

EXCAVATIONS AT THE PEABODY SITE, CHANDOS PLACE, AND THE NATIONAL GALLERY

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SUMMARY

Excavations at the Peabody site and in the National Gallery basement provided further evidence of the 7th- to 9th-century trading settlement of Lundenwic, following the discovery of mid-Saxon deposits at several sites near the Strand (Fig 1), including Jubilee Hall and Maiden Lane (Cowie and Whytehead, 1988). The long stratigraphic sequences at the Peabody site included structures, wells, rubbish pits, a large area of metallurgy, and an inhumation. The mid-Saxon features in the National Gallery basement comprised three rubbish pits.

Excavations at the National Gallery extension revealed large Saxon gravel quarries, which presumably lay beyond the western edge of Lundenwic. These were overlain by 12th-century strata, including a ditch and a possible sunken-featured structure.

The pottery analysis adds significantly to the typology and fabric classifications established for Jubilee Hall and Maiden Lane, and completes the foundation for future studies of Middle Saxon pottery from the London area. Also discussed are the loomweights, daub, metalwork (which includes a reused Roman ring and a spear from the burial), glass, worked stone and worked bone, comprising an important addition to the corpus of material from the earlier excavations in Lundenwic. The environmental evidence comprises botanical remains and animal bones. The former mainly demonstrate the cultivation of cereals: wheat, barley and some rye. The latter, however, seem to show major economic differences between the sites. The Peabody site, nearer the settlement, was a 'consumer' site, whereas the National Gallery, on the periphery, seems to have been wasteland or a farmstead where animals were kept and bred.

INTRODUCTION

The Peabody site (sitecode PEA87)

In March 1987 a trial excavation was undertaken by the Museum of London's Department of Greater London Archaeology (hereafter DGLA) at the Peabody Trust site on the east side of Bedfordbury at the junction with Chandos Place (TQ 3019 8070; Fig 2 No. 3). The site lay within the area once occupied by the Middle Saxon town of *Lundenwic* (Cowie, 1988b; Cowie & Whytehead, 1989, 708), and as anticipated the trial excavation, which followed the demolition of two housing blocks, revealed

Middle Saxon strata. The deposits were particularly well preserved in the central part of the site, where a long sequence of occupation levels capped by 'dark earth' survived. The main excavation took place from October to December 1987.

The National Gallery (sitecodes NGA87 (basement), NAG87 (extension))

Following the discovery of a Middle Saxon pit during work to install a new air conditioning plant in the basement of the National Gallery an excavation was undertaken by the DGLA at the end of February 1987 (TQ 2996 8054; Fig 2 No. 2). The two-

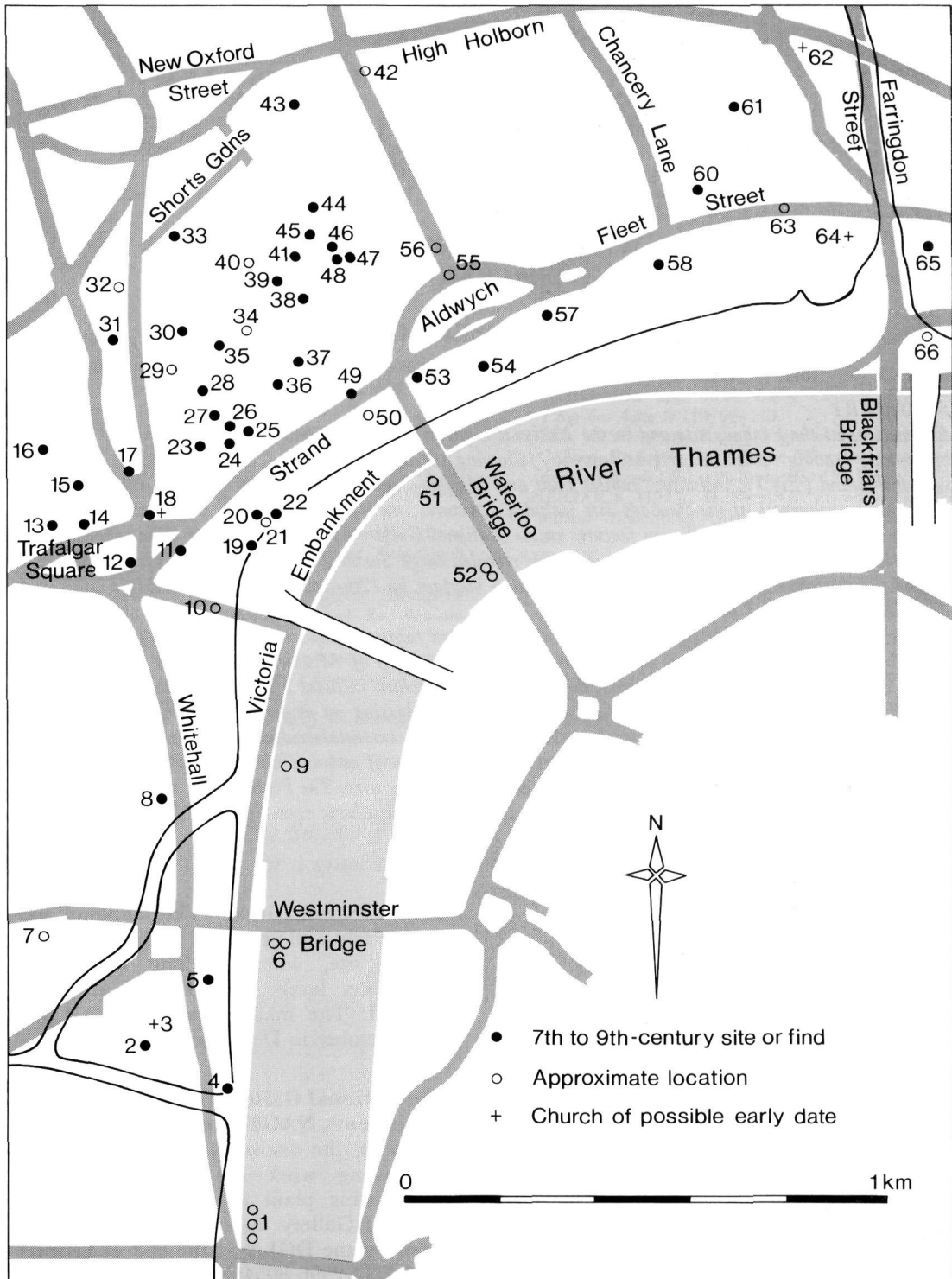


FIG 1 Map showing 7th- to 9th-century Middle Saxon sites between the Fleet and Westminister. Peabody site is No. 23; National Gallery extension No. 13; National Gallery basement No. 14 (for full key to nos see LAMAS Trans vol 39, p39)

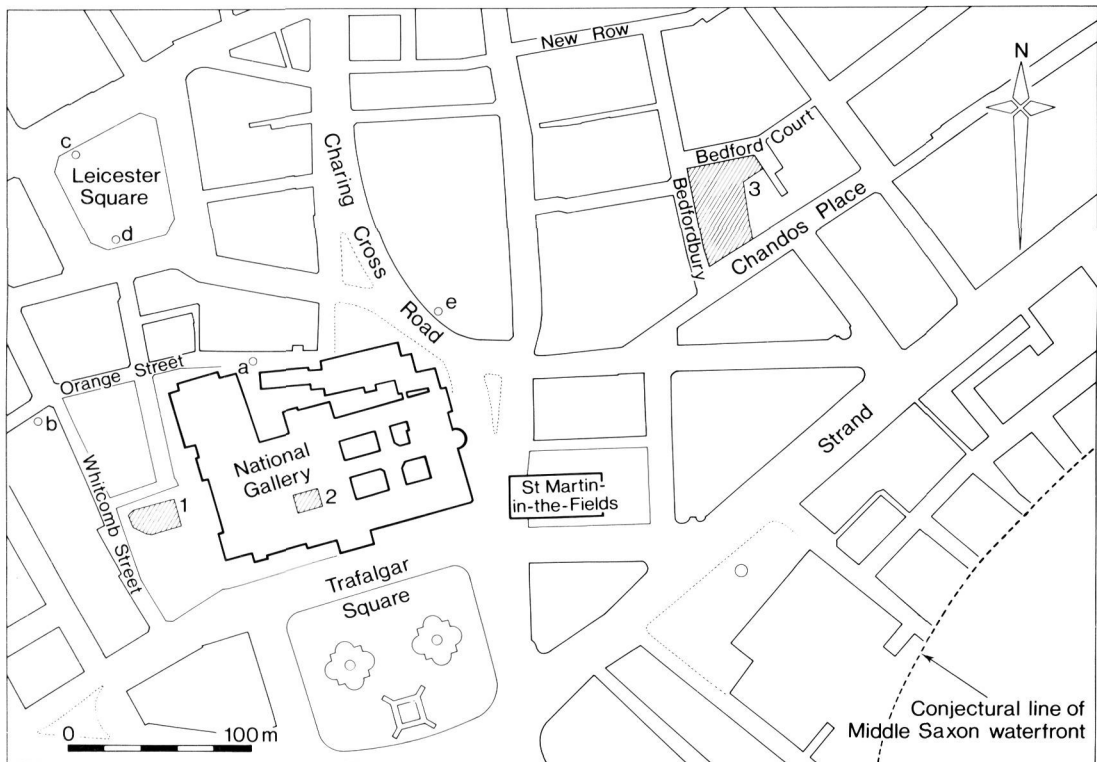


FIG 2 The Peabody site and National Gallery: site location plan. 1 The National Gallery extension; 2 The National Gallery basement; 3 The Peabody site; a National Gallery rear entrance; b 14–20 Orange Street; c Leicester Square public conveniences; d Leicester Square LEB sub-station; e Cavell House, Charing Cross Road

week excavation revealed two more pits, which produced numerous artefacts dating to *c.* AD 650–850.

In the summer of 1987 an excavation was undertaken on the site of the proposed National Gallery extension, the Sainsbury Wing, by the DGLA. The site, a former car park, was on the west side of the National Gallery (TQ 2989 8051; Fig 2 No. 1), bounded to the north by St Martin's Street and to the west by Whitcomb Street, and was situated only a few yards from Sir Mortimer Wheeler's last home (Hawkes, 1982, 320). The property measured approximately 65m north-south and 35m east-west. The aim of the excavation was to investigate archaeological deposits found in the northern third of the car park during trial work by the DGLA in August the previous year. Large

gravel quarries and other features had been recorded in section during this work, and Roman, Middle Saxon and medieval pottery recovered from the strata (Cowie, 1986). No early deposits were found in the southern and central parts of the car park.

Note: Archive reports on the excavations at the Peabody site (Whytehead, 1989), the National Gallery basement (Cowie, 1987), and the National Gallery extension (Cowie, 1988a) are held by the Museum of London, and may be consulted on request. The stratigraphic units (contexts) have been renumbered for this report, and correlation tables are included in the archive. Individual objects found at these sites are numbered according to their order of appearance in the report, but their original accession (SF) numbers are also given.

THE PEABODY SITE By ROBERT LAYARD WHYTEHEAD with DAVID BOWSER

Structure of the excavation report

The Saxon deposits survived in several areas, designated in this report Areas A, B, C, D, E (Fig 3). The geological strata and early features are discussed first; thereafter the report is divided into the site's five areas. The features in each area are described in chronological order; the final 'dark earth' phase, common to all areas of the site, is described after the section on Area E. There follows a discussion, which includes an assessment of the dating evidence.

Geology and topography

The site lay on river terrace sand and gravel capped with brickearth. About 0.50m below its surface the gravel had hardened through iron-panning to a solid dark brown mass *c.* 0.50m thick. Tests by Ove Arup Associates indicated that water lay at least 5m below modern ground level, and water was not encountered in the deepest pits dug. However, a well [19] (see p. 43), dug to *c.* 3m below modern ground level, indicated that the water table was once higher.

The focus of the Middle Saxon town appears to have been the Strand (Fig 1), the postulated Roman road later known as *Akemannestraete* (Biddle, 1984, 24; Cowie and Whytehead, 1989, 710). Today the Peabody site lies at the top of a slope rising from the Strand, where the ground flattens to form a fairly level area before rising again at the north end of Bedfordbury to New Row. The earliest Saxon occupation level at the site was located between *c.* 15.66 and 15.92m OD; the overlying Saxon strata were truncated by the formation of 'dark earth' between 16.37m and 16.04m OD north-south, about 1.50m below modern street level.

The excavation

Earliest activity—gravel pits

A deep gravel pit [1] (not illustrated) extended over the central and western part of the excavation area, with traces of a second

quarry along the western edge of the site. The edges of gravel pit [1] could not be confidently plotted, nor was the maximum depth found. The pit was filled with relatively clean brickearth (possibly derived from other quarry areas).

Early stakeholes

Apart from some slight disturbances of the 'natural' brickearth and a redeposited brick-earth ground surface [2], which yielded a Roman potsherd and a few flakes of chaff-tempered ware, the first clear evidence for Saxon occupation was a mass of stakeholes of varying size and shape, but with similar fills [3] (Fig 4). Most were sealed by gravel metalling [9] (see below).

The stakeholes were not associated with evidence for domestic occupation, but many were roughly grouped in staggered lines and may have held uprights for wattle fencing. Such a configuration could have been formed by temporary fencing, possibly animal pens, which had been moved around. Two isolated circular postholes [4] and [5], on the western fringe of the concentration of stakeholes, may have been related to them, as may the 'early' postholes [6], which contained two sherds of chaff-tempered ware, and [7].

The gravel metalling and associated features

In Area A a 1.80m wide band of redeposited brickearth [8] had been laid on the early ground surface, perhaps as a foundation for a layer of rammed gravel [9] (Fig 5). The latter extended across the site from north to south, and beyond the eastern edge of the excavation, and was the only feature to be traced in Areas A, B and C.

The north-east and south-west edges of the gravel were clearly defined. To the north-east it was bounded by a wall or fence line (see below), while to the south-west the dense gravel came to a fairly even edge, beyond which was a scatter of pebbles at the same level, ending by a gully [10]. The gully, possibly a gutter for run-off from the metalling, survived to a depth of 0.17m, and was filled with silt. Postholes [11] and [12] lay to the west of the gully, and may possibly have marked a boundary fence parallel to it.

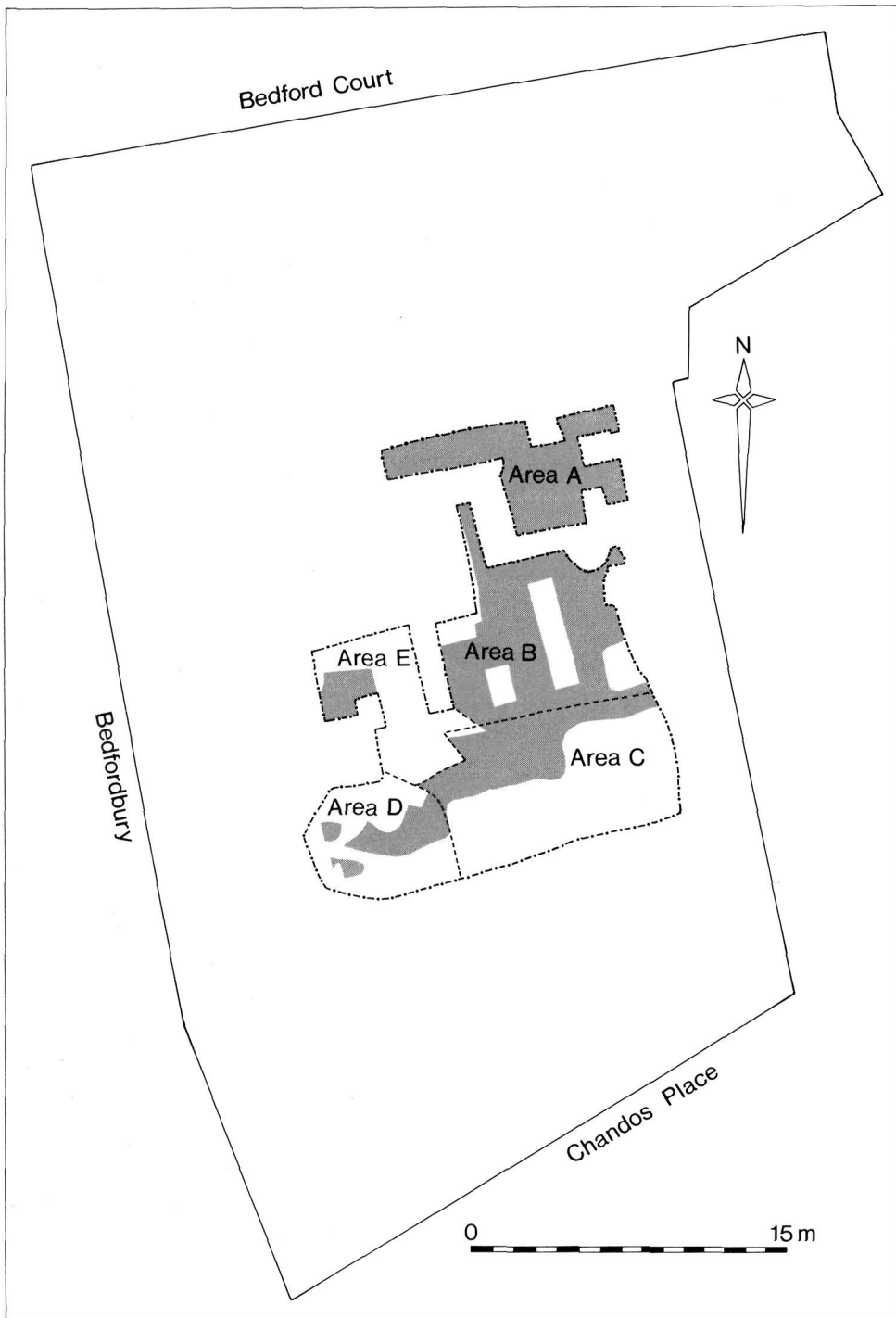


FIG 3 The Peabody site: site plan showing the five excavation areas, and the extent of the archaeological deposits (shaded)



PLATE 1 The Peabody site: the site under excavation

To the north another gully [13] cut into the metalling.

