the processing method and little significance can be attached to them.

## CHARRED PLANT REMAINS

### *Cereals*

Cereal grains occurred in virtually every sample and were often the most abundant items recovered.

Barley (*Hordeum sativum*) was the most common cereal on Maiden Lane and was dominant in the majority of samples. Most of the grains were clearly hulled, and apparently included a mixture of 6-row and 2-row varieties. This can be determined using the ratio of twisted to straight grains and, while many grains were not sufficiently well preserved to classify, the consistently low ratio suggests that both varieties were present in most samples. 6-row

barley is common on sites of all periods but the 2-row variety seems to have been introduced to this country after the Roman period. Several occurrences have been recorded from Saxon sites, including one from a 10th-century oven at Peninsular House in the City of London (Jones *et al.*, in press).

The barley from Jubilee Hall included hulled and possibly naked forms. On the whole there was less barley on the site than wheat. One or two hulled grains appeared to be twisted; this might indicate that 6-row hulled barley was present. However, the numbers were very low and it is possible that the distortion of these few grains may have been caused by the charring. The barley was not as well preserved as some of the wheat.

Very little chaff was recovered from the Maiden Lane samples, and none from Jubilee Hall. This is not unusual as the chaff of free-threshing cereals like barley and bread wheat tends not to survive burning (Hillman 1978). Sample (219) from Maiden Lane, however, contained a number of poorly preserved barley rachis fragments as well as numerous cereal culm nodes and straw fragments.

Wheat grains were ubiquitous on the Maiden Lane site, though rarely dominant. Notable exceptions were the top fills (265) and (266) in pit (261) and, to a lesser extent, the top fills (243) and (244) in pit (237), in which wheat grains substantially outnumbered barley. The Jubilee Hall samples tended to contain more wheat than barley, particularly those from the pits.

On both sites wheat grains had the typical rounded shape of bread or club wheat (*Triticum aestivum*/*Triticum aestivo-compactum*). This is the most common species of wheat found in southern England in the post-Roman period, but is rarely accompanied by the diagnostic chaff fragments necessary to separate the two varieties. No wheat chaff was recovered from any of the samples.

Several grains of rye (*Secale cereale*) were present in most Maiden Lane samples, suggesting that it may have been a common weed of other cereal crops, as has been found on many other sites of the Saxon period (Green 1979b). In context (275) however, rye was more numerous than barley or wheat, implying that it may have been grown as a crop in its own right, or at least as a deliberate maslin (mixture of crops).

Oats (*Avena* spp.) made up a very minor component of the Maiden Lane and Jubilee Hall cereals. It is impossible to separate cultivated oats (*Avena sativa*) from the wild species unless the floret bases are preserved intact, and although only one specimen could thus be positively identified, it is quite likely that all the oats here were wild species growing as weeds of other cereals.

#### Weeds

Very few weed seeds were recovered from the Jubilee Hall samples, but some of those from Maiden Lane contained quite high numbers.

Most of the weed seeds were from species which commonly grow in arable fields, as well as other habitats, and could have been accidentally gathered and burnt with cereal crops. Examples of these are fumitory (*Fumaria* sp.), corn spurry (*Spergula arvensis*), stinking mayweed (*Anthemis cotula*) and the docks (*Rumex* spp.).

Several grassland species were also present, such as self-heal (*Prunella vulgaris*), hoary plantain (*Plantago media*), clover (*Trifolium* spp.) and other legumes. Context (219) from Maiden Lane had a particularly high concentration of these.

Plants requiring damp conditions such as spike rush (*Eleocharis palustris/uniglumis*), water plantain (*Alisma* sp.) and buttercups (*Ranunculus* spp.), and a few, like the goosefoot (*Chenopodium* spp.) and stinging nettle (*Urtica dioica*) from disturbed and waste ground habitats were also fairly common. Most of these could have arrived on site with crops, despite their apparently diverse habitat preferences, having grown in drainage ditches, low-lying areas of fields, adjacent unploughed fields or field margins. Alternatively they may have been brought to the site by other means and burnt with sweepings or other refuse, becoming mixed with cereals after disposal in pits and dumps.

#### Other food and economic plants

Very few charred food plants (apart from the cereals) were found, but fragments of hazel nut (*Corylus avellana*) were common, and single examples were found at Maiden Lane of apple or pear (*Malus/Pyrus* sp.), blackberry or raspberry (*Rubus* sp.), grape (*Vitis vinifera*) and possible lentil (*Lens culinaris*).

Grape and lentil may have been imported from warmer regions. Grapes are common finds on Middle and Late Saxon sites and Green (1981) believes them to be associated with sites of high social status.

Two seeds of flax (*Linum usitatissimum*) from context (215) constitute the only non-cereal crop represented at Maiden Lane. These may have arrived on site with cereals, as a remnant of a previous rotation crop, and no economic significance can be assumed at Maiden Lane from such a small presence.

#### MINERALISED AND ANAEROBICALLY PRESERVED SEEDS FROM MAIDEN LANE

The majority of mineralised and anaerobically preserved seeds were ruderal species, such as fat

Table 15: Charred plant remains from Maiden Lane and Jubilee Hall (see Table 16 for the habitat key) (continued on following page)

Species	Common name	Habitat	Maiden Lane	Jubilee Hall
<b>Cereals:</b>				
<i>Triticum aestivum/aestivum-compactum</i>	bread/club wheat	FI	x	x
<i>Triticum</i> sp.	wheat	FI	x	x
<i>Hordeum sativum</i>	cultivated barley	FI	x	x
<i>Hordeum sativum</i>	barley rachis	FI	x	x
<i>Hordeum/Triticum</i> sp.	barley or wheat	FI	x	x
<i>Triticum/Secale</i> sp.	wheat/rye	FI	x	x
<i>Hordeum/Secale</i> sp.	barley/rye rachis	FI	x	x
<i>Secale cereale</i>	rye	FI	x	x
<i>Secale cereale</i>	rye rachis	FI	x	x
<i>Cerealia</i>	ind. cereal	AFI	x	x
<i>Cerealia</i>	ind. cereal culm node	AFI	x	x
<i>Cerealia</i>	ind. cereal straw	AFI	x	x
<b>Other plants:</b>				
<i>Ranunculus acris/repens/bulbosus</i>	buttercups	ABCDEG	x	
<i>Ranunculus cf. flammula</i>	lesser spearwort	EG	x	
<i>Ranunculus</i> sp.	—	ABCDEG	x	
<i>Thalictrum flavum/minus</i>	meadow-rue	DE	x	
cf. <i>Papaver</i> sp.	poppy	ABGHI	x	
<i>Dianthus</i> sp.	pink	CD	x	
<i>Fumaria</i> sp.	fumitory	A	x	
<i>Brassica</i> sp.	wild cabbage/turnip/mustard	ABI	x	
<i>Brassica/Sinapis</i>	mustard, etc	ABEGHI	x	
<i>Viola</i> sp.	violet	ABCDG	x	
<i>Agrostemma githago</i> L.	corn cockle	A	x	x
<i>Cerastium</i> sp.	mouse-eared chickweed	ABD	x	
<i>Stellaria media</i> (L.) Vill.	chickweed	AB	x	
<i>Stellaria graminea</i> L.	lesser stitchwort	CD	x	
<i>Stellaria</i> sp.	chickweed/stitchwort	ABCDEG	x	
<i>Spergula arvensis</i> L.	corn spurrey	A	x	
<i>Arenaria cf. serpyllifolia</i>	thyme-leaved sandwort	ABD	x	
<i>Caryophyllaceae</i> indet.	—	—	x	
<i>Montia fontana</i> ssp. <i>chondrosperma</i> L.	blinks	AE	x	
<i>Chenopodium album</i> L.	fat hen	ABFH	x	
<i>Chenopodium ficifolium</i>	fig leaved goosefoot	AB	x	
<i>Chenopodium rubrum/glaucum</i>	red/glaucous goosefoot	AB	x	
<i>Chenopodium</i> sp.	goosefoot etc.	ABFH	x	x
<i>Chenopodium/Atriplex</i> sp.	goosefoot/oraches	ABFGH	x	
<i>Atriplex</i> sp.	orache	—	x	
<i>Chenopodiaceae</i> indet.	—	—	x	
<i>Malva cf. sylvestris</i>	mallow	BF	x	
<i>Malva</i> sp.	mallow	BCDF	x	