The metalling may have been a road or yard surface. However, as the gravel appears to have been laid around a structure (see

below), did not follow a distinctive linear pattern, and seems to have been used only for a short period, its interpretation as a yard is preferred. In the following pages, features associated with or overlying the metalling are

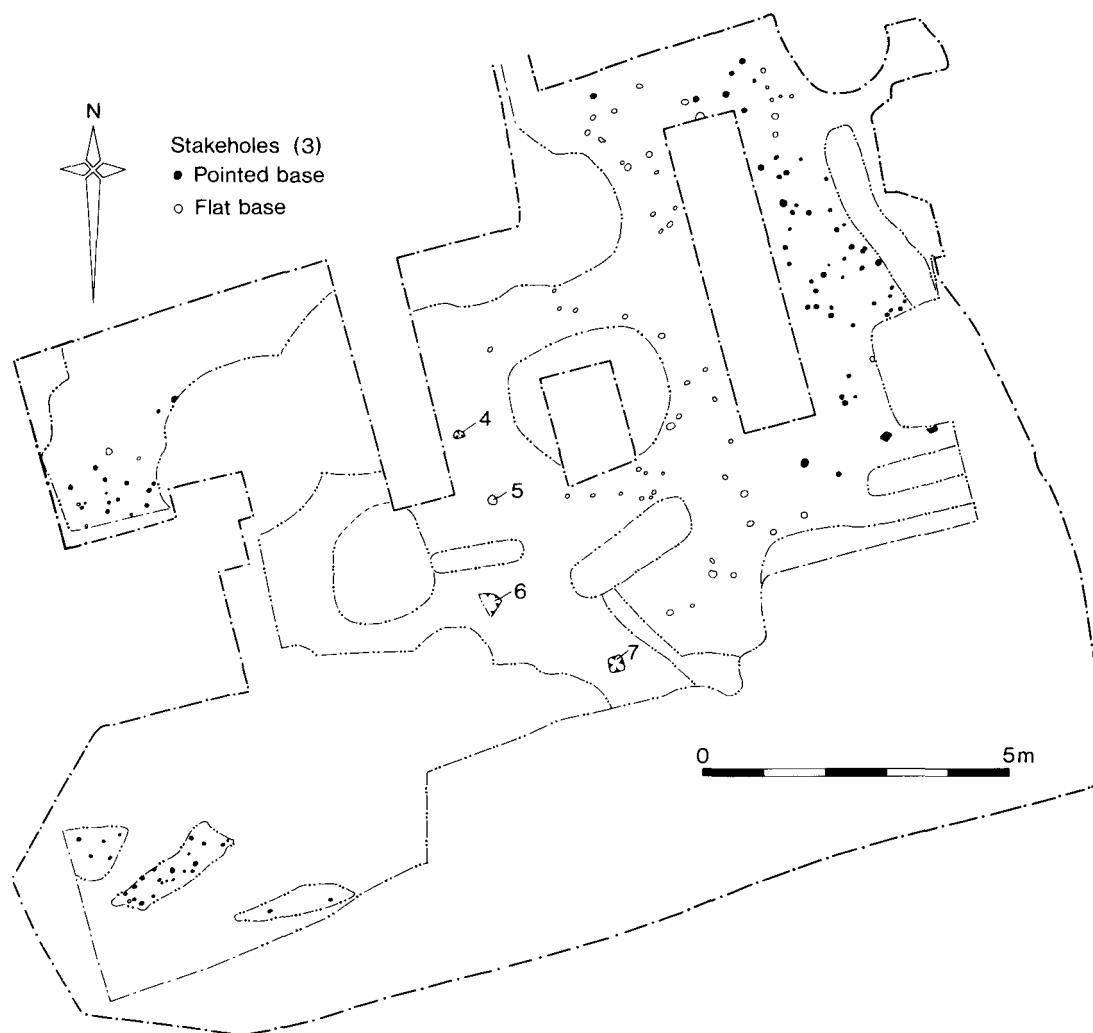


FIG 4 The Peabody site: early stakehole phase [3]

described in each of the three areas A, B and C.

AREA A

Traces of a post-and-slot structure were found on the east side of the gravel metalling in Area A (Fig 5). The structure could have been cut through the gravel metalling from a higher level, but it is more likely either that they were contemporary, or that the metalling was laid around the slot structure.

Slot [14] was 100m deep, and had a vertical east side but a sloping west side.

Next to its butt end there was a large posthole [15], 0.25m deep, with stone post-packing at the base. A smaller posthole [16] had been inserted next to it. A layer of silty sand [17] appeared to fill a break in the post-and-slot structure. It abutted the eastern edge of the gravel metalling, yet survived slightly higher than the gravel, and may have been retained by a barrier such as a wooden bar, no trace of which survived.

The slot and postholes had similar fills, resembling the overlying layer [39] (see p. 43). However, slot [14] had a concentration

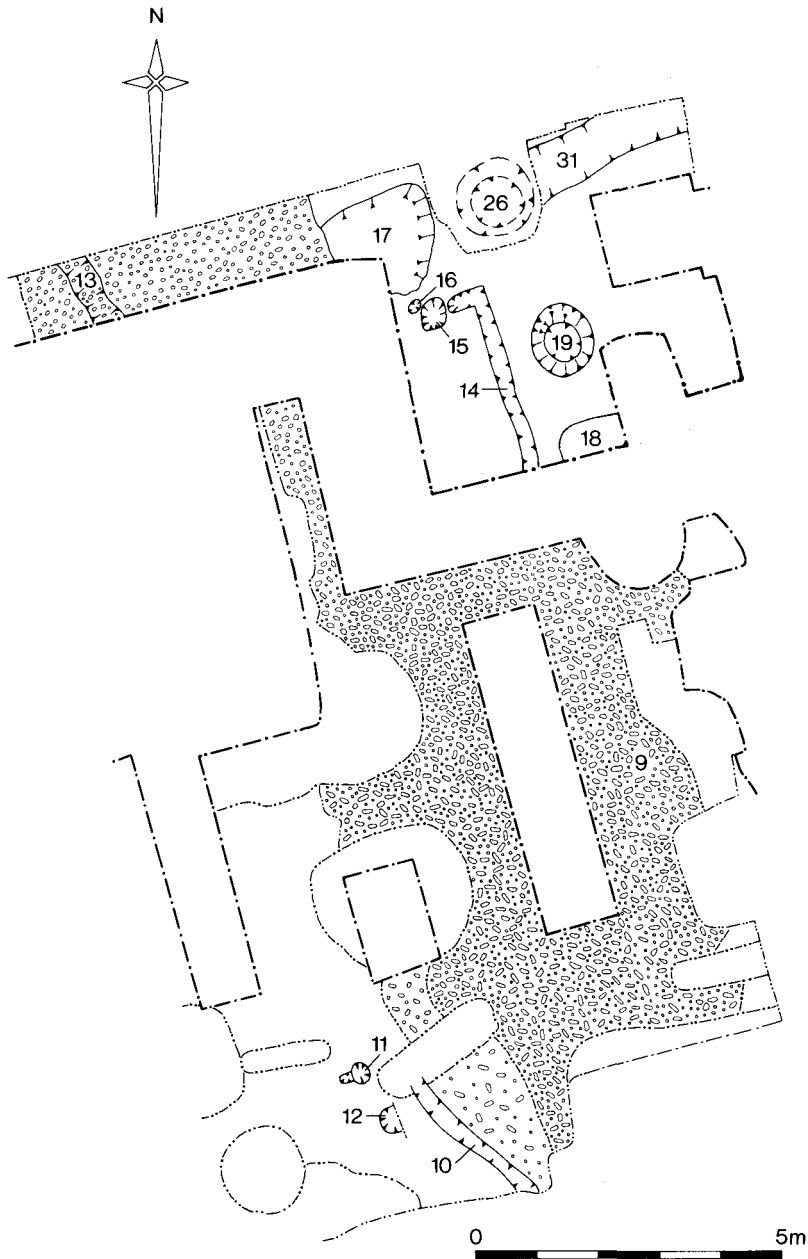


FIG 5 The Peabody site: the metallised area [9] and structural features

of charcoal flecks in its butt end, and part of a human skull approximately half way along its length. Enough of the skull survived to suggest it was lying on its left side, facing west, but whether or not the head had been

deliberately positioned was unclear. A layer of clayey silt [18], on the east side of the slot (Fig 5), had animal bone and gravel pressed into it, and may have been an earthen floor contemporary with slot [14].

The structural features suggest a wall, possibly with an entrance to a building or yard. Slot [14] may have contained a sill-beam or planks. Although it did not seem deep enough for the latter it seemed too irregular to have held a continuous sill-beam. Saxon buildings often have postholes on the exterior on either side of a doorway, but it is unusual for a wall slot to turn outwards (see Millett and James, 1983). Yet the metalled area towards which this slot turned was presumably the 'exterior' of whatever structure it belonged to. Layer [17] may have been a threshold for the building, as it apparently filled, but did not extend through, the entrance way. There would have been a slight step down from it into the building, unless it led onto a wooden floor for which no evidence survived. It should be noted, however, that a barrel-lined well [19] (see below), which would not be expected within a standing building, seems to have been contemporary with the slot. This suggests that the structure may have been a substantial fence rather than part of a building.

Further features in the north-east corner of Area A may have been contemporary with slot [14]. Well [19] was oval in plan at the surface, tapering to a circular shaft 0.70m in diameter *c.* 1.60m below the contemporary ground surface. There were traces of a wooden barrel lining in the lower section, but no details of the staves or construction of the barrel could be determined. The survival of the wood, however, indicates the likely depth of the water table at earlier periods. At a higher level where the surrounding gravel had solidified as a result of iron-panning the impressions of withies which bound the barrels were preserved. Three bands of withies could be seen on the north side and two on the south, each 10mm wide and set 10mm apart. The primary fill [20] contained a large amount of decomposed organic material, overlain by layers of silty clay [21]–[24]. Layer [23] produced the first sherd of Ipswich-type ware in this stratigraphic sequence. The uppermost fill [25], of sandy silt, contained larger amounts of domestic refuse, and it may have subsided

into the well as it was similar to the overlying layer [39].

A second, isolated well [26] (Fig 5) survived to a depth of 1.35m. The initial fills of grey clay and gravel [27] and brown clay [28] had slumped into the centre. These were overlain by grey clay [29] and grey silt [30], which contained more domestic refuse and may have been later occupation layers that had subsided. A sequence of gullies and postholes lay to the east (Figs 5, 6a, 6b). The earliest feature appeared to be a gully [31] (Fig 5), which was 0.13m deep and filled with silt. Two small square postholes [32]–[33] and a group of small stakeholes [34] cut through the gully fill and surrounding area (Fig 6a), but formed no apparent pattern. Some were cut by two narrow gullies [35]–[36] (Fig 6b). Gully [35] had a butt end, and appeared to be on the same alignment as the earlier gully [31] despite the intervening phase of stakeholes. It was filled with greenish clay and seemed to have been recut as a narrower gully [37]. Gully [36] had a similar fill, and the two gullies may have been contemporary. Both were cut by a posthole [38].

The relationship between wells [19] and [26], the sequence of cut features, and slot [14] is unclear. It would seem unnecessary to have had two wells so close together in use simultaneously. If so, it appears less likely, that [26] would have been open while the slot structure was in use, as it would have lain just within what is interpreted as a door or gateway; (although this argument might not apply if the entrance was made specifically for access to the well). Therefore, well [26] might have replaced [19], perhaps when the slot structure had gone out of use. Gullies [31] and [35]–[38] appeared to drain into it, and it may therefore have been used as a groundwater soakaway after it ceased to be used as a well.

Subsequent activity in Area A suggests that the alignment of slot [14] may have been preserved as a property boundary. A layer of dark grey sandy silt [39] had been cut by, or had accumulated around, a group of stakeholes [40], some of which were in rows (Fig 6a). They may have held uprights

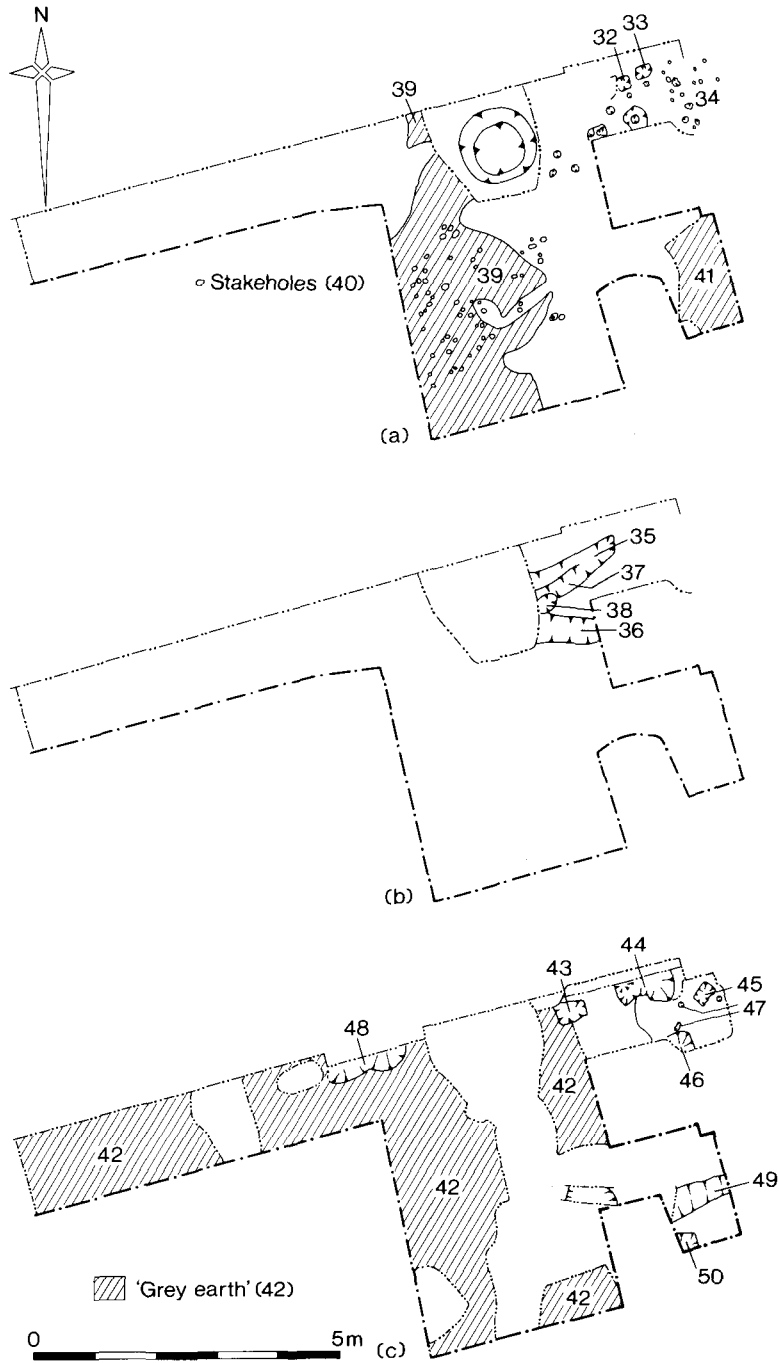


FIG 6 The Peabody site: sequence of features in Area A

for wattle panels around an earth floor. The 'grey earth' [42] which overlay this phase may have derived from collapsed organic building material from that structure (Fig 6c). Layer [41] (Fig 6a) may have been contemporary with layer [39], and was composed of brown sandy silt with bone and oyster shell. It was 100mm deep, and may have been occupation debris rather than a floor.

Sequences of 'grey earth' and cut features (Figs 6c, 7a)

All the features described above were covered by a layer of homogeneous 'grey earth' [42] (Fig 6c). It was typically 30mm to 100mm thick and comprised a mottled sandy silt with pebbles, animal bone and other domestic refuse. There were some variations: one patch contained the greater part of a large sand- and chaff-tempered pot (Fig 28, No. 1) with a purple deposit over the eroded inner surface, and another contained a concentration of burnt daub. Analysis suggests that similar 'grey earth' at Jubilee Hall was organic building material and domestic refuse roughly reworked by natural action (Macphail, 1988). Here it may have comprised material from structures which once stood on the northern part of the site. A sherd of Badorf/Walberberg-type ware indicates deposition after AD 800.

Some small features cut the 'grey earth' (Fig 6c). In the north-east corner was a group of what appeared to be postholes [43]–[46] (although [43] and [44] contained domestic refuse and may have been small rubbish pits), and three small stakeholes [47]. To the west, there may have been a double posthole [48] aligned with [43] and [44]. Three features lay to the south, including a gully [49] and an indeterminate feature [50], which were filled with rubbish.

A second layer of 'grey earth' [51] (Fig 7a), 30mm thick, distinguished from the first by a higher clay content, overlay [42] and had been cut by, or perhaps accumulated beside, a row of intercutting postholes and pits on a north-south alignment. Of these the longest sequence was of four features [52]–[55]. Feature [52] had been truncated and may

have been a pit or posthole; it was cut by a probable posthole [53], which had in turn been cut by posthole [54]. Finally, an irregular shallow pit [55] was dug and filled with rubbish. Nearby, a shallow rubbish pit [56] was cut by a 'D-shaped' posthole [57], which was adjoined by a circular posthole [58], and two irregular pits [59]–[60] were cut by pit [61]. These features ([52]–[58]) may mark a boundary fence, with the rubbish pits ([59]–[61]) alongside. If there was a fence, it must have been repaired or rebuilt, for the posts had been replaced. The posts seem to be on a similar alignment to the earlier slot [14], which might indicate continuity of property boundaries. To the west lay three rubbish pits [62]–[64]. Pit [62] survived to a depth of 0.19m; the others were 100mm deep.

Above the 'grey earth' was a layer of dark grey sandy silt containing occupation debris [65] (Fig 7b), by which it could be distinguished from the overlying 'dark earth'. While this layer appeared to cover the features described above, it is possible that some were cut from this level, or higher. Two rubbish pits [66]–[67] did cut through it, and were at least 0.12m and 0.20m deep respectively. Both were filled with material similar to the overlying 'dark earth' (see p. 56), and may have been dug from a much higher level.

AREA B

Occupation layer on the gravel surface [9]

On the north side of Area B a layer of 'grey earth' [68] (not illustrated) lay on the gravel surface where it extended west of the structure (slot [14]). To the south the gravel was covered with greenish silty clay [69] (Fig 8), 100–150mm deep, which contained charcoal, animal bone, and domestic debris including Ipswich-type ware. The following features cut layer [69], and were all sealed by the 'dark earth': a circular posthole [70] containing an animal bone on end, which may have been used for post-packing; part of a large shallow pit [71] filled with a grey gravelly clay silt, and possibly used for rubbish; and

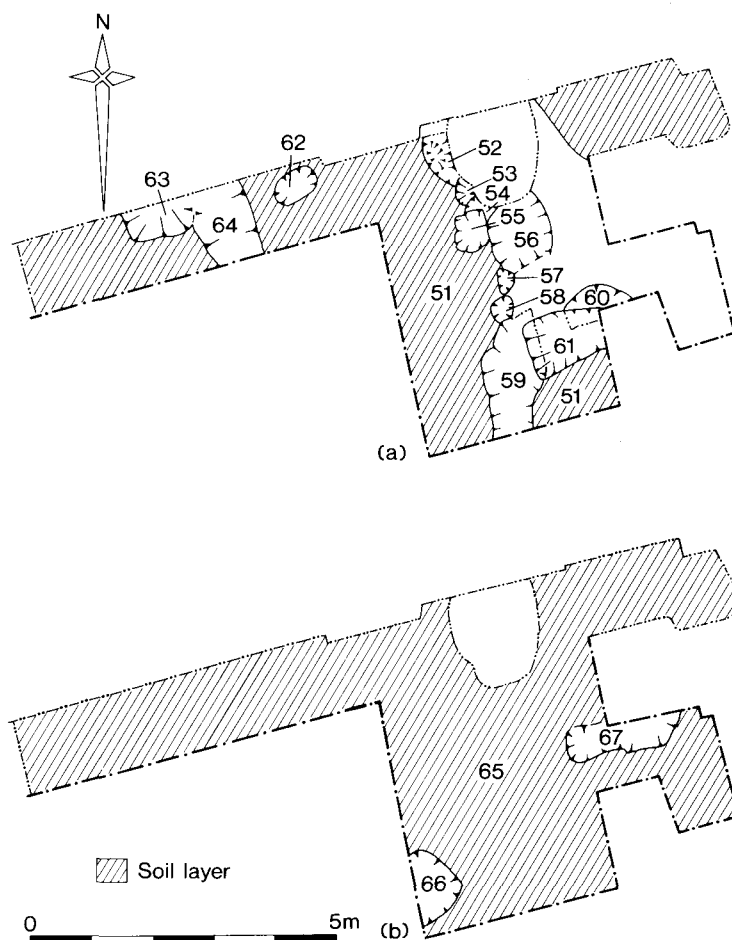


FIG 7 The Peabody site: sequence of features in Area A

several stakeholes [72], apparently truncated by a rubbish pit [73] (Fig 8).

Deep pits

The remains of four substantial pits were found (Fig 8). Two, [86] and [91], were cesspits but the function of the others, [74] and [84], was unclear.

The large circular pit [74] was filled with charcoal-flecked grey clay [75] overlain by a layer of brown organic material, apparently wood [76]. The other fills in the lower part consisted of grey-green silt [77]–[78] and brown clay [79], and contained a variety of occupation debris for which a 9th-century

date is suggested. The upper fills all appeared to be 'dark earth' [80]–[83].

Pit [84] was severely truncated but had a fine-textured lower fill [85] which might have contained excreta, and so may have been a cesspit.

About a quarter of cesspit [86] survived. The primary fill [87] comprised a red-brown fine organic loam, probably containing excreta, although no mineralisation of the contents occurred (see p. 134). This was overlain by a layer of ashy, grey pebbly, clayey silt [88] with frequent charcoal flecks, that had slumped considerably into the centre. This was in turn overlain by a layer of grey silt [89] which may have originally

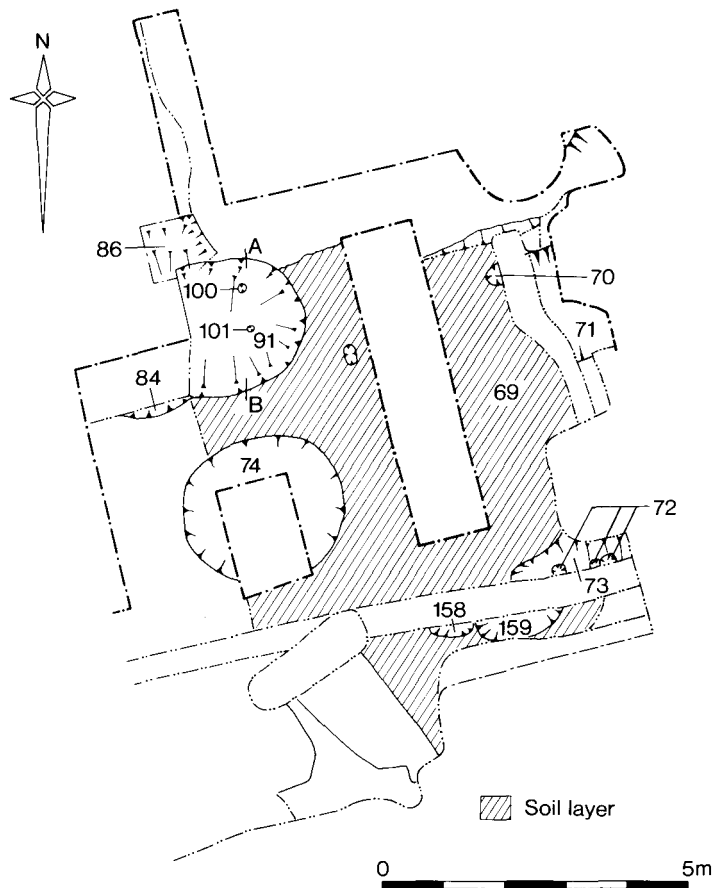


FIG 8 The Peabody site: occupation layer [69], and pits [74], [86], [91] in Area B

filled the pit to the top. The overlying material [90] was similar to the surrounding 'dark earth' but had slumped into the pit.

A circular cesspit [91] (Fig 9) cut cesspit [86]. The primary fill consisted of gravel [92]–[93], which had slumped in from the side. The pit had then been filled with layers of dark brown silt [94]–[95] with a high organic content. The latter contained a considerable quantity of mineralised seeds (see p. 134). Layer [95] was sealed by a layer of gravelly sand with ash and charcoal [99], overlain by a layer of sandy silt with charcoal flecks [102]. Above this was a thin layer of grey clayey silt [103]. At this stage some gravel [104] had slumped from the sides, and this was overlain by a layer of green-grey sandy silt [105]. The remainder of the pit

was filled with successive layers of 'dark earth' [106]–[109], distinguished from each other by variations in their texture and inclusions.

Evidence for a timber framework was found at the bottom of the pit (Figs 9, 10). Four postholes ([97], [98], [100], [101]) were found in the lower fills, two of which, [100] and [101], penetrated the base of the pit. The posts in [100] and [101] remained after those in [97] and [98] had been removed and the holes sealed by layer [99]. Traces of decayed wood [96] and what may have been wickerwork lay on top of fill [95] between postholes [97] and [98] (Fig 10). The wooden frame may have been the remains of either a platform at ground level or a roof to cover the pit, supported by stakes.

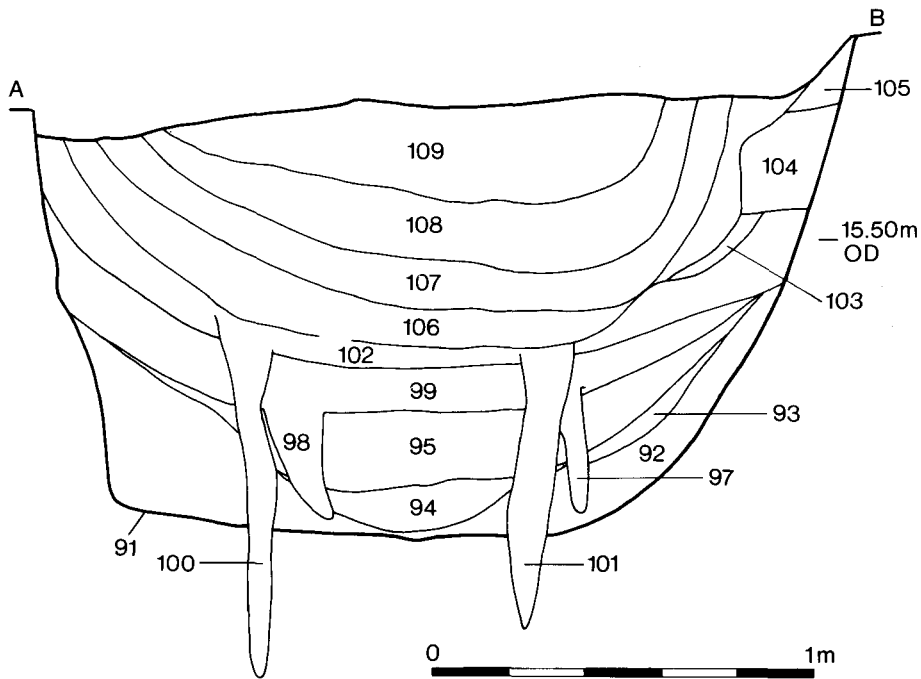


FIG 9 The Peabody site: north-south section through cesspit [91]

A layer of greenish-grey silty clay [110] (Fig 11), which overlay the general clay layer [69], also appeared to have overlain and subsided into pit [91]. Layers [111]–[112] (Fig 11), which were similar to the ‘dark earth’, lay on top of all the undisturbed Saxon deposits described above, and may have been partially ‘reworked’ occupation layers. Layer [112] may be the same as [113] (not illustrated), which had slumped into pit [91]. Pit [114], however, cut through layer [111] and could be of Saxon date or later, as could postholes [115]–[116]. An isolated pit [117] (not illustrated) cannot be related to any of these features, but had a primary fill of ‘grey earth’ [118] and two upper fills of ‘dark earth’ [119]–[120].

AREA C

The southern part of the site showed a distinctive use as an area of small pits, surviving 80mm to 0.55m deep, many of which were intercutting (Figs 12–15). Most contained domestic debris and were probably rubbish pits. Dumps of redeposited brick-

earth, 30mm to 130mm thick, occurred in this area, and may represent upcast from pitting. A grave was found among the pits. Pit [121] and layer [122] (Fig 12a) post-date the early stakeholes [3] but pre-date gully [10], which is presumed to have been contemporary with the gravel metalling [9] (see above). Layer [123] and pit [124] (Fig 12b) may have been contemporary with gully [10], along with postholes [11]–[12] (see Fig 5). A small dump of burnt daub [125] overlay posthole [12] (Fig 12b). After gully [10] had gone out of use it was overlain by a layer of greenish-yellow silt [126] (Fig 12c). An adjacent pit [127] contained a mass of friable animal bone in a charcoal-flecked, grey clay. A layer of sandy clay [128] was also deposited at this time.

Clay layers [129]–[130] sealed the previous features (Fig 13a), and in turn were overlain by an occupation layer [131]. Three postholes [132]–[134] were dug through layer [129]. Three shallow pits [135]–[137] and a grave [138] (Fig 13b) were then dug through all these clay and occupation layers. Three clay

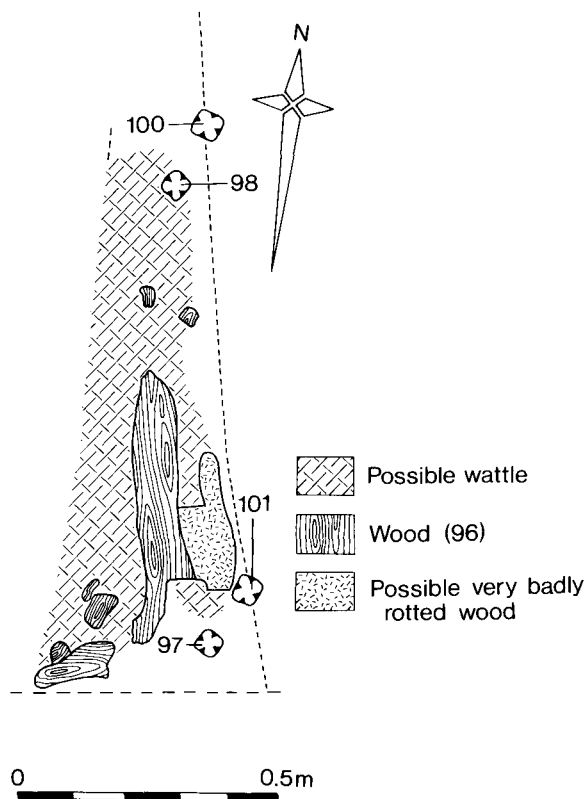


FIG 10 The Peabody site: traces of wood in cesspit [91]

dumps [139]–[141] appeared to be contemporary with the pits.