Table 15: Charred plant remains from Maiden Lane and Jubilee Hall (continued)

cf. <i>Artemisia</i> sp.	mugwort, etc	B	x
<i>Carduus/Cirsium</i> sp.	thistles	ABDEG	x
<i>Centaurea</i> sp.	knapsweed/thistle	ABDGH	x
<i>Compositae</i> indet.	—	—	x
<i>Alisma</i> sp.	water-plantain	E	x
<i>Juncus</i> sp.	rush	ABCDE	x
<i>Eleocharis palustris/uniglumis</i>	spike-rush	E	x
<i>Eleocharis</i> sp.	spike-rush	E	x
cf. <i>Scirpus</i> sp.	club-rushes	EH	x
<i>Cladium mariscus</i> (L.) Pohl	sedge	E	x
<i>Carex</i> spp.	sedge	CDEH	x
Cyperaceae indet.	—	ABCDEFI	x
<i>Avena fatua/ludoviciana</i>	wild oat	A	x
<i>Avena</i> sp.	oat	AI	x
<i>Avena/Bromus</i> sp.	oat/brome grass	ABCDFI	x
<i>Avena/Secale</i> sp.	oat/rye	AI	x
<i>Lolium/Festuca</i> sp.	rye-grass/festue	BCD	x
cf. <i>Poa</i> spp.	poa	ABCDE	x
<i>Avena/Bromus</i>	oat/brome	ABD	x
<i>Bromus</i> sp.	brome grass	ABD	x
cf. <i>Agrostis</i> sp.	bent-grass	ABCD	x
cf. <i>Phleum</i> spp.	cat's-tail	D	x
Gramineae indet.	—	ABCDEHIF	x

Table 16: Anaerobically preserved and mineralised plant remains from Maiden Lane.

Species	Common name	Habitat	Anaerobic preservation	Mineralised preservation
<i>Papaver somniferum</i> L.	opium poppy	BGHI		
<i>Fumaria</i> sp.	fumitory	A	x	
<i>Chenopodium polyspermum</i>	all-seed	AB	x	
<i>Chenopodium album</i> L.	fat hen	ABFH	x	
<i>Chenopodium</i> spp.	goosefoot etc.	ABFH	x	x
<i>Chenopodium/Atriplex</i> spp.	goosefoots/oraches	ABFGH	x	
<i>Atriplex</i> sp.	orache	ABFGH	x	x
<i>Chenopodiaceae</i> indet.	—	—		x
cf. <i>Vicia/Lathyrus</i> sp.	vetch/tare/vetchling	CD		
<i>Rubus fruticosus/idaeus</i>	blackberry/raspberry	CFGH	x	
<i>Fragaria vesca</i> L.	wild strawberry	CDF	x	
<i>Prunus</i> spp.	—	CFGH		x
<i>Rosaceae</i> indet.	—	—		x
<i>Conium maculatum</i> L.	hemlock	CEG	x	
<i>Rumex</i> spp.	docks	ABCDEFGH		x
<i>Umbelliferae</i> indet.	—	—		
<i>Urtica urens</i> L.	small nettle	AB	x	x
<i>Urtica dioica</i> L.	stinging nettle	BCDEFGH	x	x
<i>Prunella vulgaris</i> L.	self-heal	BCDG		x
cf. <i>Compositae</i> indet.	—	—		x
<i>Alisma</i> sp.	water plantain	E		
<i>Ficus carica</i> L.	fig	I	x	
<i>Mentha</i> sp.	mint	ABCEFGH	x	
<i>Stachys</i> sp.	woundwort	ACEG	x	
<i>Sambucus nigra</i> L.	elder	BCFGH	x	
<i>Eleocharis palustris/uniglumis</i>	spike-rush	E	x	x
<i>Eleocharis</i> sp.	spike-rush	E		
<i>Carex</i> spp.	sedges	CDEH		x
<i>Graminae</i> indet.	—	ABCDEHIF	x	

## Habitats:

- A. Weeds of cultivated land
- B. Ruderals. Weeds of waste places and disturbed ground
- C. Plants of woods, scrub, hedgerows
- D. Open environment (fairly undisturbed)
- E. Plants of damp/wet environment
- F. Edible plants
- G. Medicinal and poisonous plants
- H. Commercial/industrial use
- I. Cultivated plants
- K. Others (e.g. parasitic)

hen (*Chenopodium album*), elder (*Sambucus nigra*) and stinging nettle (*Urtica dioica*), which probably grew on or near the site and arrived in the archaeological deposits by accidental means (see Table 16). A few seeds of edible plants were found however, giving a hint, despite the limited recovery, of the diet of the Maiden Lane inhabitants.

Mineralised plum or sloe stones (*Prunus* spp.) were common in the residue from sample (215), and fig (*Ficus carica*), strawberry (*Fragaria vesca*) and blackberry or raspberry (*Rubus* sp.) were preserved anaerobically in contexts (244) and (348). Figs provide more possible evidence for foreign trade, although some varieties can be cultivated in this country (Harrison *et al.* 1985). The limited capacity of Saxon boats has led Hodges (1982, 128) to believe that large-scale international trading in foodstuffs was unlikely in this period.

Nevertheless it seems probable that these 'exotics' were imported, presumably dried, rather than grown locally in this period.

## DISCUSSION

The lack of chaff and large weed seeds in most Maiden Lane samples, and in all the Jubilee Hall samples studied, suggests that the early stages of crop processing had been completed elsewhere (see Hillman 1981; 1984; Jones 1984). Grain would therefore have been brought on to the site in a clean or semi-clean state and any fine sieving necessary to remove the remaining small, dense seeds would be carried out as the grain was required.

Charring may have happened by accident, for instance while grain was being parched prior to grinding, or during cooking. However, most charred plant remains are likely to have been deliberately burnt as waste from fine sieving, or as spillages swept into the fire with other refuse.

Although these general observations concerning crop processing can be applied to most samples from the two sites, there was some variation in the composition of the assemblages from individual features. These are discussed below, and are summarised in Table 17.

Maiden Lane (see Tables 15 and 17)

Area A produced poor flots with low numbers of seeds per unit volume of soil, and poor preservation of those which did survive. Most cut features were small and so produced little soil, and no real conclusions can be drawn except that this did not seem to be an important area for the disposal of domestic waste.

Area B contained several large pits and produced much richer samples. The more interesting ones will be discussed individually.

Fill (219) in pit (217) contained the usual mix of cereal grains, with barley predominating. These were greatly outnumbered, however, by weed seeds, many of which were from species characteristic of arable fields and grassland. This sample also contained considerably more chaff than any others, mainly in the form of culm nodes and straw fragments.

Unfortunately it is impossible to know, when dealing with refuse contexts, whether cereal remains are from one source or many, as mixing is very likely, though not inevitable. In this case a single, semi-cleaned crop product is a possibility, perhaps intended as animal fodder rather than for human consumption. The grassland weeds and stem fragments may also suggest the presence of hay (Greig 1984). A sample from a 10th-century oven at Peninsular House (Jones *et al.*, *op. cit.*) was similarly contaminated with weeds and was interpreted as animal fodder. Alternatively the assemblage may consist of waste from fine sieving operations, mixed after disposal with grain from another source.

Context (215), the primary fill of pit (214), contained very mixed cereals and weeds, and included apple/pear and flax. A number of mineralised seeds including sloe/plum were found, and dog coprolites and human faecal material were identified by de Rouffignac (see below). This gives the impression of a general rubbish pit containing assorted household debris which functioned initially as a cesspit.

Pits (237) and (261) both contained a lot of wheat in their upper fills ((243), (244) and (265), (266) respectively), and little or no cereal in the lower ones (context 262); the lower fills of pit (237) had no flot at all. Fills (265) and (266) had very few weeds, indicating a fully cleaned crop product. The relatively high incidence of barley as well as wheat may signify a mixed crop, or deliberate mixing of two separate crops before consumption. Fill (262), at the bottom of pit (261), contained a number of waterlogged seeds, and fragments of a marine hydrozoan, possibly *Obelia geniculata* (identified by Dr K. Thomas, Institute of Archaeology, University College, London). The origins of this are a mystery, but it may have been introduced to the site attached to edible shellfish.

Fill (275) in pit (267) was also rich in cereals, but in this case rye made up approximately 50% of the grains. The weeds suggested a semi-cleaned crop or crops.

Fills (252) and (253) in pit (251) contained very pure barley with few weeds or other cereals. Obviously fully cleaned grain had been disposed of in this pit, perhaps as the result of a cooking





accident, and had not become mixed with other cereal remains. Mineralised weed seeds were also recovered from these deposits.

Two pits from Area C were examined: pit (329) contained only small fills and produced virtually no plant remains. Fill (335) in pit (334) included another reasonably pure deposit of barley, with few weeds or other cereals.

Layers from the midden in Area C provided samples rich in plant remains. Layers near the bottom (337)–(338) contained few cereals and many times more weeds, probably indicating fine cleanings from the final sieving of crops, perhaps mixed with general sweepings. Samples from higher in the sequence, layers (343), (345), and (348), were rich in barley, layers (343) and (348) being very pure and relatively weed-free, while (345) contained more weeds. Several mineralised seeds were present in (345) which also contained dog coprolites, as did (338) and (343).

Other samples were less rich and so could not be interpreted as specifically as those above, but all contained a mixture of cereal grains with barley predominating. Proportions of weeds varied, depending on whether or not the grain had been fine sieved, and on the degree of mixing with other products.

No obvious pattern of refuse disposal was apparent from this study, either between areas or feature types. It is not possible, therefore, to suggest specific activities concentrated in particular areas of the site.

#### Jubilee Hall (see Table 17)

The samples from the pits in this excavation were the most productive in terms of charred remains, especially the samples of fills (135) and (137). Fill (137) of pit (136) included a lot of bread wheat, some oat and very few barley grains. The fill of pit (139) was also rich in grain but no analysis could be made because of the way it had been processed (see above p. 145). The pits are not associated with any structure, so that it is possible only to say that the plant remains must have been thrown away in them. The wells also contained cereal grains and a whole large legume seed, a probable *Vicia faba*, Celtic bean/horsebean, was recovered from fill (124) of well (121).

There was no evidence from the plant remains that some of the fills came from wells. The flots recovered from these features were all typically charred flots without any trace of remains preserved by waterlogging. It is possible that none of the samples came from the bottom of the features. It is also possible that the wells had dried up before being turned into rubbish pits.

An interesting feature of the site is that there was a tendency for grains of one sort rather than the other to occur in each feature. Bread wheat was dominant in the fills of pits (135) and (136) while barley was more significant in the two fills of well (117) where no bread wheat was found. The remains from fill (124) of well (121) only contained bread wheat and no other cereal.

#### CONCLUSIONS

The ubiquitous nature of cereals in the domestic refuse at Maiden Lane and Jubilee Hall is an indication of the important part they, and their preparation, must have played in the daily lives of the inhabitants.

Barley, wheat and rye were all consumed by the occupants of the sites or their animals. Their relative importance cannot be proved, however, because of the element of chance involved in the preservation of charred remains.

Some or all the cereals were brought on to the site in a semi-cleaned state, ready for piecemeal final cleaning before food preparation. Where flotation had been carried out on the samples from Jubilee Hall it was apparent that the cereals were thoroughly cleaned and almost certainly for human consumption. Some of the grain from Maiden Lane, however, was probably destined for animal feed. Hay and straw may also have been imported for animal fodder, bedding and other purposes.

Several samples from Maiden Lane contained very pure deposits of barley, showing that it was grown and used alone as a single crop. Wheat and rye were always accompanied by other cereals on this site, however, and may either have been grown together, been deliberately mixed before consumption, or become accidentally mixed after disposal. At Jubilee Hall wheat was also found as a pure crop. Final sieving of the clean barley and wheat to dispose of small weed seeds may have taken place on site, or it may have arrived fully processed.

A few seeds of native food plants, such as legumes, were found, and these were probably gathered locally. Dried fruits and the possible lentil may indicate foreign imports.

#### THE COPROLITES

by Clare de Rouffignac

The recovery of coprolites from archaeological excavations has been well documented in recent years. Coprolites are formed when faecal material or stools are preserved either by desiccation or mineralisation. Coprolites recovered from archaeological excavations can give information on diet

Table 18: Canine coprolites from Maiden Lane and Jubilee Hall.

Context	5mm sieve	No. coprolites	No. frags	Weight (g)	<i>Taenia</i> present
Jubilee Hall					
5		1	1	not rec.	not
57		1	1	7.8	tested
60		2	2	6.6	
62		1	1	3.6	
129		1	2	9.9	
141		1	1	9.7	
Maiden Lane					
205		1	1		no
215	yes	3	2	36.41	no
262	yes		2	15.27	no
338		12	12	186.3	yes
339	yes	9	3		
			2		
			2	146.65	yes
340		1	2	30.78	yes
343	yes	1		5.35	yes
345	yes	1		8.51	yes
364		2		31.04	no
376		1		14.3	no
unstratified		1		10.96	no

and show evidence of infestation and illness in the human and animal populations by the analysis of the included seeds, pollen, bone and parasites.

Treatment of coprolites to enable recovery of these remains involves soaking to allow reconstitution. Chemical preparations such as 0.5% aqueous sodium triphosphate were pioneered by Callen (1969) but good results were obtained by Wilson and Rackham (1976) and de Rouffignac (1985a and b) by merely soaking the coprolites in distilled water.

Certain species of parasite are host-specific and their identification can allow the determination of the species that produced the coprolite.

Coprolites were recovered from ten contexts at Maiden Lane and six at Jubilee Hall. Investigation revealed that the coprolites were mostly those of dogs. Table 18 shows the numbers of canine coprolites from each context, their recovery method and the total weight per context. A 'coprolite' was considered as a whole stool or a fragment comprising more than half a stool. Microscopic examination of the suspensions obtained from various canine coprolites revealed a number of ova of the tapeworm, *Taenia* sp. Tapeworms are known to commonly infect dogs, even today. The coprolites also contained a small number of phytoliths (Powers, pers. comm) and very fragmentary insect remains. Neither is unexpected in scavenging dogs.

Nine fragments of 'mineralised faecal material', as opposed to coprolite, were recovered from context (215) at Maiden Lane and some also from context (127) at Jubilee Hall. This material was far more irregular in shape than the actual coprolites and the Maiden Lane examples when soaked produced a suspension containing large numbers of *Trichuris trichura* ova. This species is parasitic on man and pigs (Jones 1983a), so it seems most likely that the faecal material was of human origin, deliberately disposed of in the pit. The botanical and fish remains (see above and below) from pit (214) at Maiden Lane support the interpretation of this feature as a cesspit. A number of canine coprolites were also recovered from the pit, so it is possible that it was used for the disposal of other refuse apart from human excreta.

## CONCLUSION

The coprolites from both sites are interesting finds. They materially illustrate the presence of scavenging dogs and the unidentifiable character of the bone fragments that survive after ingestion (see Table 19). The parasitological data are indicative of worm infections in both man and his domestic animals. They also show that such evidence may survive even when waterlogging has not occurred, if the deposits have become mineralised.

Table 19: Bones from three coprolites from Maiden Lane.

Context	bone (g)	coprolite (g)	% bone/ coprolite	mean bone wt
364(1)	1.28	20.81	6.2	0.064
364(2)	0.31	10.23	3.0	0.005
unstratified	1.65	10.96	15.1	0.066

## THE FISH BONES

by Alison Locker

Fish bones were recovered from a number of Saxon contexts on both sites. The total numbers of fish that may be assigned to species or group are displayed in Table 20. Most contexts on Maiden Lane were sieved, ensuring the recovery of the very smallest bones, but only eight sampled contexts from Jubilee Hall produced fish bones. Very few skull fragments were recovered from any species: the remains were largely vertebral centra, so reconstruction of the size of the individual fish based on skull measurements was not possible.

The following species were identified: eel (*Anguilla anguilla*), herring (*Clupea harengus*), Salmonidae, pike (*Esox lucius*), roach (*Rutilus rutilus*), cf. rudd (*Scardinius erythrophthalmus*), Cyprinidae, cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), whiting (*Merlangius merlangus*), ling (*Molva molva*), cf. hake (*Merluccius merluccius*), cf. bass (*Dicentrarchus labrax*), cf. sea bream (*Sparidae*), cf. brill (*Scophthalmus rhombus*), plaice (*Pleuronectes platessa*), flounder (*Platichthys flesus*), and flatfish indet.