The grave [138] (Figs 13b, 14) was orientated roughly SW-NE. It measured 2.16m by 0.70m, and survived to a depth of 0.20m. It contained the skeleton of an adult male [142], 5'7" (1.71m) tall (F. Keilly, Museum of London, archive report). The body appeared to have been rolled into the grave to lie on its right side with the left shoulder propped against the side of the grave, with the left leg rolled over the right. The left side of the pelvis probably projected upwards, but had been removed during the digging of a post-medieval drain. A Saxon rubbish pit [151] (see below) cut the southwest end of the grave, and had removed the cranium, although the mandible remained. The right arm appeared to have been straight with the hand perhaps resting in the area of the pelvis; the left arm was tightly flexed

back to the shoulder where an iron spearhead lay, and it may therefore have once grasped a spear. The grave produced sherds of chaff-tempered ware, including part of a small pot with comb-point decoration (Fig 29, No. 20).

The grave and pits of this phase were followed by a further sequence of pits. Pit [143] (Fig 13c) had a circular depression in the base where a post may have stood. It was filled with three layers of brown pebbly silty clay [145]–[147], and was lined on its east side with a spread of redeposited brickearth [144]. This may indicate that it had a special function before it was filled with domestic debris.

Nearby, a flat-bottomed pit [148], filled with grey silt, cut the fill of grave [138], and was probably contemporary with the adjacent pit [149]. A trench [150] (Fig 15a) cut the fill of [148]; its base sloped down from west to east, and it ranged from 40mm to 150mm

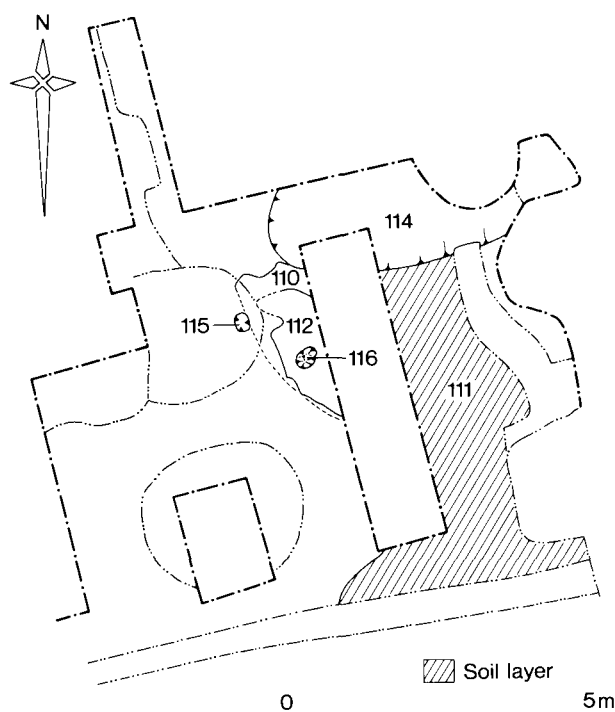


FIG 11 The Peabody site: later occupation levels in Area B

deep. It was filled with brown, pebbly, silty clay. The trench was cut by a circular pit [151], with a similar fill, which was the earliest feature in the sequence of pits to contain Ipswich-type ware. It was cut by another trench [152], which was filled with grey silt, animal bone and oyster shell. Trench [152] was cut by a gully [153] filled with black silty clay containing domestic refuse. Pit [154] cut gully [153]. The primary fill of sandy silt [155] was covered by a layer of oyster shell and a dark grey silt [156]. It was cut by pit [157], which was at least 0.15m deep, and was filled with black silty clay.

A number of features in Area C were unphased. Two shallow rubbish pits [158] and [159] (Fig 8) lay just beyond the edge of layer [131] (see Fig 13a). Posthole [5] (Fig 4) was overlain by two isolated layers (not illustrated): a clayey silt [160] overlain by gravel [161]. These layers were cut by pit [162] (Fig 13b), which also clipped posthole

[134] and so post-dated layer [131]. Pit [162] was 0.55m deep, with a thin layer of clay [163] lining the west and north sides. It was filled with brown sandy clays with animal bone [164]–[166]. Layer [166] contained more oyster shell than the others, and was possibly a later occupation layer which originally overlay the pit.

All the deposits described above were sealed by an extensive layer of brown gravelly silty clay [167] which lay immediately under the 'dark earth' (Fig 15b). It was 100mm deep, and contained large amounts of animal bone and other occupation debris, including iron slag which was probably deposited at a time when ironworking was undertaken nearby.

Two pits [168] and [169] (Fig 15b) cut through layer [167], the more substantial of which ([168]) was filled with 'dark earth'. The second pit [169] had steep sides and a flat base, and was at least 0.24m deep. It would seem to have been a rubbish pit as the

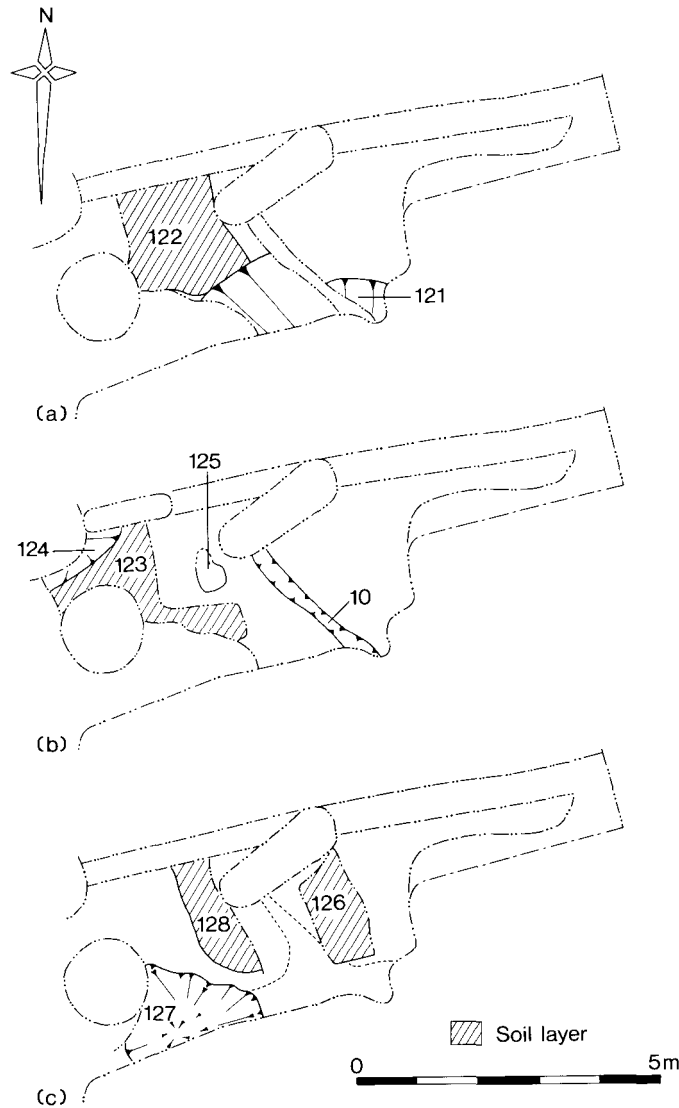


FIG 12 The Peabody site: sequence of features in Area C

fill, a brown silty clay, contained frequent animal bone and oyster shell. Finally, a large isolated pit [170] (Fig 15b) survived up to 0.19m deep. Its fill was a black silty clay similar to the 'dark earth' elsewhere and contained animal bone and oyster shell.

AREA D

Area D was cut by modern drains, which left small islands of archaeological strata.

A deep circular pit [171] (Fig 16), probably a well, was severely truncated but survived to a depth of 1.44m. Its sides may have been barrel-lined. The primary fill was brown charcoal-flecked clay with animal bones [172]. This was overlain by grey clay with animal bone and oyster shell [173], and the uppermost fill consisted of grey silt with animal bone and oyster shell [174].

Occupation layers [175] and [176] (not

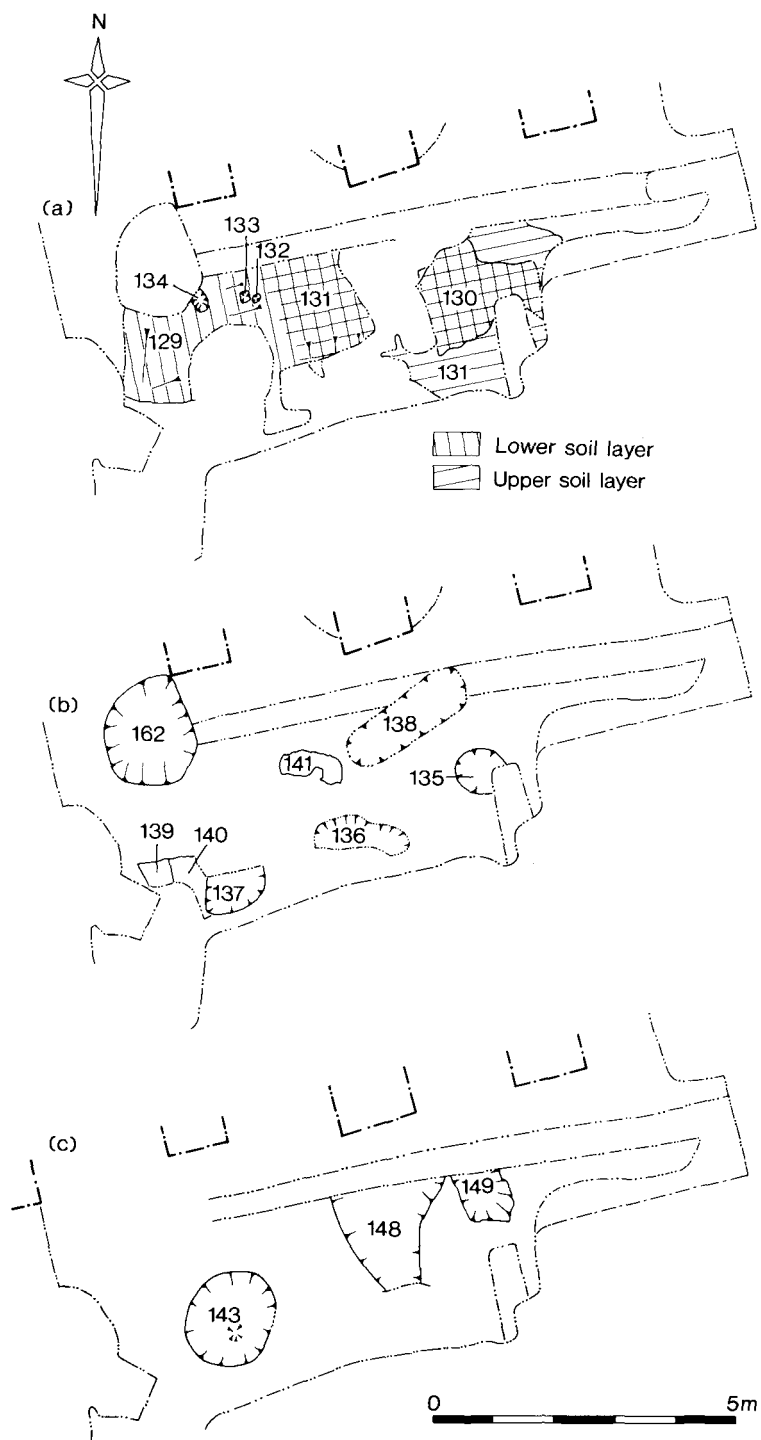


FIG 13 The Peabody site: sequence of features in Area C

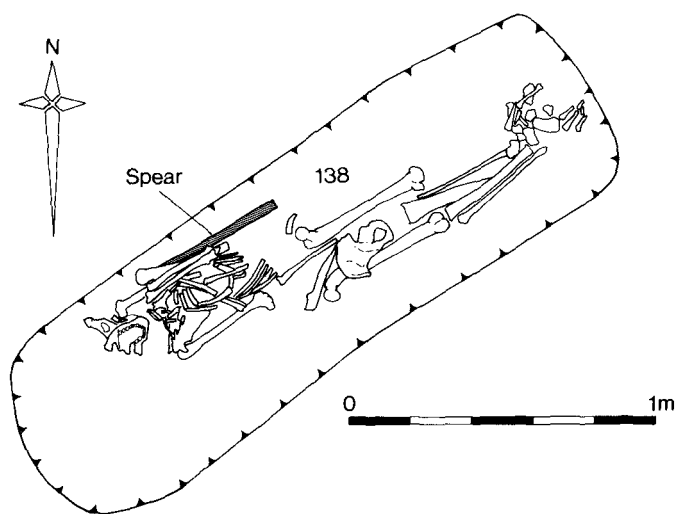


FIG 14 The Peabody site: west-east burial of an adult male with spear in grave [138]

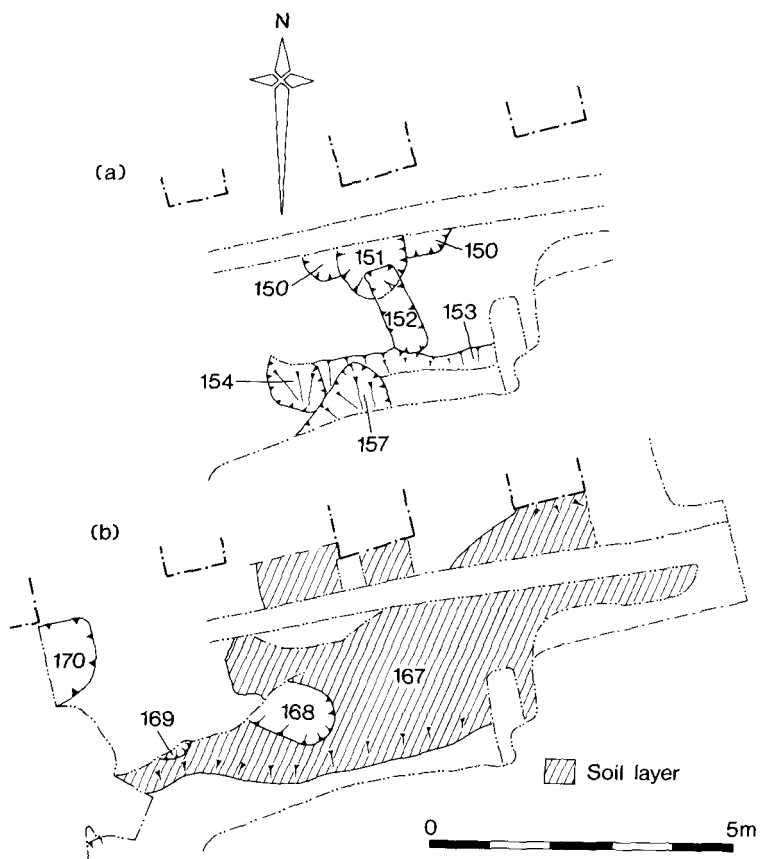


FIG 15 The Peabody site: sequence of features in Area C

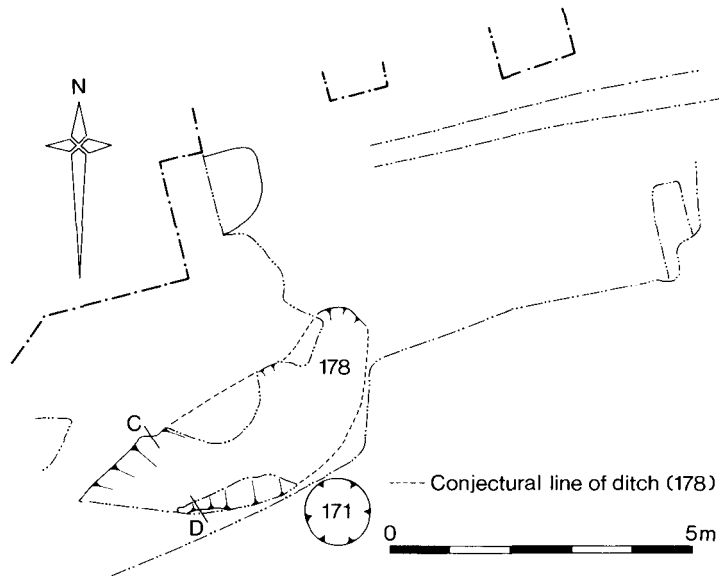


FIG 16 The Peabody site: ditch [178] in Area D

illustrated) overlay stakeholes [3] (see above), and there were traces of a cut feature [177] filled with material similar to 'dark earth'. These elements were cut by what appeared to be a ditch [178] (Figs 16, 17), which was poorly defined but seemed to have a butt-end to the north east. The initial fills [179] and [180] mainly comprised gravel, which may have slumped in from the sides. They produced few artefacts, although [180] contained some iron slag. The ditch appeared to have been recut to a 'V-shape'. The

primary fill [181] of the recut had perhaps eroded from the side but contained animal bone, iron slag and sherds of Ipswich-type ware. Most of the remaining fill consisted of a dark brown gravelly sandy clay [182]. Three further deposits [183]–[185] filled the recut ditch. Fill [184] contained a large part of a horse skeleton, as well as medieval pottery, and it is likely that the ditch dates to this period. The layers [186] (not illustrated) above fill [185] were typical of the 'dark earth' deposits.

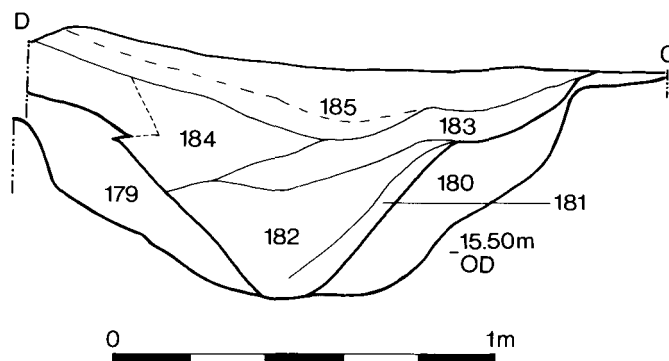


FIG 17 The Peabody site: north-south section through ditch [178]

AREA E (Fig 18)

An isolated block of strata with evidence for a series of structures survived on the west side of the site.

The earliest activity was represented by stakeholes belonging to group [3] (see above), perhaps for wattle fencing (Fig 18a). The soil around them [187] is interpreted as a beaten earth floor. A second earth floor [188] (Fig 18b), which overlay [187], was cut by a flat-bottomed posthole [189] (not illustrated) 100mm deep. The posthole was covered by a spread of redeposited brickearth [190] up to 100mm deep, which contained domestic debris. The brickearth may have been wall daub, and was pierced by an irregular row of stakeholes [191] *c.* 50mm deep. Three further stakeholes [192] lay roughly at right angles, and at the junction of the two rows there was what appeared to be a double

posthole [193]. A spread of silt with lumps of burnt daub [194] and containing occupation debris, lay on the earth floor within the angle formed by the two rows of stakeholes. The stakeholes, together with the burnt daub, are thus considered to be the remains of a structure. This was probably post-built with wattle walls, part of which seem to have been burnt.

The building was apparently replaced by a second structure indicated by a line of stakeholes [195] (Fig 18c). A cut feature [196], 0.23m deep, lay to the north-east. A layer of silty clay [197] filled the later stakeholes and feature [196]. It extended over the entire area, and was up to 100mm deep. It may have been an occupation layer, or make-up for the gravel metalling [198], which overlay it.

This layer of compact gravel metalling

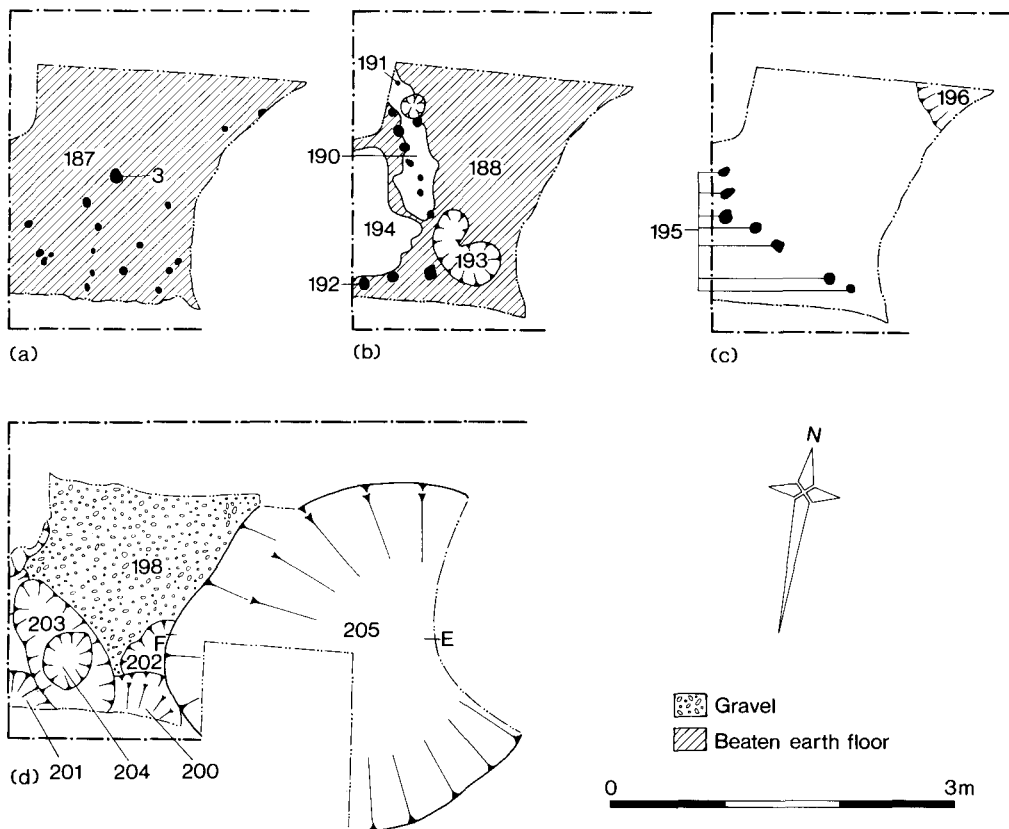


FIG 18 The Peabody site: sequence of features in Area E

[198] (Fig 18d) was between 100mm and 0.15m deep. Its south-west side was overlain by silt with animal bone and oyster shell and other debris [199] 50mm deep, probably deposited while it was in use. The silt layer [199] was cut by pit [200], which was filled with similar material. A probable pit [201], which survived to a depth of 0.17m, and was filled with silt containing animal bone and burnt daub, may have been contemporary with the metallurgy. A shallow feature [202], 80mm deep, cut through the gravel. A broad oval pit [203], 0.14m deep, cut pits [200] and [201]. It was filled with clayey silt containing animal bone and oyster shell. The fill was cut by a feature [204], possibly a posthole, at least 100mm deep.

Pit [205] (Fig 18d) cut feature [202], and was at least 2.70m deep. It may have been a quarry, for it seemed too large for a well, and after it had been dug the sides were apparently allowed to weather and collapse. The eroded material formed the primary fill [206], which consisted of layers of brickearth interleaved with grey silt (Fig 19). The first layer of apparently deliberate fill [207] was a mottled brown and greenish yellow clayey silt, containing large amounts of animal bone and some material from the sides. It may also have contained soft organic material, and it appeared to have subsided at the centre. The fills above it [208]–[210] were all similar to 'dark earth', and were separated by spreads of oyster shell or differentiated by slight variations in their inclusions. They were probably part of the 'dark earth' levels (see below) which had subsided. The topmost fill [210] was cut by two pits [211] and [212], which were probably medieval.

The 'dark earth' [213]

Macphail (1988) stressed the role of wireworms (usually found in the upper few centimetres of tilled soil) in the formation of the 'dark earth' which overlay mid-Saxon strata at Jubilee Hall. The 'dark earth' is occupation debris, particularly organic building materials, reworked by natural action.

Here, the 'dark earth' [213] survived up to 0.50m deep in some places. It appeared to be a homogeneous deposit, but the inclusions within it, including animal bone, pottery and

slag, varied at different levels. The full depth of 'dark earth' probably accumulated over a long period of cultivation and may have been dug over repeatedly, moving objects around within it. The animal bone in particular was more fragmented in the upper levels. Medieval pottery was found in the lower levels of the 'dark earth'.

Distinctive horizons within the 'dark earth' were identified where it had subsided into underlying features, suggesting that later reworking had destroyed evidence for sequential accumulations of the soil. In particular, distinctive layers of oyster shell defining layers in pit [205], and spreads of gravel at different levels in the upper fills of ditch [178], showed that layers could be identified in such material. This suggests there were episodes of activity during the accumulation of the 'dark earth'. Although it produced a large number of Saxon artefacts, some items could date to a later period. In particular, the considerable quantities of iron slag, which are likely to have come from nearby, are evidence for iron working on a large scale, but cannot be proven to be of Middle Saxon date.

Discussion

The excavation revealed a sequence of occupation dating to the Middle Saxon period, which demonstrates the intensity of occupation in this part of *Lundenwic*. The distribution of features seems to suggest activity areas, with cesspits, *eg* [91] and [86], in one place, close to where there was evidence for, at least in an early phase, a structure. To the south there was a concentration of pits, and on the west side a sequence of wattle and daub structures.

The evidence for structures is fragmentary and difficult to interpret. The slot [14] and postholes in Area A (Fig 5) indicate an entrance to an enclosed area, possibly a building. On the other hand, the presence of at least one, probably contemporary, well [19] in the enclosed area, and the accumulation of what may have been animal bedding refuse on the gravel yard surface around it, suggest equally that it may have been part of a stock enclosure. The only interpretation that can be offered of the stakeholes (Fig 4) in the earliest occupation phase is that they

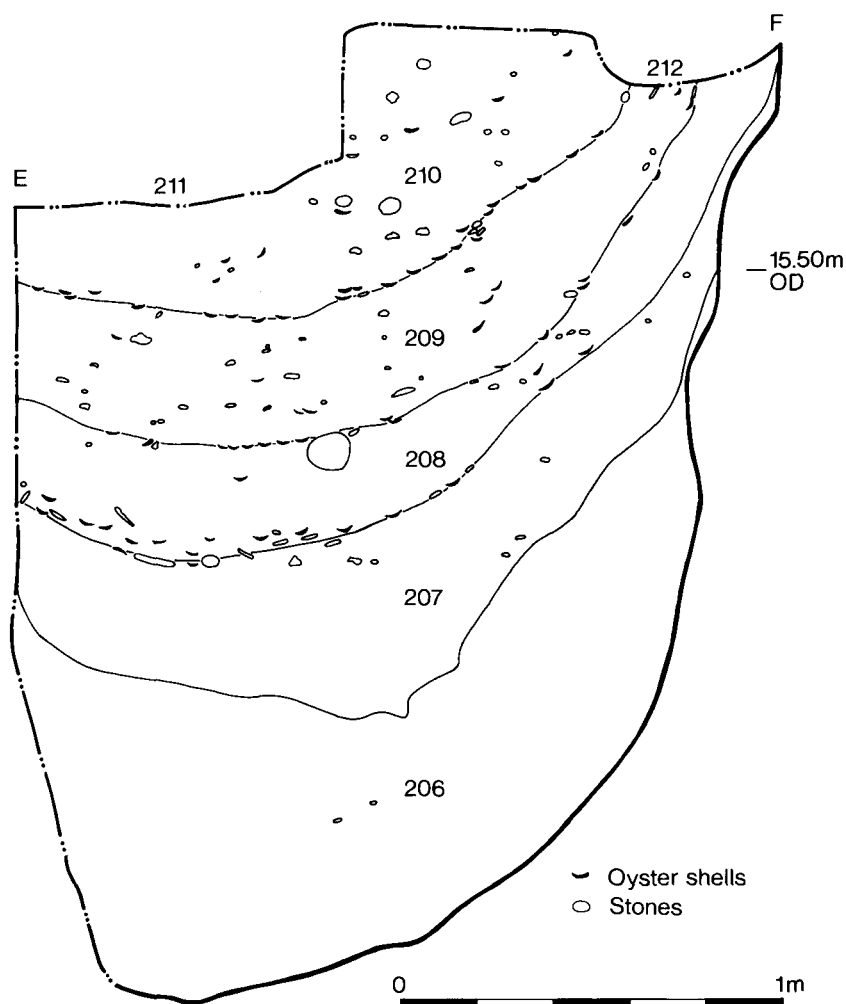


FIG 19 The Peabody site: east-west section through pit [205]

may indicate a succession of wattle structures or fences, which may have been temporary stock enclosures.

Structures, with wattle walls, were also found in Area E. The earliest phase of stakeholes (Fig 18a), perhaps associated with an earth floor, was covered by a further earth floor with a post set in it. The post was subsequently replaced by a double post with a wattle and daub wall (Fig 18b). The latter was rebuilt on a different alignment after a fire (Fig 18c). While these structures were evidently not substantial they seem to

demonstrate continuity in the use of this area.

The slot structure in Area A was replaced by a group of stakeholes on a different alignment. The structure they represent would probably not have been substantial enough to have been an external wall of a building, but may have been an internal partition. It was in this area that the 'grey earth' was found, and not elsewhere on the site; as at Jubilee Hall 'grey earth' seems to have been reworked organic building materials, it is suggested that the ground around

this structure had matter such as wattle, daub, and thatch dumped on it.

The subsequent line of pits (Fig 7a), which cut the 'grey earth', appeared to be dug next to a fence as if placed at the back of a yard or garden. Similarly the pits on the south side of the excavation seem to be concentrated in a broad east-west alignment. The group of large pits in Area B (Fig 8), at least two of which were cesspits, again indicate repeated use of an area for one purpose. Although the cesspits would have been near habitations, they did not necessarily belong to the structures found to the north-east. The presence of intercutting pits suggests that this use took place over a considerable length of time, as the contents of the earlier cesspit would, presumably, have been allowed to settle and dry out before being disturbed. The concentration of smaller pits in Area C (Figs 12, 13, 15) also demonstrates the intensity of occupation activity, and the long sequence of intercutting again indicates use over a long period.

The evidence for a wooden structure in cesspit [91] raises the question of what structure might have gone in, above, or around, the pit. The stakes may simply have supported a platform which protruded over the pit, or perhaps a canopy to protect the user from the weather. The whole pit might have been planked over to prevent people and animals falling in, and to reduce noxious smells. Could the remains of an apparent wicker frame have been the remnants of a trap door or cover over an aperture in the latrine floor?

The presence of a grave within the occupation sequence is surprising, although a Middle Saxon burial at Jubilee Hall could have been contemporary with the earliest occupation levels (Whytehead, 1988). At Southampton two individual graves, both furnished with spears, were found on one site (Holdsworth, 1980, 38–9), but they may have pre-dated the domestic occupation there. Holdsworth (1980, 39) suggested that the burials with spears might indicate foreign visitors to the port at *Hamwic*; and it is possible that this burial similarly is of a pagan trader excluded from the town cemeteries.

EXCAVATIONS AT THE NATIONAL GALLERY, 1987

by ROBERT COWIE

The geology

The National Gallery and its extension lie on river terrace sand and gravel capped by brickearth, a yellow-brown sandy clay. Only brickearth was encountered in the basement, but on the extension site the interface between the gravel and brickearth was located between 10.30m OD and 11.15m OD. The brickearth occurred in isolated patches up to a metre deep on the east side of the excavation area, and in one place despite truncation by archaeological and modern features it survived as high as 11.72m OD.

The National Gallery basement (NGA87)

The Middle Saxon pits

All three Middle Saxon pits (Fig 20; [214], [222], [226]) had been truncated by the basement, so that only their lower parts remained, and contemporary occupation levels did not survive. The pits were cut into 'natural' brickearth, and although truncated they survived to such a depth that they could not be fully excavated without undermining the National Gallery. Consequently some unexcavated Saxon deposits were sealed under the new basement floor of the plant room.

Pit [214] was at least 1.94m deep, judging by excavation and auger investigation (the auger did not reach the bottom). The west side was cut by a construction trench for a basement wall. The feature was filled with layers of redeposited brickearth [215]–[216] and grey silty and sandy clay [217]–[221].