The Saxon contexts principally comprise dump layers, and the fills of pits and ditches. The most numerous occurring species throughout is eel, comprising 87% of all identified bones at Maiden Lane, although only 40% of the much smaller sample from Jubilee Hall. Eels would have been caught during their migration seawards in traps such as 'eel bucks', or speared. Wheeler (1979, 60-64) discusses the importance of the eel fishery in the Thames within historic times, noting that the eel-bucks were frequently associated with mills much further upstream than Maiden Lane. The main 'season' for fishing during the seaward migration was November to January, so the fish may have been caught in the Thames adjacent to the settlement during the latter part of this period.

Herring bones were the second most frequent species at Maiden Lane, comprising 5% of all identified fish. The annual southward migration of herring down the North Sea in large shoals led to

the development of an important fishing industry in the medieval period. Herring were also exploited in earlier periods.

Fishing in the Thames is represented by a number of species, the largest group being the cyprinids. Roach and rudd were identified and a broken pharyngeal was from chub, dace or gudgeon (the broken teeth precluded a positive identification). The virtual absence of pharyngeal and other skull bones prevented the specific identification of some of the cyprinids. At Jubilee Hall the cyprinids were the most common group of fish, 44% of the total identified. In one feature at Jubilee Hall, context (135), some of the cyprinid vertebral centra were very close to Tench (*Tinca tinca*). Together with pike (all the pike vertebral centra suggested small specimens) these fish could have been caught locally on rod and line. The fragments of Salmonid vertebral centra were all from mature specimens that are known to have been common in the Thames in the past (*ibid.*, 51).

Of the flatfish, both plaice and flounder were positively identified, and could have been caught in the Thames estuary, along the shoreline in traps or on lines. The small immature fish enter estuaries and the size of the vertebral centra suggested that many of these were from small fish. Brill was tentatively identified and this species has also occasionally been recorded from the outer estuary (*ibid.*, 198).

The other species positively identified are of marine origin. Ling is found in deep water in the northern part of the North Sea. It would have been caught on lines and must have been brought down to London in a dried or salted condition. Cod are widely distributed in the North Sea and may also have been dried or salted. Whiting, present in low numbers, could have been a common inshore catch, caught in nets or on lines. Haddock, living close to the sea bed, would have been caught on lines. The latter three species could all have been caught in the southern part of the North Sea adjacent to the Thames estuary, and brought up river by boat.

The Late Saxon pits at Pudding Lane (Locker 1986) showed a greater concentration of marine fish than at Maiden Lane. The sample was much

Table 20: Fish species identified from samples and excavated material collected from Maiden Lane and Jubilee Hall.

Species	Maiden Lane	Jubilee Hall
Eel, <i>Anguilla anguilla</i>	2558	79
Herring, <i>Clupea harengus</i>	151	7
Salmonidae	22	1
Pike, <i>Esox lucius</i>	12	1
Roach, <i>Rutilus rutilus</i>	4	9
Rudd cf., <i>Scardinius erythrophthalmus</i>	6	
Cyprinidae	89	85
Cod, <i>Gadus morhua</i>	5	
Haddock, <i>Melanogrammus aeglefinus</i>	28	
Whiting, <i>Merlangius merlangus</i>	2	
Ling, <i>Molva molva</i>	2	
Hake cf., <i>Merluccius merluccius</i>	1	
Bass cf., <i>Dicentrarchus labrax</i>	2	
Sea Bream cf., Sparidae	1	
Brill cf., <i>Scophthalmus rhombus</i>	1	
Plaice, <i>Pleuronectes platessa</i>	35	12
Flounder, <i>Platichthys flesus</i>	5	
Flatfish, indet.	29	

smaller, but cod and whiting were the two predominant species. There is no evidence at Pudding Lane of the exploitation of the Thames itself, only of local marine waters. The fish from Jubilee Hall have a very similar species composition to those from Maiden Lane, reflecting local fishing in the Thames. In part the dominance of eel at both Maiden Lane and Jubilee Hall may be the result of sieving a large number of contexts, ensuring the small vertebral centra were not missed. However the infrequent occurrence of cod and whiting at Maiden Lane and Jubilee Hall compared to Late Saxon Pudding Lane and later medieval deposits at Trig Lane (Locker 1986) does suggest a different emphasis on the type of fish consumed at these Middle Saxon sites. The overall absence of skull fragments implies the fish were already beheaded prior to their disposal, and there appears to be no significant difference between features other than a particularly high concentration of eel vertebral centra in context (215), a pit fill. Some of the eel vertebrae have become distorted as if by passage through the gut (Jones 1984) which supports evidence presented above that this feature is a cesspit.

## BIRDS AND MAMMALS

by Barbara West with contributions from James Rackham

### INTRODUCTION

From the Middle Saxon levels at Maiden Lane, a total of 19,599 animal bones (385.4kg) were

analysed, of which 13,675 (371.3kg) were identified. Although the bones from three types of feature (pits, dumps and ditch) were analysed separately, no patterns emerged to distinguish the use of one group of features from another. The collection from Jubilee Hall comprised a further 3937 animal bone fragments (87kg) collected during the excavation from the Middle Saxon levels. Data from Maiden Lane and Jubilee Hall was compared with the published information from seven other sites of the period or broadly contemporary: the Treasury site in London (Chaplin 1971); *Hamwic* in Southampton (Bourdillon & Coy 1980); Saxon Portchester (Grant 1976); Dorestad in The Netherlands (Prummel 1983); Haithabu, Feddersen Wierde and Elisenhof in Germany (Reichstein & Tiessen 1974). Maiden Lane and Jubilee Hall form part of a detailed analysis of Saxon faunal material from London to be published elsewhere (West and Rackham, in press), and only a summary and interpretative discussion of the results is presented here. All methodology is fully described in the archive report.

### DIET AND FOOD PREPARATION

As can be seen from Table 21, most of the meat in the diet of the inhabitants of these two sites was provided by cattle, followed by pig and sheep. The predominance of pigs over sheep on these sites is quite interesting, since almost all the comparative sites yielded far more sheep than pig: ie Portchester, *Hamwic*, Dorestad and the Treasury site. Pigs pre-

dominated only at Haithabu, a major sea port and merchant town.

Chaplin (1971) notes the value of pigs in reducing the risks of husbandry: their rapid reproductive rate, foraging abilities and adaptable diet means that they are a source of fresh meat in winter, when sheep and cattle are in poor condition. Noddle (1975) and others suggest environmental constraints, i.e., that low numbers of pig bones on Saxon and medieval sites indicate deforestation. However, King (1978) emphasizes cultural and economic factors as being more important than environmental constraints in choosing pigs over sheep; i.e., the Romans simply preferred pork to mutton. Also, Clutton-Brock (1976) points out the discrepancy between the paucity of pig bones from Saxon sites and the historical evidence for very large herds of swine during this period. In a study of medieval pig husbandry at Peterborough Abbey, Biddick (1984) provides historical evidence that there was no relation between the size of the pig herds and the woodland resources.

It has been suggested that pork was considered something of a luxury food item in medieval York-

shire (Ryder 1956) and in Wales during the Saxon period (Alcock 1963). It has also been pointed out by West (Armitage & West 1985) that on medieval monastic sites, high levels of pork consumption relative to mutton correlate with historical evidence for prosperity and high status, while low levels correlate with evidence for a more frugal lifestyle. Thus it is proposed here that environmental constraints such as woodland resources can be dismissed as a factor in influencing pork consumption, and the large numbers of pig bones relative to those of sheep from Maiden Lane reflect the wealth of the Saxon inhabitants. It is nevertheless possible that the paucity of sheep relates to the lack of extensive areas of pasture suitable to sheep. The local economy may have favoured the pasturing of cattle on the available grasslands, while sheep only became common on later sites when the large market character of London encouraged the droving of animals in from much further afield.

The remaining species found on the two sites (Table 21) are similar to those on the comparative sites noted above. Those included in the diet of the Maiden Lane and Jubilee Hall Saxons were small

Table 21: Number of fragments and weight of species and unidentified bones from the middle Saxon deposits at Maiden Lane and Jubilee Hall.

Species	No. of Fragments	MAIDEN LANE			No. of Fragments	JUBILEE HALL		
		% of ident.	Weight in grams	% of ident.		% of ident.	Weight in grams	% of ident.
Horse	11	.08	1493.0	.4	3	.09	372.7	0.4
Cattle	2898	21.0	188202.4	51.0	843	26.0	51657.7	60.2
Goat	11	.08	1320.0	.3	7	.2	732.0	.85
Sheep/goat	850	6.0	14846.2	4.0	307	9.5	4729.6	5.5
Sheep					22	.7	505.3	.6
Pig	1547	11.0	35521.5	9.6	365	11.3	7738.5	9.0
Dog	4	.03	154.0	.04	33	1.0	70.9	.08
Cat	33	.2	95.3	.02	5	.15	17.1	.02
Red deer	28	.2	1278.0	.3	6	.2	200.7	.2
Roe deer					1	.03	8.1	.009
Chicken	80	.6	179.0	.04	24	.7	55.4	.06
Goose, domestic	61	.4	340.0	.09	14	.4	68.4	.08
Duck, domestic	4	.03	10.0	.003				
Goose species	4	.03	27.0	.007				
Teal	1	.007	1.0	.0003				
Sparrowhawk	2	.01	2.0	.0005				
Raven	3	.02	8.0	.002	2	.06	3.8	.004
Unident. bird	39	.2	75.0	.02	5	.15	9.5	.01
Cattle size	5898	43.0	116850.0	31.5	1188	36.7	18212.5	21.2
Sheep size	2200	16.0	10941.5	3.0	413	12.7	1439.9	1.7
Small mammal	1	.007	.3	.00008				
Unident. mammal	5924		14089.0		699		1273.0	
Total identified	13675		371344.2		3238			
Total	19599		385433.2		3937		87095.1	

numbers of goat, domestic chicken, goose, duck and teal. Goose was more important in the diet than chicken. One unusual possible food item at Maiden Lane was apparently dog. A humerus was found which had been chopped (butchered?) and later gnawed by a dog (or fox). Alternatively since the few other dog bones indicated very large mastiff sized beasts, and no other site has yielded evidence for Saxons eating their dogs, this animal may have suffered a blow from a sharp weapon on its shoulder. It may have died or been put down and subsequently been consumed as carrion by dogs and other scavengers.

Food preparation and disposal were indicated by evidence of butchery, cooking and gnawing. There were very consistent proportions amongst the domesticates from both sites of bones bearing butchery marks (3–8%) in the form of chops and knife cuts (although the butchered pig bones from Jubilee Hall constituted just over 1%), as well as evidence of burning (1%) and cooking such as boiling or roasting (0.3%). Roughly 1% of the bones had been gnawed by dogs (none by rodents) and only a few others were weathered. However, this apparent lack of bones lying about on the surface outdoors does not necessarily mean that these Saxons disposed of their rubbish quickly. Dogs may well have completely destroyed the component of rubbish lying about with only a few gnawed and weathered bones being kicked into the pits and ditches. Many of the completely unidentified fragments could result from such destruction.

The overall ratios of cattle/pig/sheep were remarkably consistent throughout, despite the different sample sizes (see Table 22). The more rapid recovery necessitated by the circumstances of the excavation at Jubilee Hall does not appear to have biased the assemblage. The ratio of the main domesticates is very similar to that at Maiden Lane, except that sheep remains, the smallest and most generally missed during rapid excavation, are in fact more abundant (Table 22). The limited sample size at Jubilee Hall has precluded any detailed intra-site analysis.

Table 22: Relative proportions of the three main domesticates

	% fragments		% weight	
	MAI	JUB	MAI	JUB
Cattle	55	55	79	79
Pig	29	24	15	12
Sheep/goat	16	22	6	9

Table 23: Relative proportions of identified fragments and weight in feature types at Maiden Lane.

	No. fragments	% fragments	% weight
Ditch	1424	10%	10%
Pits	4979	36%	44%
Dumps	6332	46%	40%

The distribution of skeletal elements for the three main domesticates recovered from the pits, dumps and ditch was used to assess the relative quality of meat consumed by the inhabitants of the site (see Table 23). In both weight and fragment numbers, there were consistently high proportions of the best quality meat (represented by the bones of shoulder, hip, upper legs and back), as well as the lesser quality cuts (represented by the lower legs and head), and low proportions of the poorest quality meat (represented by the feet) (see West and Rackham, in press, and archive report for data). Intact proximal metapodials are considerably more frequent than distal ends, suggesting either butchery of this bone, the feet being left with the skin, or possibly increased destruction of the less robust or unfused distal epiphyses. The preponderance of cattle mandibles and metapodials at the Treasury site was not reflected at Maiden Lane or Jubilee Hall, although at the Treasury the figures are based upon minimum numbers. The inhabitants of Maiden Lane and Jubilee Hall were apparently eating well and utilising most of the carcass of cattle, sheep and pigs. Comparative information on meat quality was not readily available from the other sites mentioned previously.

#### HUSBANDRY PRACTICES

The calculations of withers heights (height at the shoulder) indicate that the cattle and pigs from Maiden Lane were larger than those from all the other comparative sites, while the sheep were smaller (see archive report). As demonstrated by Prummel (1983), the average withers height can indicate different types of cattle husbandry. In the case of Maiden Lane cattle, the high average withers height (1179mm) suggests that most of the bull-calves were not killed, but castrated and kept to adulthood (since castration results in longer-limbed animals). However, individual measurement comparisons indicate that the cows and oxen from Maiden Lane were also larger in general than, for example, their counterparts from Dorestad.

Over half the cattle from the two sites were killed between 2 and 4 years old (aged on the basis of Silver, 1969), while about 30% (on the basis of

epiphyseal fusion and tooth cementum lines) were kept until 8-9 years and above. More females than males were slaughtered (on the basis of metrical data), which emphasizes the importance of beef and traction rather than dairy products (i.e., most females were killed for beef and not kept for milk, while more males were kept for traction). The use of cattle as draught animals may be supported by the high proportion of arthritic changes found compared to the other sites, particularly in the regions of shoulder, hip, "ankles" and feet.

This contrasts markedly with the patterns at Dorestad and *Hamwic*, where the majority of cattle were not killed until they were at least 4 years old, and probably not until they were too old to be used for milk or traction. At *Hamwic*, the good health and general maturity of the cattle was noted. This suggests that the Maiden Lane and Jubilee Hall Saxons could afford the prime quality meat of younger animals. In addition, the high percentage of calves' bones (11%) is similar to that from Haithabu and Feddersen Wierde, and points to a higher level of prosperity as reflected by the consumption of veal (discussed by Reichstein and Tiessen, 1974).

The Maiden Lane pigs were also larger than those from other sites (even measurements of juveniles indicated that their average adult withers heights were well in excess of 729mm), but still within the size range of domestic rather than wild pigs.

Nearly one-third of the pigs were slaughtered at or before 1 year of age, and half at 2-2½ years, while a mere 5% survived to be more than 3-3½ years old. The data for Jubilee Hall are very similar but with a few percent more juveniles. The sample size is, however, small and this variability may not be real. More males than females were killed, which merely indicates that some sows were kept until adulthood for breeding. This pattern of age and sex distribution is similar to that found at Dorestad and *Hamwic*, and reflects the importance of pigs as meat producers. Although there were various instances of pathology, such as arthritic changes, slight infections and fractures, there were no discernible patterns or evidence for tethering (as postulated at *Hamwic*).

Unlike the large cattle and pigs, the Maiden Lane sheep were diminutive animals, smaller than the sheep from all the other sites (average withers height: 606mm). Although a few were slaughtered as lambs less than a year old, two-thirds were killed between 1 and 3 years, and one-quarter survived to be over 4 years old. The pattern is again very similar among the Jubilee Hall remains, but again with a slightly higher percentage of juveniles.

Twice as many males as females were killed, as suggested by innominate morphology and the measurements of bones from Maiden Lane, and only 10% of the total killed were identified as castrates. This pattern of age and sex ratios implies that good quality meat from younger sheep was of primary importance to the inhabitants, while wool and milk were only secondary. Only one-quarter (mainly females and castrates) were kept well into maturity: the females for wool, milk and breeding; the castrates for the large quantities of wool they produce.

This pattern is quite different to that at Dorestad and *Hamwic*, where many more lambs under 1 year were killed, but the majority of sheep were kept into maturity, with the emphasis on wool production. The pathological changes in the sheep bones were mostly arthritic in nature, and not concentrated in any particular areas.

While geese were generally larger than those from *Hamwic*, the chickens were similar in size. All the geese and chickens found were adult birds, and sex could only be determined for six chickens: 3 males, 2 females from Maiden Lane and 1 female from Jubilee Hall. The presence of medullary bone indicates that the 2 hens from Maiden Lane were egg-laying when they were killed.