Pit [222] was truncated to the south by a modern concrete raft, and was at least 1.87m deep. Before the DGLA intervened, contractors had unwittingly excavated the upper part of the pit to about 11m OD, but remnants of its fill adhering to the vertical face of the concrete raft indicated that the pit was originally at least 0.59m higher. The pit was excavated archaeologically to a depth of 10.60m OD, at which point an auger was

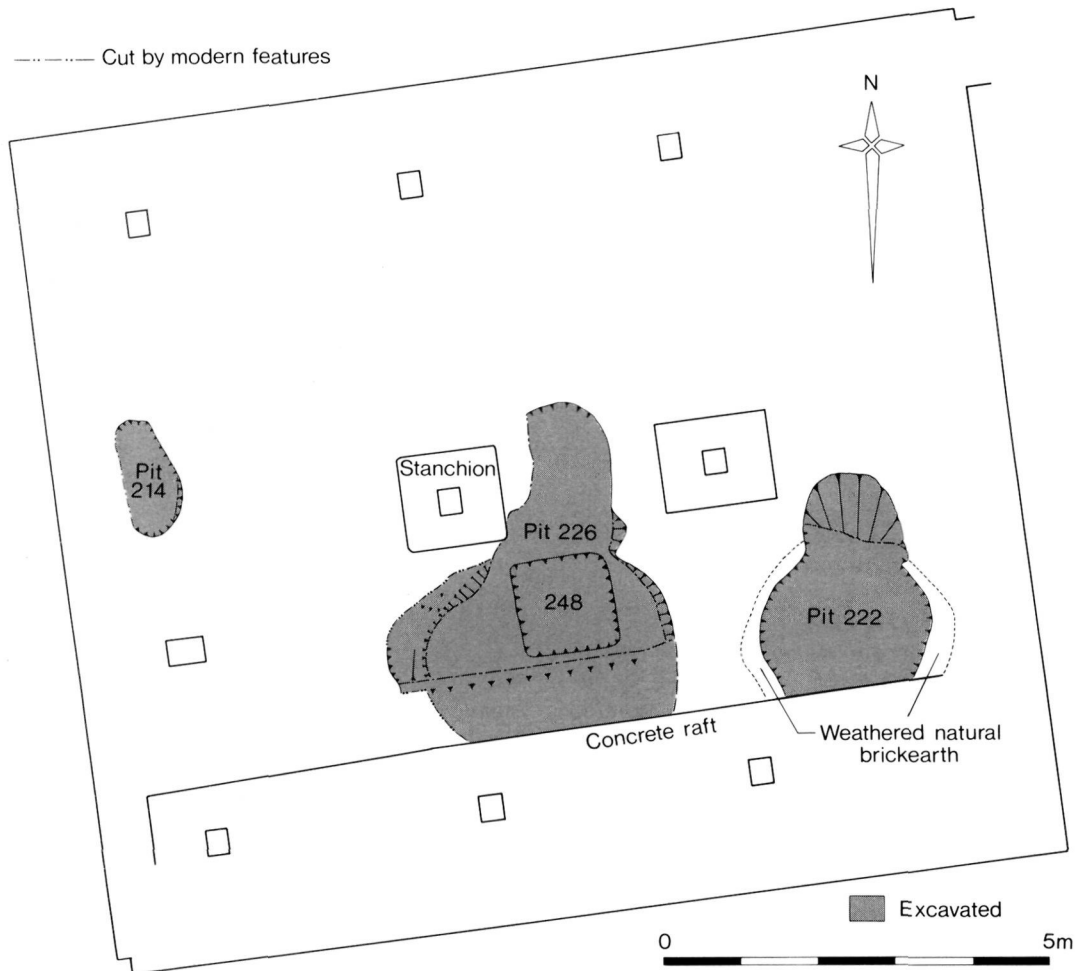


FIG 20 The National Gallery basement: plan of the site showing mid-Saxon pits [214], [222] and [226] (shaded)

drilled through the remaining fill to a depth of 9.72m OD but did not reach the bottom. However, at the north end of the pit there was a step at *c.* 10.80m OD, presumably to allow the pit diggers to climb in and out. The pit was filled with layers of yellowish-brown brickearth [223], orange-brown gravelly brickearth [224], and grey-brown sandy clay [225].

Pit [226] was truncated to the south by the concrete raft, and to the north-west by a brick drain. It was excavated to a depth of 1.90m. The pit was filled with layers of brown to grey sandy clay [227], [228], [230]–[232], [234], [235], [237], [239],

[241], [242], [244], [245], which yielded considerable quantities of domestic refuse, and some contained lenses and patches of charcoal, ash and burnt daub. Interleaved with these fills were layers of yellow-brown redeposited brickearth of varying purity [229], [236], [238], [240], [243], which contained markedly fewer finds. With time pressing towards the end of the excavation, several layers, including parts of layers [234]–[239], were treated as just two contexts [246]–[247]. The upper five layers produced proportionally more Ipswich-type ware and less chaff-tempered ware than the earlier fills, which might indicate that the pit had been

filled in two stages (see below, p. 98), or that the upper layers were ground level deposits that had subsided into the pit. A modern pit [248] (Fig 20) cut the upper layers of pit [226]. It was just over one metre deep, and its fill contained a number of redeposited Saxon potsherds.

The National Gallery extension (NAG87)

It was impractical to excavate all the surviving strata at the National Gallery extension, so areas were selected for excavation in order to record and date a representative sample. Four areas, designated A, B, C, and D (see Fig 21), were located to obtain complete cross-sections through the principal features. Artefacts were sparse, particularly in the earlier deposits, and therefore a considerable volume of strata had to be dug by hand to recover dating evidence.

Undated features (Fig 21)

Six features produced no evidence which would allow them to be closely dated.

Feature [249] in Area B was an isolated cut, 80mm deep and truncated to the west and south-east by modern wall trenches. In it were laid cobbles [250] ranging from 50mm to 120mm in diameter; these were mainly flint, although sandstone, limestone and iron-smithing slag were also used. The cobbles were edged with pieces of Roman tile, the only datable objects that were found. A space (0.38m wide) between the cobbles and the edge of the cut was filled with light brown clayey gravel and brown sandy clay.

Feature [251] in Area A was probably the remnant of a gravel quarry pit. It was revealed in a narrow trench dug to investigate the earliest strata in Area A. The feature was truncated to the west and east by later quarries, [252] and [269] respectively, so that only part of the base survived.

Quarry pit [252] (Fig 22) survived to a depth of 0.38m, and was filled with dark grey-brown sandy clay. A nearby pit [253] (Fig 21) may have been part of the same quarry; it survived to a depth of only 0.23m, had steep sides and a flat base (located at 9.31m OD).

Quarry pit [254] (Figs 21, 23), in Area C,

measured about 2m E-W and was at least 0.80m deep. Although it was only partly revealed within a narrow trench, the surrounding areas of unexcavated quarry fill suggest that it may have been quite large. It was filled with layers of grey to brown sandy clay. A neighbouring pit [255] may have been part of the same quarry (Figs 21, 23). It measured at least 4.50m E-W, but was cut to the west by a post-medieval feature, and to the east by a Saxon quarry pit [256]. It was 0.60m deep, and was filled with layers of yellow-grey to grey-brown sandy clay.

Saxon gravel quarries

Quarry pit [256] (Figs 21–23) was at least 16.50m long (N-S), although its full length was not discovered because it extended beyond the excavation area. It was 11m wide on the south side of the site narrowing to 8.80m on the north, and was up to 2.75m deep. The east side was irregular with a number of breaks of slope, and in places near the base of the slope there were bays which gave the side a scalloped effect, possibly indicating the work areas of individual quarrymen. Most of the west side was severely truncated by later features. The base was irregular, with scoops and hollows.

The earliest layers filling the quarry consisted of brown to grey sandy clay [258], [260], [262], [264]–[266], and mixed silts, sands and gravels, varying in colour from yellow-grey or brown to reddish orange [257], [259], [261], [263], [267], [268]. They contained just a few artefacts, including Roman tile fragments, sherds of mid-Saxon Ipswich-type ware, a piece of lava quernstone and a loomweight fragment. A sherd from a late Saxon cooking pot (Fig 35, No. 100), found in layer [265], may have been intrusive, especially as some of the quarry fills were poorly defined in places.

A small quarry pit [269] in Area A (Figs 21, 22), which cut the west side of quarry [256], was 0.65m deep. The primary fill was a layer of brown-grey sandy clay [270], covered by a layer of grey-brown sandy clay [271].

In Area A all the quarry fills were overlain at c. 9.40m OD by a patchy scatter of rubble



FIG 21 The National Gallery extension: plan of undated features and Saxon gravel quarries

[272] (not shown in Fig 22), consisting of flint cobbles and fragments of sandstone, ragstone, limestone, lava quernstone, mortar, iron slag (not submitted for analysis) and Roman tile.

Cut feature [273] (Fig 21), in the south-west corner of Area A, was only partly excavated. Its stratigraphic position was ambiguous, but it was probably later than quarry [256]. It was at least 0.74m deep (the base was not located), and was filled with layers of mixed brown to orange sandy clay and gravel, which produced Roman tile fragments and a copper alloy object with two rivet holes.

Quarry pit [274] in Area D (Figs 21, 24, 25) was *c.* 1.50m deep and over 16m long (N-S), being truncated at either end by

modern walls. Only the western part lay within the excavation area. The western edge was roughly straight and on a north-south alignment. In general the side sloped down eastwards at an angle of *c.* 45 degrees (Fig 24, sections J-K, L-M, N-O), but towards the north the lower half of the side steepened to a vertical face (Fig 25). The base of the quarry was flat. The earliest layers in the fill consisted of yellow-brown clayey gravel [275], brown or grey sandy clay [276]–[278], [280] and grey-brown clayey-gravel [279] (Figs 24, 25). They produced few finds, none later than Middle Saxon, including sherds of Ipswich-type ware (mostly from layer [280]), a chip of green-blue glass (No. 166, probably Saxon), lava quernstone fragments, and Roman tile fragments. A thin layer of gravel

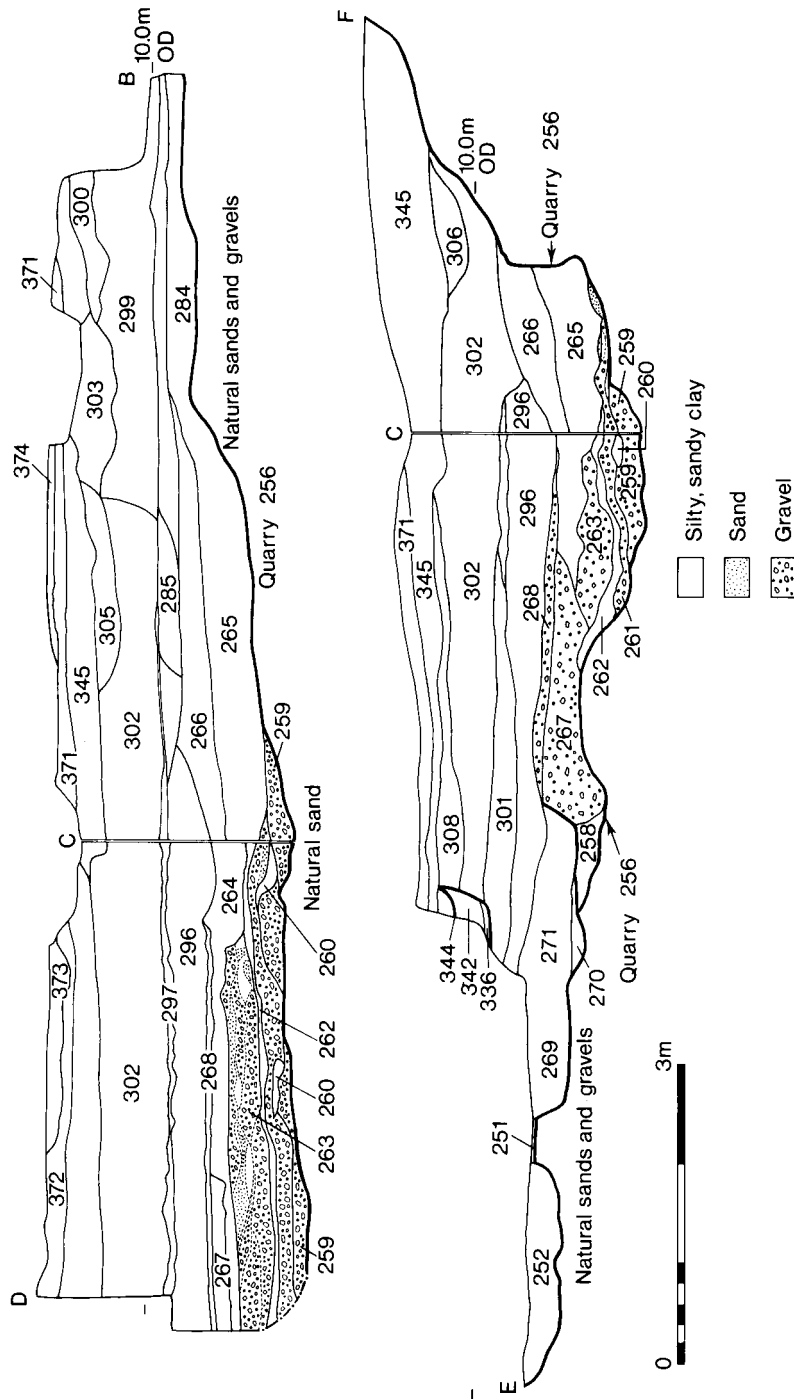
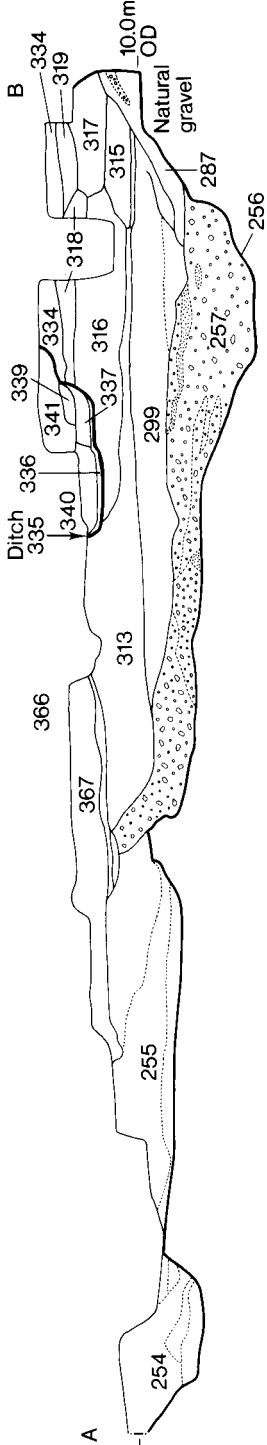


FIG 22 The National Gallery extension: sections across gravel quarries, including gravel pit [256]



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FIG 23 The National Gallery extension: sections across gravel quarries, including gravel pit [256]

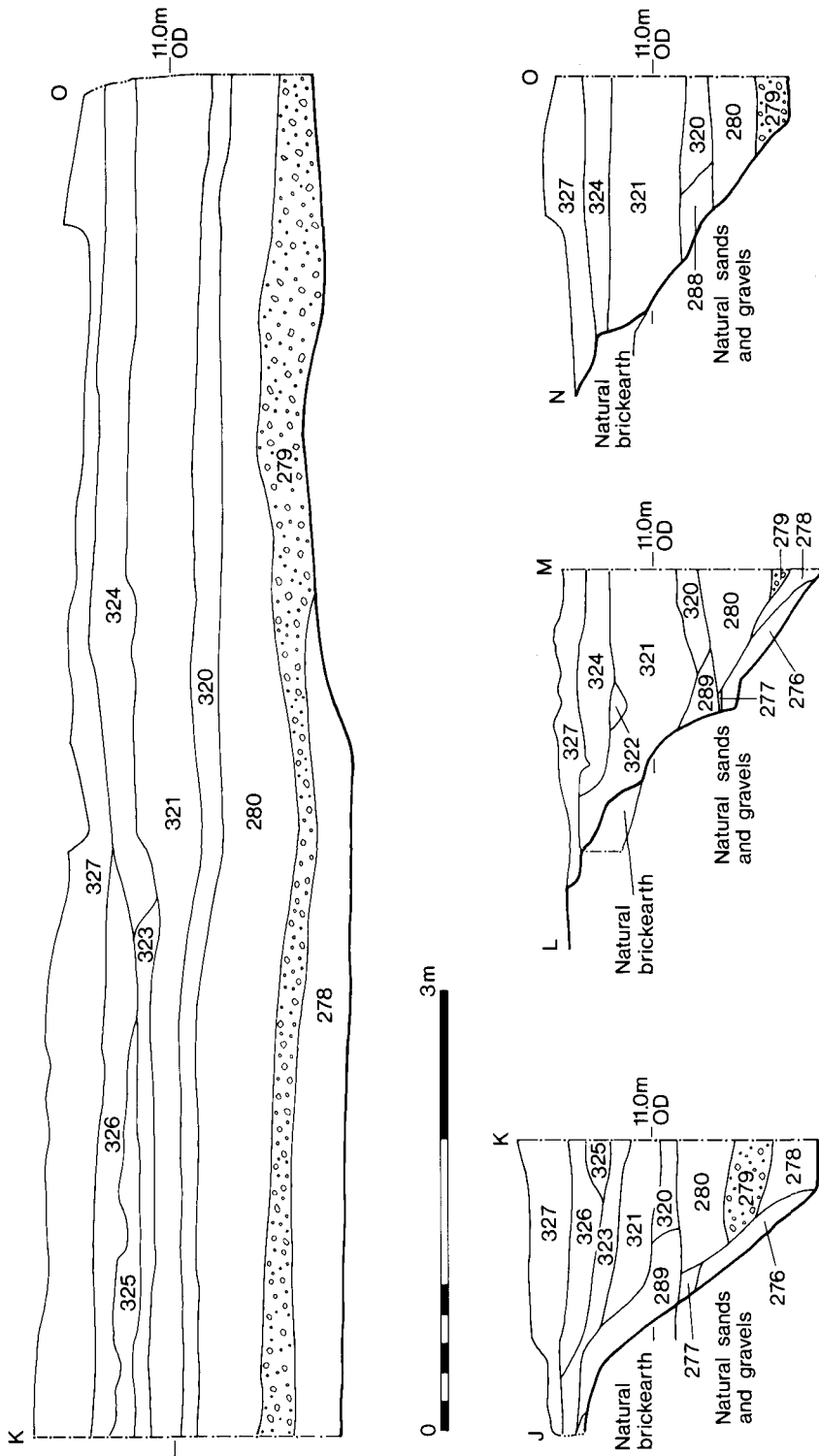


FIG 24 The National Gallery extension: sections across Middle Saxon gravel quarry [274]

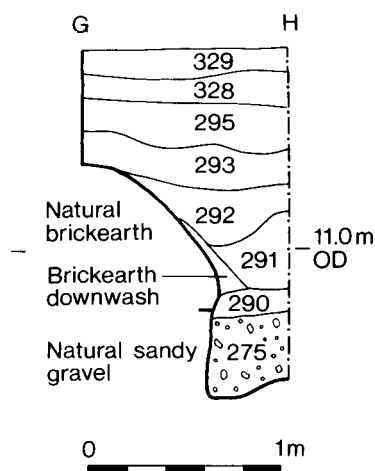


FIG 25 The National Gallery extension: section across Middle Saxon gravel quarry [274]

[281] lying on the 'natural' brickearth next to the quarry (not illustrated) may have been thrown up during quarrying.