A further examination of pathology at Maiden Lane sheds an interesting light on the animal injuries, some of which may have been inflicted by humans. In addition to the blow to the dog's shoulder mentioned earlier, the very badly healed fracture of a chicken femur is also suspicious, as this robust bone, well-protected by being held close to the body, is one of the least likely to be broken from natural causes, unlike the more exposed bones of wings and feet. A human or animal kick could have broken the femur quite easily. One pig forelimb had been fractured and subsequently healed. In one cattle skull, the right horn had been so violently wrenched that the skull sutures were torn apart and the frontal bone itself cracked, leaving a gap 140mm long and 20mm wide, which subsequently healed. This extraordinary fracture may have been the result of the animal's panic-stricken efforts to free itself after its horn became wedged, or of human efforts to pull it out of some place of entrapment, such as a quagmire.

#### OTHER SPECIES

Other species, none of which were likely to have been eaten, occurred in very small numbers on the site (as is the case with most other sites of the historical period), and amongst these were horse, dog and cat. Little data could be gathered on withers height, age or sex from the few bones

available, other than the withers height for dog (651mm), indicating a large animal the size of a mastiff.

Horn and antler-working are indicated by two cattle horn cores whose tips had been sawn off for horn removal, and twenty-eight fragments of red deer antler, all of which had been sawn, at Maiden Lane. At Jubilee Hall cattle horn cores were proportionally more abundant and much heavier by weight than at Maiden Lane, and goat and sheep horn cores also occurred. Most of the cattle horn cores were found in pit (59) and well (117). Five fragments of red deer antler were found at Jubilee Hall, but also a single postcranial fragment of red deer and one of roe deer, indicating that at this site at least venison was eaten. Only one antler from Maiden Lane was attached to the skull, indicating butchery rather than collection of cast antlers in the forest. However, since there is no other evidence from this site for the consumption of venison, these antlers were probably purchased separately as part of the horn and antler-working trade.

One female sparrowhawk was found, which may have been kept for falconry, as the female birds are much larger than males (however, the lack of wild birds from the site either discounts this, or reflects rather badly upon the skill of this particular bird). In medieval times, sparrowhawks were considered suitable falconry birds for priests. Sparrowhawks were not found on any of the sites used for comparison.

The occurrence of raven in three separate contexts at Maiden Lane and one at Jubilee Hall is intriguing, as it is actually a rare occurrence on archaeological sites in London. Only two other bones have been found: one from 14th-century Trig Lane, and one from the Roman levels at St Magnus. Although easy to dismiss as a scavenger (as some authors have done), its significance will be investigated further.

## CONCLUSIONS

Judging from the faunal evidence, then, the Maiden Lane and Jubilee Hall Saxons were quite a prosperous lot; more so, apparently, than many of their contemporaries in Britain and Europe. Their cattle and pigs were larger than those from other sites, but their sheep were small and delicate. Meat was of primary importance in their diet, and they ate all the best quality cuts from young, tender animals, including veal. All other animal products, such as milk, cheese, butter, wool and even eggs were of secondary concern (as shown by their willingness to slaughter egg-laying hens). Unlike some of their contemporaries, they were not forced to economise by waiting to slaughter until their

cattle and sheep had outlived their usefulness as milk or wool producers, although they did utilise most of the carcass afterward. Many bulls, however, were castrated as calves and later used as draught oxen, suffering arthritic changes in their joints (some females may have been used as well).

Also unlike most of their contemporaries, they much preferred pork to mutton, and goose to chicken. It is proposed here that environmental constraints can be dismissed as an influencing factor in pork consumption, although not necessarily in mutton consumption, and that the preponderance of pig bones over those of sheep at Maiden Lane reflects the relative wealth of the Saxon inhabitants. They consumed very small numbers of goat, domestic duck and teal, and apparently were not interested in hunting wild animals or birds, but were content with the meat provided by their domestic animals.

There is evidence that their animals were occasionally, injured, as in the interpretation of a blow across a dog's shoulder, and a severe kick breaking a chicken's leg, possibly intentional human actions. In one cattle skull, the right horn had been so violently wrenched that the skull was cracked and torn apart, but this animal (as well as the chicken) survived for a considerable time afterward.

The Maiden Lane and Jubilee Hall Saxons were also engaged in working horn and antler on a small scale, and although the general results appear to reflect a 'town' economy rather than the farm which Chaplin proposed for the Treasury site nearby, definitive statements will be reserved for the succeeding publication (West and Rackham, in press).

## CONCLUDING SYNTHESIS

by James Rackham

Little evidence for the early foundation of post-Roman London has been found apart from excavations of an as yet unpublished 9th-century site at the Treasury, Whitehall. Those reported here are the first two excavations of Middle Saxon London that have produced evidence of the diet and agricultural economy. More recently there have been other excavations within the Middle Saxon settlement (see Cowie, this volume), but these are still undergoing



study. The environmental evidence reported above therefore constitutes, as yet, our only interpreted study of these aspects of Middle Saxon London. With a wealth of further material presently undergoing study, it would be premature to be too dogmatic about the conclusions from Maiden Lane and Jubilee Hall, but we can certainly summarise aspects of these sites' economies.

First, despite some differences in the scale of excavation and recovery, it is interesting to note that the assemblages of plant and animal material from both sites are similar. It is clear that the contemporary Saxon farmers were growing barley, wheat and probably also rye. There is little or no evidence for oats as a crop but flax may have been, since it rarely survives long 'wild'. Despite this evidence, the sites have produced nothing to suggest that the immediate inhabitants were themselves concerned with this cultivation. Most of the cereal was 'cleaned', and it is suggested that one or two which were 'semi-cleaned' with some chaff and high numbers of weed seeds may be animal fodder with some evidence perhaps of hay.

The lack of evidence for post-harvest cereal processing activities suggests that we are dealing with domestic activities at the market end of this economic system. The presence of remains of fig, grape and possible lentil, perhaps give further support to this, which although including only single occurrences of the latter two, probably indicate purchase of imported foodstuffs. The remaining plant foods give us no information since apple/pear, sloe/plum and raspberry/blackberry would presumably have been available to all sections of the population.

The fish remains include a number of marine fish, evidence of trading upriver to the settlement; but whether they were brought in fresh, salted or dried we cannot

say. Oysters were fairly common, which suggests a daily trade of fresh marine produce or transport alive in water containers. The fish are fairly small in size and in no way suggest that any major industry had developed. All of these finds are from fishes that could readily have been caught in the estuarine waters of the Thames or inshore areas of the East Coast, although ling is traditionally thought of as a deep water fish of the northern North Sea. The low numbers of marine species by comparison with the abundance of eels and the presence of freshwater species suggests that this trade was small, particularly by comparison with medieval material from London. The freshwater fishes indicate local river fishing, the abundance of eels probably reflecting availability and ease of capture.

Recognition of imported or traded material is relatively easy for plants and fish but among the mammal and bird remains only antler, for crafting, fits this category. Unfortunately, antler is ubiquitous on Saxon and early medieval settlements of both rural and urban character, and can give us no information on the nature of the settlement. It is clear that craft-working was carried out using bone and red deer antler since finds include finished objects, half completed or worked fragments and shavings. These could derive from itinerant craftsmen (MacGregor 1989) or home manufacture, since apart from the combs little of the worked bone need have been produced by specialist craftsmen. Pieces of sawn cattle horn core testify to the presence of saws, tools unlikely to be in the hands of any but a craftsman, and it is probable that horns of cattle, sheep and goat were being worked. None of these remains are in sufficient numbers to suggest a 'workshop' nearby such as those found elsewhere at this period (see MacGregor, 1985; 1989).

The mammal assemblages are inter-

esting. The young age profile of the killed animals and a dependence upon cattle and pig suggests a 'meat' market rather than a pastoral system geared to secondary products, such as wool or milk. The absence of foot bones, while often attributed to recovery methods, may on these sites reflect the removal of skins and feet, with only the meat bearing elements arriving on the site. These patterns perhaps suggest a 'market' rather than subsistence economy and would indicate an urban or trading settlement. The presence of remains of some very young pigs indicates pig keeping in the settlement, along with geese and chickens, but cattle and sheep were probably farmed elsewhere, outside the settlement, the latter being of some importance as wool producers as well as meat.

The general conclusions from the environmental analysis suggest an urban or mercantile settlement, trading locally with the coast and surrounding countryside and possibly over much greater distances with the European mainland, but nevertheless probably maintaining some domestic stock of their own. The 'urban' character is much less marked than on later sites where the evidence for imported plants and animals is much more extensive. This picture contrasts with the interpretation of the mid-9th-century site at Whitehall as a Saxon farm.

## A SKELETON FROM JUBILEE HALL

by Janet D. Henderson

Examination of the human skeletal remains from grave (39) showed that most of the bones of the skeleton were represented but that preservation was only poor to fair. Observations were made for age, sex, stature and any skeletal anomalies or abnormalities. A complete catalogue of these results is held in the site archive and a full archive inventory of the bones and teeth present is kept in the Ancient Monuments Laboratory.

The skeleton was that of an adult male (aged approximately 35–40 years). Stature was estimated at 1.72m (c. 5'8").

With the exception of the presence of an *os trigonum* (accessory bone) on the right foot no unusual metrical or morphological anomalies were found.

Evidence for pathological change was noted on the teeth, the vertebrae and the right ulna. Orally there was a carious lesion affecting the maxillary right first molar. In addition there was marked bony recession of the alveolar margins which is generally taken to indicate some form of gingivitis (gum disease) during life. On the spine the evidence was all for joint disease. Only the cervical and thoracic vertebrae were sufficiently complete for examination, but it was possible to establish that only the vertebral bodies were affected (i.e. not the posterior joints) and that the presence of marginal osteophytes and Schmorl's nodes suggested that there had been some intervertebral discal degeneration. This was not considered to be of any great significance since such changes are common and may occur as early as the second decade of life (Resnick and Niwayama, 1981). Finally there was a fracture of the right ulna. This kind of injury is often described as a 'parry' fracture since it is often caused by parrying a blow with the forearm. However it may also result from an indirect force, such as a fall on the hand, so it should not automatically be assumed that it represents violence (Adams, 1978). The bone and radiographic evidence suggested that the fragments had united and were partially consolidated, both features generally taken to be indicators of healing (Watson-Jones 1946).

## SOIL REPORT ON THE MIDDLE SAXON FLOOR AND 'DARK EARTH' AT JUBILEE HALL

by R. I. Macphail

The section studied (Section A–C, Fig. 4) featured a brickearth clay floor (7) immediately overlain by 'grey earth' (15) which merged into 'dark earth' proper (37). These layers were investigated by micromorphology and analysis of organic carbon and calcium carbonate (Avery and Bascomb 1974; Bullock *et al.* 1985; Courty *et al.* 1989).

## RESULTS AND DISCUSSION

These are presented in detail in Table 24 and in the Micromorphological Description and Interpretation. Briefly, the investigation shows that a Middle Saxon, rather pure brickearth floor seems

to have had 'carnivorous' type, probably human, coprolites incorporated into it during its use. The floor was also affected by water containing organo-phosphatic solutions from the hearth, which produced a form of ironpanning, and possibly with soluble coprolitic material, which also produced amorphous iron nodules and infills featuring vivianite ( $\text{Fe}_3(\text{PO}_4)_2 \cdot 8\text{H}_2\text{O}$ ).

On the surface of the floor an 'omnivorous' / herbivorous type coprolite occurs beneath what may be interpreted as a collapse of 'daub wall' material. Ash over the coprolite suggest fire accompanied by collapse. The 'wall' material included very pure brickearth together with brick-earth mixed with organic matter (Table 24), which was some form of clay wall daub. Burning of this material reddened layers of the daub.

The horizon which is called 'grey earth' was in places re-worked by soil fauna. Probable *Enchytraeidae* produced organo-mineral micro-aggregates, typical of 'dark earth' (Macphail, 1981; 1983), whereas earthworms produced casts of rather 'pale' soil because the 'digestible', organic matter had been removed leaving just the charcoal. The analysis of the 'dark earth' here and elsewhere (Macphail and Courty, 1985), suggests that this finding indicates the role of earthworms in 'dark earth' formation to have been over-stressed, whereas *Enchytraeidae* may have been overlooked. The 'dark earth' at Jubilee Hall again seems to have developed from the accretion of re-worked debris from insubstantial buildings (Macphail and Courty, 1985), leading to a finely calcitic fabric being developed through a combination of fires (ash) and the breakdown of such materials as plaster and mortar.

Table 24. Micromorphological analytical data.

Horizon	% Organic	% Calcium
	Carbon	Carbonate
'Dark earth' (37)	1.1	2.2
Brickearth collapse/ 'Grey earth' (15)	1.2	0.9
Brickearth floor (7)	0.5	trace

#### MICROMORPHOLOGICAL DESCRIPTION—JUBILEE HALL

In the description the following abbreviations are used:

PPL = viewed under Plane Polarised Light

OIL = viewed under Oblique Incident Light

Colour photomicrographs are held in the archive.

The limit set between 'Coarse' and 'Fine' mineral was 10µm.

#### THIN SECTION A: THE 'DARK EARTH'

*Structure* very weakly prismatic: micro-aggregate micro-structure.

*Porosity* 35%; very dominant, open-walled, medium vughs (voids); few medium open-walled, dominantly vertical, channels.

*Mineral*. Coarse/Fine 50:50.

*Coarse* unsorted; dominant silt size, very fine, fine, medium sand-size quartz; few coarse quartz; frequent medium, coarse, very coarse and gravel size flint; few fine to very coarse opaques, glauconite etc; rare feldspar, limestone. Common daub, burned daub, brickearth fragments (see Fine); rare probable oyster shell fragments—disintegrating; frequent coarse to fine bone, rare weathered, biogenic calcite sometimes burned.

*Fine* heterogeneous; a) dominant (micro-aggregate) very dark brown, blackish; heavily dotted (PPL); low birefringence; dark brownish, black specks (charcoal) in OIL (biologically worked 'dark earth'). b) few pale brown, speckled (PPL), moderate birefringence; pale orange in OIL (calcitic mortar/plaster; ashey fabric). c) frequent, very dark brown, blackish, heavily dotted (PPL); very low birefringence; very dark brown in OIL (slaked daub fabric, sometimes blackened or reddened by burning). d) few yellowish-brown to dark brown (PPL), generally low to moderate birefringence; blackish, dark brownish and reddish in OIL (brickearth fragments, mainly burned).

#### Organic

*Coarse* bone as above; few charcoal.

*Fine* very abundant, charred organic matter, obscuring most of fine fabric; humifying organic matter; rare phytoliths.

*Groundmass* porphyric, (closely embedded), weak to moderate crystallitic b-fabric.

*Pedofeatures*. Excrements very dominant, thin organo-mineral, probable *Enchytraeids*; rare mammilated fragments (possible relic), rare biogenic calcite ?*Arionid*.

*Textural*. Common intercalations of fine fabric in daub (unworked biologically, perhaps because baked by burning). *Fabric* heterogeneous mix of anthropogenic fabric, commonly reworked biologically.

*Amorphous*. Few yellowish-brown fragments of ?organo-phosphatic and iron character?

#### THIN SECTION B:

2 = 'Grey earth': Biologically worked collapsed building materials (15)

3 = Brickearth: ?collapsed daub

4 = Brickearth floor (7)

#### Structure

3 and 4, massive with massive microstructure;

2, massive and sub-angular blocky, with massive, vughy, micro-aggregate and total excremental microstructures.

*Porosity* 3 and 4, 10–15%; 2, 30%.

3 and 4, very dominant, moderately smooth-walled, medium vughs, few fine channels.

2, common, medium to coarse, moderately smooth-walled vughs; frequent, very coarse, moderately smooth-walled channels (earthworm).

*Mineral.* Coarse:Fine 60:40 generally.

*Coarse* very similar to Section A, but:- very abundant silt-size quartz (brickearth), frequent gravel size flint; frequent burned and unburned bone. Large amount of inclusions, including brickearth floor and burned and indurated areas.

The rest of the description is divided into three levels:

#### 4—'Brickearth floor'

*Organic.*

*Coarse.* many large fragments of reddish-brown, ferruginised bone—cooked—digested?; occasional wood charcoal.