A roughly horizontal cut [282] (Fig 21) had truncated the natural brickearth next to quarry [274] at *c.* 11.60m OD, and it is suggested that brickearth may have been removed from around the top of the quarry to lower the ground level for better access to the gravel. The truncated brickearth was covered with gravel [283], possibly the upcast from the quarry, up to 0.30m deep.

The intermediate fills of quarries [256] and [274] (Figs 22–5)

Above the earliest quarry fills were layers which were either sterile or only contained a few small fragments of Roman tile. In quarry [256] these layers consisted of orange-brown to grey sandy clay [284]–[287], and in quarry [274] they mainly consisted of yellow-brown to grey-brown sandy clay [288]–[295]. Some of these deposits were derived from brickearth, possibly washed in from the sides. This material may gradually have accumulated in the quarries after they had been abandoned.

The upper fills of quarries [256] and [274] (Figs 22–5)

The upper fills of [256] consisted of brown to grey sandy clay [296]–[319] and were

generally horizontal, varying in depth from 50mm to 0.60m. The pottery assemblage mainly consisted of 11th to early 12th-century sherds, with a few Roman and Saxon sherds. Other finds included a prehistoric flint knife or chisel, a lava quernstone fragment and a glass bead.

The upper fills of [274] consisted of brown sandy clay [320]–[329] and produced 11th to 12th-century pottery, with a number of residual finds, notably a prehistoric flint blade, a Roman ring made of gilded copper alloy (No. 192, Fig 41) with an engraved glass intaglio (P1 4), a copper alloy pin (Fig 41, No. 193) and a Series T sceat dating to AD 715–720 (P1 3).

12th-century features (Fig 26)

When quarry pit [256] was nearly full the following features were cut into its upper fills:

(a) Pit [330] in Area A was irregular in shape, and was truncated to the south and from above by post-medieval structures. It survived to a depth of 0.70m. The highest point of the cut was at 10.41m OD. The sides were very steep, and the base rounded. It was filled with grey-brown silty clay and ash, with frequent charcoal flecks, and a few charred cereal grains. It produced 11th to 12th-century pottery and a possible Saxon sherd, a Roman tile fragment and some iron slag.

(b) A possible posthole [331] in Area A was 0.33m deep, and was filled with dark green-yellow sandy clay. It was overlain by a lens of dark brown sandy clay [332], containing 12th-century pottery.

(c) A slot [333] in Area C, aligned approximately north-south, was cut into quarry fill [319]. The slot was truncated to the south by post-medieval disturbance. It was 80mm deep, and was filled with grey-brown sandy clay, which produced a prehistoric flint flake and a loomweight fragment. It was sealed by a layer of brown sandy clay [334], containing two sherds of early medieval pottery, and this was cut by a ditch [335].

(d) Ditch [335] was aligned approximately north-south, and extended from the north side of Area C to the south-west corner of Area A, a distance of 15.50m. It was between



FIG 26 The National Gallery extension: plan of the 12th-century features

1.60m and 1.74m wide, and about 0.60m deep. The sides were steep and the base flat, although it sloped down from north to south on average 45mm per metre. It was filled with a mixed deposit of orange, brown and grey sandy clay [336], and with layers of brown to grey-brown sandy clay [337]–[343] which yielded 11th- to 12th-century pottery and a rim fragment from a glass vessel probably dating to the Saxon period (No. 167).

(e) A posthole [344] in Area A was 0.28m deep and cut the upper fill of ditch [335]. It was sealed by a layer of brown sandy clay [345], the uppermost fill of quarry [256] (Fig 22).

(f) Pit [346], in Area B, clipped the east side of quarry [256]. It had an irregular

shape (Figs 26 and 27), and was 7.60m long (N-S). The northern part measured *c.* 1.50m E-W, and was over 0.50m deep. The southern part was considerably wider and deeper, measuring 5.75m E-W and up to 0.92m in depth. A line of three postholes [347]–[349] in the base of the pit may have held supports for a shelter. These were 0.30m, 0.25m and 0.22m deep respectively, and were filled with brown to grey-brown sandy clay.

The northern part of pit [346] contained two successive hearths or fires (Fig 27, section R-S). The first 'hearth' was represented by a layer of red to black clay [350] up to 40mm deep, that had been fired *in situ* scorching the 'natural' gravel beneath. The burnt clay was covered by carbonised material, including cereal grains and very dark grey-brown silty

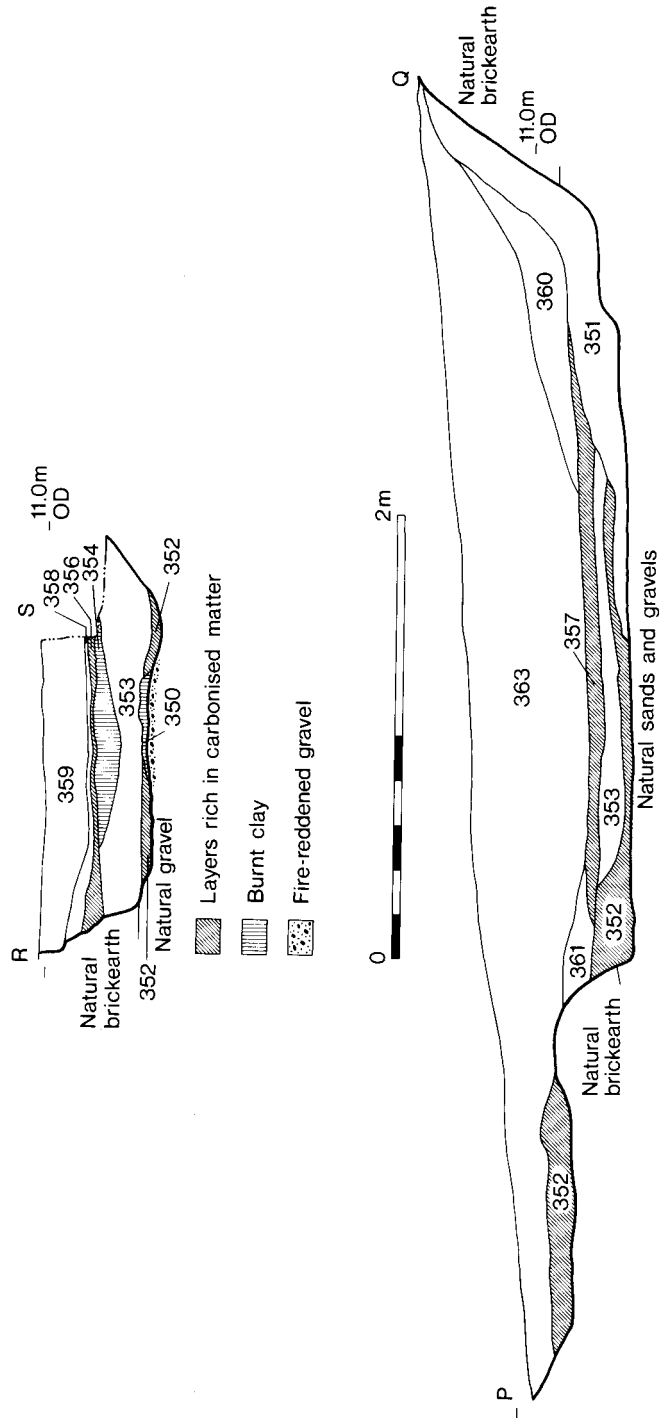


FIG 27 The National Gallery extension: sections across 12th-century pit [346]

clay [352], which extended into the southern part of the pit, as did the layer above, a mottled deposit of brown to yellow-brown sandy clay [353]. In the northern part of the pit, layer [353] was overlain by the second 'hearth', a lens of reddened burnt clay [354] up to 150mm thick. Two shallow hollows in its surface were filled with grey ashy silt containing frequent charcoal flecks [355], and this in turn was sealed by carbonised material including cereal grains and burnt clay fragments [356]. This carbonaceous deposit was overlain by successive layers of mixed dark grey sandy clay, and yellow-orange brickearth [358], and by grey-brown sandy clay [359]. To the south, pit [346] opened out into what may have been a rake-out area (Fig 27, section P–Q), filled with brown sandy clay layers [351], [360]–[363], interleaved with carbonaceous layers [352] and [357] (probably part of [356]) containing carbonised cereal grain, mostly wheat and barley (see below, p. 138).

Pit [346] contained waste from a smithy, including 7.3kg of iron-smithing slag (see p. 127) and a horseshoe of a type produced between AD 1150 and 1250 (John Clark, pers comm). Most of the pottery has been dated to the 11th to 12th centuries, complementing an archaeomagnetic date of between AD 1120 and 1155 obtained from the upper 'hearth' (see p. 170).

(g) In the north-west part of Area D a layer of brown clay [364] covered layer [283] (see above, p. 65). It was cut by an apparently haphazard cluster of 13 stakeholes [365] (not illustrated), one of which contained a 12th-century potsherd.

12th/13th-century dump layers

Several dump layers [366]–[375], mainly comprising brown to grey silty/sandy clay, lay above the upper fills of the quarries and the 12th-century features. Most of the pottery from these layers dates to the 11th and 12th centuries, although a few 13th-century sherds were found in layers [368] and [371]. Layer [368] also produced a few post-medieval sherds, which may represent contamination, as this layer was immediately beneath machine clearance. Layer [375], which sealed

stakehole group [365], produced one small sherd of 12th-century pottery, but was notable for containing flint-tempered pottery possibly dating to the Iron Age (see below, p. 100) and a serrated flint blade (Fig 44, No. 283).

Post-medieval strata

The post-medieval deposits excavated at the National Gallery extension are described in the archive report (Cowie, 1988a), but are not discussed here.

Discussion

Tracing the western limits of Lundenwic

The sites at the National Gallery are among several which, when examined together, may indicate the location of *Lundenwic's* western boundary. The National Gallery basement site lies on the western edge of the known Middle Saxon settlement area, which field-work has shown to be centred around Covent Garden and the Strand (Cowie and Whytehead, 1989, 706–8). Middle Saxon rubbish pits have been found at other sites on the western fringe of the occupation zone (Figs 1, 2), including 10 Great Newport Street, Cavell House on the east side of Charing Cross Road, and a site in Orange Street near the rear entrance to the National Gallery (Cowie, 1988b). In contrast, several sites only a short distance further west have produced no direct evidence of Middle Saxon occupation, and probably lay outside *Lundenwic*; they include the National Gallery extension (the Sainsbury Wing), 14–20 Orange Street (Cox, 1989), and sites in Leicester Square (Cowie, 1989a; Hoad 1989) (Fig 2). Therefore, the distribution of sites suggests that the western boundary of Middle Saxon London was located between Leicester Square and Charing Cross Road, and continued south between the National Gallery basement and the extension to the west side of Trafalgar Square. However, environmental evidence suggests that the National Gallery basement site may have been on a farm just outside the settlement, for its faunal assemblage contained high proportions of young and newborn animals (see p. 168). If so, the

settlement boundary may have been further east, between the Gallery and the Peabody site, which had a faunal assemblage similar to those at the 'consumer' sites at Jubilee Hall and Maiden Lane. It is also possible that the limits of *Lundenwic* were not well-defined, and that buildings became more scattered towards the edge of the settlement.

The National Gallery basement

The Middle Saxon pits beneath the National Gallery had been used for rubbish disposal, and contained a large quantity of refuse, including 5512 animal bones and a range of mid-Saxon artefacts. Pits [222] and [248] were very large, for although they were truncated to the south by a concrete raft, they measured 2.80m and 4.20m north-south, whereas the average diameter of pits at sites near the presumed centre of the settlement (around Covent Garden) was *c.* 1.80m. Why these pits were so large is not clear; they may have been dug initially as quarries, but they were unlike the gravel pits at the National Gallery extension, and it is not known if they penetrated the river terrace gravel. Alternatively, if the site was part of a farm large pits may have been needed simply for waste disposal. Nevertheless, their size may be taken as a further indicator that the site was located on the edge of the settlement, or just outside it, where there would have been more space.

The National Gallery extension

Prehistoric activity is indicated by a few residual flint-tempered postherds, dated to 800–400 bc, and eight residual flint artefacts. The flints were examined by N. Merriman, Museum of London, who concluded that the assemblage could date from the later Mesolithic to the Bronze Age (*c.* 8000–700 bc). Residual flint artefacts have been discovered elsewhere in the locality (Merriman, 1987), notably at a site on the south side of Leicester Square (150m north of the National Gallery extension), where mesolithic/neolithic flints and bronze age pottery were thought to be roughly contemporary with postholes and ditches (Hoad, 1989, 11).

Residual Roman artefacts, consisting of small abraded potsherds, tile fragments and a finger ring (No. 192), were also found. Residual Roman material has been recovered from a number of sites between the Aldwych and the National Gallery, but not one feature in this area has been conclusively attributed to the Roman period, suggesting that the National Gallery sites were open ground at this time. It has been suggested that some Roman artefacts found in this area may have been lost during the Middle Saxon period, including two coins from Jubilee Hall and Maiden Lane, and a brooch and ?belt-fitting from Shorts Gardens (Cowie and Whytehead, 1988); and it may even be that the ring from the National Gallery extension, which was finally deposited in a 12th-century context, falls into this category.

The earliest features on the extension site were massive gravel quarries. Some lacked artefacts and could not be dated, but the lower fills of the largest quarry pits, [256] and [274], yielded a few sherds of Ipswich-type ware suggesting a Middle Saxon date. However, a date range from the 8th to 9th century might be preferred for these quarries, considering the absence of chaff-tempered ware from the whole of the mid-Saxon assemblage. A late 9th or 10th-century date for some of the lower fills in quarry [256] could be indicated by a Late Saxon potsherd (see p. 101), but this seems more likely to be intrusive.

These quarries were the first evidence of Middle Saxon gravel quarrying in central London. Quarries of uncertain date have since been found at nearby locations, including the Peabody Site, where gravel pits were discovered beneath Middle Saxon occupation layers, and in Trafalgar Square. At Barking Abbey, in north-east London, one Middle Saxon pit cut into gravel was large enough to be a quarry, measuring 7m by 12m (Kenneth MacGowan pers comm). Like quarry [256], its base was irregular, with scoops and hollows cut into it. It contained a relatively large quantity of pottery (Blackmore and Redknap, 1988, table 2), and a variety of other mid-Saxon artefacts,

suggesting its final use may have been as a rubbish tip.