*Fine.* Many organic fragments—charred grass, humified grass; rare phytoliths. Abundant, yellow, yellowish-brown to dark brown amorphous, organic matter as concretions organic (?root) pseudomorphs, and as septic and concentric nodules; generally non-birefringent, yellow or brown in OIL; occasionally associated or includes blue/green vivianite crystals. Many relate to decalcified ashy areas where only phosphate staining and minor clay coating formation left, others are probably coprolitic. These features are complex, some presumed to be some form of organo-phosphate—probably mainly derived from ash; although some may be influenced by cess. Others appear to be coprolite fragments.

*Fabric.* Mineral 'background' is predominantly brickearth with minor organic mixing. Other features are 'iron panning' or staining of layers of brickearth, and brown amorphous infills—iron and manganiferous hydromorphic impregnation—seems to decrease away from hearth direction. There could be some association with amorphous organo-phosphatic features as described above, which also occur elsewhere in this layer as nodules.

#### 3—'Brickearth, collapsed daub'

This layer, mainly of brickearth, has been strongly perforated by biological (earthworm) activity. Includes gravel, coarse charcoal etc; many fine charred and humified often 'grassy' organic matter; therefore deposit originating from 'mixed' brickearth daub, plaster etc. Organo-phosphatic infills also occur in small amounts.

#### 2—'Grey Earth'

This is a very complicated layer which includes brick-earth fabric, many inclusions, and two main types of biological working.

*Excrements.* Many excellent, coarse, mammilated mineral earthworm excrements occur as 'loose' infills of coarse channels. These can be differentiated from the general fabric by being very pale brown, dotted (PPL), very low birefringent, and grey to very pale yellow OIL. They contain abundant, fine organic matter, which is predominantly black—presumably charred—with extremely little yellowish-brown organic matter present. The coarsest mineral inclusions are fine sand (*c.* <500µm). Surrounding soil is less well sorted (including all the inclusions—bone, shell, burned daub, stained brickearth,

brickearth etc), and much darker because it contains very abundant, fine organic matter, much of which is yellowish-brown and amorphous (i.e. fresh, 'edible', organic matter is present). Also present are many thin organo-mineral excrements, probably *Enchytraeids*—wire worms, which have not digested all the organic matter.

### INTERPRETATION

The Middle-Saxon floor (7) is made up of brickearth. This constructional material, which was commonly used for 'clay' floors and 'clay' walls in Roman times has been previously studied from both City and Southwark sites (Macphail and Courty, 1985), and from destruction levels at Colchester (Macphail, 1986). It is also being currently investigated from the Courage Brewery and 28 Park Street sites in Southwark. Although a large proportion of the brickearth material at Jubilee Hall is from uncontaminated brickearth—i.e. a geological clay loam deposit generally low in organic matter—much has been mixed with organic matter. This suggests some re-use.

The brickearth layer may not just be a floor which is contemporary with the hearth in this part of the site. Close inspection seems to suggest that there may be two 'layers'; the floor itself and an overlying brickearth deposit including brickearth daub.

#### The Floor:

In the floor, which is made up of both pure and contaminated brickearth, inclusions such as coarse flints, coprolites (see below) and large fragments of (partially digested) bone both phosphatised (Ultra Violet light illumination) and ferruginised bone occur. The floor was also affected by hydromorphic (gleying) iron and manganese staining (impregnation) or ironpan formation—probably contemporary with the site because it is fractured. This discontinuous pan may also have been more strongly developed towards the hearth. Localised near-surface wetting and even slaking of dirt floors is a common phenomenon (Courty *et al.* 1989), and this pan formation here probably relates both to wetting and the influence of 'organo-phosphorus' solutions derived from hearth ash residues—the latter enhancing biochemical effects of hydromorphism and ferruginous impregnation elsewhere.

In addition, there are nodular infills 1–3mm in size, yellow with dark brown to black edges, amorphous, non-birefringent and yellow and brown in reflected light, but which do not fluoresce under UV. These also sometimes contain the blue/green iron-phosphate mineral vivianite which, although a mineral common to fen soils, has clear associations with anthropogenic deposits (Keeley and Macphail 1981; Macphail 1983), and is also present within phosphatised (digested) bone. There are two probable interpretations of these nodules. First that they can be the result of a combination of hydromorphism (mobilising iron in the reduced state), and water containing organo-phosphorus from dissolved wood ash from the nearby hearth. In fact, because of some obviously impregnated outer margins, this effect must be at least contributory. Secondly, they can be coprolitic in origin. Some are definitely coprolites (from reference thin-sections, Macphail 1987; Courty *et al.* 1989) on the

grounds of morphology, with discrete, dark brown margins and strongly phosphatised bone fabrics; whereas others are more nodular and possibly represent ferruginous organo-phosphorus residues—ferruginisation also effecting bone fragments. The high quantity of amorphous material, the lack of phytoliths and plant inclusions, but the presence of bone with 'digested' margins and phosphatised possible 'pseudomorphic bone' all indicate that these coprolites are from carnivores. The presence of human coprolites at Maiden Lane suggests the possibility that these are from mainly meat-eating humans, as opposed to dog, because the latter tend to scavenge and their coprolites may have an 'omnivorous' content. In the case of the amorphous yellow ('amber') coprolitic residues, similar examples have been associated with such pure carnivores as hyenas (Goldberg, 1979).

#### *The collapse (15):*

Much coprolitic material occurred in one area, approximately at the junction between the floor and the 'collapse'. Here, although amorphous organic matter predominates, there are a few phytoliths and frequent plant fragments suggesting an omnivorous/herbivorous origin. It seems to have been deposited in a semi-liquid state, as some of the surrounding soil became impregnated. The coprolite is then directly succeeded by what may be interpreted as 'collapse' or 'destruction' deposits. These look very similar to the brickearth floor because they are essentially of the same mineral origin—i.e. brickearth. Here, however, the brickearth, although containing 'pure' fragments, is mainly mixed with organic matter—phytoliths; fine, often charred, organic matter; and coarse plant remains and plant pseudomorphic porosity all suggest a daub or 'clay wall' origin. Fragments of decalcifying 'plaster' also occur, but of course these may be secondary. Within the 'collapse' are small areas of ash (calcite crystals) associated with organic rich daub fabrics. Also in this part of the thin section are thin layers of charcoal, burned 'brickearth' with charcoal and ash (e.g. on top of the omnivorous/herbivorous coprolite). Some burning may therefore be associated with the collapse/destruction of this building. Further coprolitic material and organo-phosphatic/vivianite deposition also characterise this deposit.

#### *Post-depositional events; accretion of 'dark earth' (37):*

It appears that the loose 'collapse' deposit ('grey earth') was moderately perforated by fauna, although the brickearth floor, probably because it is more dense and rather 'sterile', was much less biologically worked. Two main types of faunal working can be recognised and it is important to differentiate between them. Frequently, dark organo-mineral excrements probably relate to *Enchytraeidae* (wire worms) which are known to produce stable soil aggregates and occur in hundreds of thousands in the top few centimetres of natural soils. In addition, *Arionidae* (slugs) were also present chewing over decaying organic matter, as evidenced by their (now decalcifying) calcite granules. *Enchytraeidae* and *Arionidae*, however, were less efficient in re-working the deposit than earthworms which produced very coarse channels and mammilated casts or excrements from the anthropogenic mixture of brickearth

mineral, organic matter and charred organic matter. Detailed studies of these excrements and surrounding 'grey earth' of the 'collapse' and re-worked 'collapse' show similar sorting and birefringence. The excrements, however, are much paler, because although they still contain much charred organic matter as in the juxtaposed sediment, all of the 'digestible' organic matter has been removed. This characteristic is typical of casts.

It is very important to note that in the 'dark earth' deposit, sampled some 500mm above the base of the floor, the fabric appears to be purely that of micro-aggregates—typical of 'dark earth' (Macphail 1981; 1983; Macphail and Courty 1985), and apparently the result of *Enchytraeidae*. This clear evidence suggests that the impact of earthworms on 'dark earth' deposits may have been over-emphasised in the past. The origin of 'dark earth', although still under study (Macphail, Courage Brewery and 28 Park Street AML reports in prep.) relates in part to the destruction of insubstantial buildings (Macphail and Courty, 1985), and the fine calcium carbonate present within the matrix at Jubilee Hall is a typical result. The presence of *Enchytraeid* excremental fabrics throughout the 'dark earth' at a number of sites clearly demonstrates that 'dark earth' occurs through accretion because *Enchytraeids* are most common in the top few hundred millimetres of soils and only occur down to 200mm depth, whereas *Enchytraeid* worked 'dark earth' can be over a metre thick.

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