The gravel quarried at the National Gallery extension was probably used for surfacing roads and yards in *Lundenwic*. The quarries are much larger than most Roman or medieval gravel pits found in central London, and probably represent a communal enterprise. They were almost certainly located outside the western limits of *Lundenwic*, for it is unlikely that such large quarries would have been dug inside the settlement. This is borne out by the sparsity of refuse in the lower fills, which suggests that they were too far from habitations to be used regularly as a rubbish dump. Gravel pit [274] was nearer the known occupation area, and produced more mid-Saxon pottery per unit volume than quarry [256] further west.

After quarries [256] and [274] had been abandoned they remained open until the 12th century. So for a period of perhaps four centuries the local landscape would have been cratered with disused gravel pits, which probably became waterlogged in wet weather, for it was noted during the excavation that drainage was poor and pools of rain-water accumulated in them. It was possibly during the period of abandonment that the relatively sterile intermediate fills were deposited, which seemed to consist mainly of eroded material washed in from the quarry sides.

The upper fills of both quarries contained 12th-century pottery, suggesting that the remaining hollows were backfilled at this time to level up the land. A number of features (also dating to the 12th-century) were then cut into the new ground surface, notably ditch [335] and pit [346]. The ditch possibly marked a field boundary, and its gently sloping base would have helped drainage. The function of pit [346] remains unclear, although it is possible that it was a sunken-featured structure, and that the postholes in the base held supports for a shelter. Most of the feature appears to have been used as a rake-out area for a hearth or oven in a recess on the north side. The 'hearth' was probably used for 'parching cereals or drying legumes' (see below, p. 138). A shallow step on the west side of the

rake-out area may have been used to enter the pit. The pit shares some characteristics with early 13th-century drying kilns at Wintringham (Beresford, 1977, 241–5), although these were smaller, and with a 14th-century sunken-featured structure at Brentford (Canham, 1978, 30–1, fig 41: John Mills pers comm). The latter was rectangular, and had burnt patches on its floor and in a recess on its northern edge. The charred plant remains from pit [346] are similar in their abundance and diversity to those from Church Road, West Drayton (see below, p. 143), where two 11th or 12th-century pits produced carbonised grain and over 28kg of burnt daub, which may have come from a demolished oven or drying kiln (Cotton, 1981, 123–4).

The reuse of the long-neglected land on the extension site during the 12th century may be related to increased activity around Westminster at this time (see Rosser, 1989, 16), and to the development of a suburb to the City along Fleet Street and the Strand. The National Gallery lies close to the important junction at Charing Cross, where in the medieval period roads from the City and Westminster met, possibly as early as the 12th century. Archaeological evidence of renewed activity in the area during this century has been found at a number of sites. At the Treasury, for example, a grid of ditches was dug in the 12th century to drain marshy ground on the west side of Whitehall, and this was followed by the construction of tenements (Green and Thurley, forthcoming). A short distance downstream, at 18–20 York Buildings, 12th-century riverside dumps may represent land reclamation prior to the construction of Norwich Inn (Cowie, 1989b, 23). The earliest known reference to the Inn, the town residence of the Bishops of Norwich, is an order issued in 1237 to repair the quay (LCC, Survey of London, 1937, 51), which suggests that by the mid 13th century the waterfront of the estate had existed for some time. To the north of the Strand, excavations have revealed little evidence of medieval occupation, although one pit at Jubilee Hall yielded a radio carbon date calibrated to AD 1010 to 1140 (see below, p. 83). During the

medieval period most of the land here was part of the garden of the Convent of St Peter's Westminster, first referred to in a document attributed to the reign of King John (GLC, 1970, 19–22). The garden was divided into orchard, pasture and arable land. Likewise, it seems that the area around the National Gallery was mainly open ground on the edge of London during the medieval period, and remained so until the 17th century, when stables and domestic buildings with yards were built.

THE POTTERY

by LYN BLACKMORE

Introduction

Until 1985 very little Middle Saxon pottery had been recovered from stratified deposits in central London. Over the last few years this has changed dramatically with the excavations at Jubilee Hall in 1985 and Maiden Lane in 1986 (Blackmore, 1988a), and with the subsequent excavations at the Peabody site, Chandos Place, in the National Gallery basement, and at other sites in Shorts Gardens, Southampton Street and Drury Lane. Smaller groups of Middle Saxon pottery have also been recovered from the National Gallery extension and from numerous watching briefs in the Covent Garden area.

Of the sites covered in this report, the assemblages from the Peabody site (*c.* 600 Saxon sherds) and the National Gallery basement (186 sherds) would appear to date from the late 8th or 9th century, although the former includes a number of sherds of 7th- or earlier 8th-century date. This collection comprises mainly chaff-tempered and Ipswich-type wares, but also includes a range of non-local and imported wares, several of which were not found on the Jubilee Hall and Maiden Lane sites. The pottery from the National Gallery basement (mostly Ipswich-type ware) mainly derives from three pits, which although truncated and not fully excavated due to their depth, are of importance as largely undisturbed closed groups.

The pottery from the National Gallery

extension is rather different from the other two sites, with only a few Middle Saxon sherds from the lower fills of the quarry pits. Most of the pottery from the upper quarry fills and later features comprises early medieval coarse wares, the dating of which is aided by an archaeomagnetic date of *c.* AD 1125–1150 for a hearth in a pit cutting one of the quarries.

This report is divided into four sections:

1. The Middle Saxon fabrics, and the form types in each ware or ware group, with comments on specific sherds. This section is designed to be used in conjunction with the report on the Jubilee Hall and Maiden Lane material (Blackmore, 1988a); where possible, fabric descriptions given in that report are not repeated in full, but are summarised in Table 1. New fabrics (marked with an asterisk in this section and in Table 1) or new forms, however, are discussed in detail and as in Blackmore 1988a the type sherd is cited at the end of each description. Further thin-section work and analysis of the organic inclusions in the chaff-tempered wares is planned, and it is hoped to publish a fuller statement on the pottery fabrics from the Middle Saxon settlement in due course.
2. Catalogue of the illustrated pottery.
3. Stratigraphic analyses of the pottery from the Peabody site, the National Gallery basement and the National Gallery extension; the last of these also includes discussion of the medieval pottery from the site.
4. Discussion and dating of the Middle Saxon pottery, with reference to other sites in London, York, Ipswich, Canterbury and *Hamwic*.

Method of analysis

This follows the system adopted for the Jubilee Hall and Maiden Lane material (Blackmore, 1988a), and so is not described in full here. The classifications and quantification in this report are based on vessel fabric, with each sherd being given a unique number (joining sherds are usually counted as one). The pottery was initially recorded on paper, and subsequently directly on computer using a series of codes to describe the various numerical and textural attributes

TABLE 1. Fabric codes used in the pottery analysis

<i>Chaff-tempered</i>			
CHAF	London Clay or brickearth with abundant organic temper	*NGBWD	North French blackware, coarse version of NFBWA
CHSF	sparse organic temper and fine sand (finer than CHAF)	NFGWB	North French greyware, fine sand-tempered
CHFS	as CHAF but coarser with abundant sand/grit	NFGWA	North French greyware, coarse sand-tempered
CHFQ	as CHAF, but with large quartz grits and some sand	NFGWC	North French greyware with red core; hard, thin-walled
*CHQF	as CHFQ, with mixed quartz and flint grits	NFGWD	North French greyware, micaceous, fine sand-tempered
CHFI	as CHAF, but iron-rich matrix	NFGWE	North French greyware, very fine sand-tempered
CHFG	as CHAF, with grog/tile	NFGWF	North French greyware, abundant iron
<i>Ipswich-type</i>		*NFGWG	?North French greyware, hard grey-white body
IPSF	fine Ipswich-type ware	NFEBB	North France/East Belgium, hard greyware
IPSM	intermediate Ipswich-type ware	NFRW	North French red ware
IPSC	coarse Ipswich-type ware	NFSVA	?North France, Seine Valley coarse buff ware
<i>Non-local (?)</i>			
SSANA	coarse sand-tempered (pinkish-brown core, black surfaces)	*NFSVC	North France, Seine Valley fine white ware
SSANB	medium sand-tempered (grey-black throughout)	*MSRWA	North French/Rhenish fine oxidised ware
SSANC	sand-tempered (white-firing clay)	*MSRWB	North French/Rhenish, coarse oxidised ware
*SSAND	fine sand-tempered (grey-black throughout, burnished)	*MSWWA	North French/Rhenish white ware (?Trier)
*SSANE	fine sand-tempered (pale grey)	BEAV	North France, Beauvais white ware
*SHISA	coarse sand-tempered with abundant iron/slag inclusions	BEARP	North France, Beauvais red-painted Rhenish, Badorf/Walberberg-type ware (soft, coarse)
SLGSB	Lower Greensand ironstone sand in ?Reading Beds clay	BADOA	Rhenish, Badorf/Walberberg-type ware (hard fine)
*MFSGB	mixed sand, quartz, flint (hard, reduced)	BADOB	Rhenish, Badorf/Walberberg-type, hard coarse
*MSGFC	mixed sand, quartz, flint, iron (hard, reduced)	*BADOE	Rhenish, Badorf/Walberberg-type, hard coarse
*MSFGD	mixed sand, flint, quartz, limestone (hard, pale grey)	<i>Late Saxon and Medieval wares</i>	
MSCH	mixed sand, flint, chalk	ANDE	Andenne ware (1000–1200)
MSSB	abundant ill-sorted bivalve shell, sparse organic matter	BLGR	Blue-grey ware (1000–1200)
MSSC	abundant bivalve shell with sand and organic inclusions	CBW	Coarse Border ware (1350–1500)
MSSE	abundant bivalve shell (reduced, fine or coarse)	CHEA	Cheam ware (1350–1450)
*MSSF	abundant very fine shell (reduced, soft)	EMCH	Early medieval chalky (1000–1150)
*MSSG	abundant sand and sparse shell	EMFL	Early medieval flinty (1000–1100)
*MSSH	abundant shell (oxidised, soft, soapy)	EMGR	Early medieval grog-tempered ware (1050–1150)
*SLCHA	limestone/chalk with organic	EMS	Early medieval sandy (900–1050)
*SLCHB	limestone/chalk with ?grog	EMSH	Early medieval shelly (1050–1150)
*MSSLA	shelly-limestone with organic	EMSS	Early medieval sand and shell (1000–1150)
MSOL	oolitic limestone	ESUR	Early Surrey ware (950–1150)
*MSLCA	limestone and chert	KING	Kingston ware (1230–1350)
*MSLQA	limestone and quartz	LSS	Late Saxon shelly ware (900–1050)
*MSSQ	sandstone and quartz	LCALC	Calcareous London-type ware (1100–1200)
SSSL	sandstone, quartz and sparse shelly-limestone	LCOAR	Coarse London-type ware (1150–1200)
<i>Imports</i>		LC-SHELL	Shelly ?Coarse London-type ware (1100–1200)
NFBWA	North French blackware, fine brown/pink body	LOGR	Local grey ware (1050–1150)
NFBWB	North French blackware, sandy, reduced throughout	LOND	London-type ware (1150–1350)
NFBWC	North French blackware, fine blueish-white body	OSR	Medieval white wares, unsourced (1230–1500)
		SAIN	Saintonge ware (1250–1500)
		SHEL	Early medieval shell tempered (1050–1150)
		SHER	South Herts wares (1150–1300)
		SSW	Shelly sandy ware (1150–1200)
		STAM	Stamford ware (900–1150)
		<i>Post-medieval wares</i>	
		BORD	Fine Border ware (1550–1750)
		PMR	Post-medieval redware (1600–1800)
		TUDB	Tudor Brown (1480–1620)

Note: *denotes a new fabric absent from Blackmore 1988^a

of each fragment, together with details of sherd links, and illustration (see Table 2). The pottery archives for each site will be stored together with the site records and finds at the Museum of London. Details of the pottery stamps, classified by Teresa Briscoe, are also held in the Archive of Anglo-Saxon pottery stamps (at Stoke Poges, Bucks). Thin-sections quoted in this report are held at the University of Southampton.

The wares

The main fabric groups are as follows:

Chaff-tempered

Ipswich-type

?Non-local: sand, mixed grit, chalk, shell, limestone, others

Imports: North French/Belgian, Rhenish

These groups have a number of sub-groups, each of which has a unique fabric code (Table 1). The wares are discussed in this order with regard to fabric, manufacture and forms. To this end the illustrations are ordered as far as possible by stratigraphic location within fabric and form types. The distribution and dating of the pottery is considered in the final discussion. The general proportions of the ware groups present in each assemblage are illustrated in Tables 3, 6 and 7.

Chaff-tempered wares

This group includes most fabrics containing vegetable matter of any kind as a dominant inclusion (for descriptions see Blackmore, 1988a); these wares were probably locally made, although it has been suggested (Vince, 1990, 99) that the chaff-tempered wares used in London were made in south-west Essex. Other wares with organic matter are listed under the identifying inclusions (*eg* shelly-limestone). In addition to the previously cited discussions of organically tempered pottery, there is now a useful note on the chaff-tempered wares from Mucking (Hamerow, 1987), which covers both forms and dating. Mention should also be made of the thin-section work on chaff-tempered wares from East Anglia (Russell, 1982).

The various fabric types present are summarised in Table 1. Only one new fabric was found:

*CHQF—chaff-tempered with quartz and flint/chert. Two sherds from the Peabody site, with abundant fine and medium rounded and sub-angular quartz grains with scattered large inclusions of quartz and flint or chert to 8mm across, with some blue/red burnt flint grits. If this is a local ware, the flint was probably derived from the river gravels and added purposely to the clay.

The quantities of the different wares (counting as one sherds from the same vessel) are shown in Table 1a.

As at Jubilee Hall and Maiden Lane, the most common fabric at the Peabody site is CHAF; the clay and inclusions are generally well mixed, but one sherd contains a large oval pellet of brown sandy clay over 10mm across. CHAF is less common at the National Gallery basement, and absent from the extension site. All the other groups are quite rare. One sherd of CHFI from the Peabody site, with a reduced core and orange-brown surfaces, has abundant iron inclusions up to 3mm across.

Manufacture

This pottery is all handmade. Some pots may have been finished on a turntable 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, but very few are completely oxidised; interestingly, these include two of the comb-stamped vessels from the Peabody site (see below). Many sherds have externally smoothed or burnished surfaces; the Peabody assemblage includes one reduced sherd with fine vertical burnish externally and horizontal smoothing internally, and another has a distinctive smearing of the outer wall caused by roughly wiping the pot with grass while it was still wet (SF 115, dark earth [213]). One vessel from the National Gallery basement (Fig 33, No. 84) appears to have a surface slurry which is flaking off. Several sherds have voids from burnt out grains or seeds, while the inner surface of one sherd has impressions of grass blades and a plant stem measuring 30mm × 3mm. The bases of all vessel types are generally flat, but some are

TABLE 1a Chaff-tempered wares from PEA87, NGA87, NAG87

	CHAF	CHSF	CHFS	CHFQ	CHQF	CHFI	CHFG	Total sherds	Rims	EVES
PEA87(strat)	205	13	31	2	1	9	1	262	20	2.31
'Dark earth'	35	1	4	—	2	—	—	42	1	0.07
NGA87	18	6	5	—	—	7	—	36	3	0.37
NAG87	—	—	—	—	—	—	—	—	—	—

sagging; the greatest base thickness in the Peabody assemblage is 18mm.

Forms (PEA87: Figs 28, 29; NGA87: Fig 33).

The range of forms found on the Peabody site is much the same as that from Jubilee Hall and Maiden Lane, but some new types are present, notably a small bowl or lamp, a biconical vessel, and comb-stamped jars. It is very difficult to date these vessels on form alone, since many shapes were long-lived and may appear 'late' or 'developed' when they are early, or *vice versa*. The dating thus relies to some extent on the association with other ceramics or artefact types, and in this respect the work at Mucking (Hamerow, 1987) should prove most useful, but allowance must still be made for factors such as residuality and regional/local variations in vessel form.

Most *cooking pots/jars* from the Peabody site are small and have a rim diameter of less than c. 120–140mm (Fig 28, Nos. 2–3, 7–8, 10–12; Fig 33, No. 85); the medium size is not common (Fig 28, Nos. 6, 10). Of the larger cooking pots/storage jars (Fig 28, Nos. 1, 13; Fig 33, No. 84), No. 1, which is substantially complete (53 sherds), has evidence of considerable use, possibly for making dyes (see below). The rim forms are mainly everted, and although the thickness and angle of the rim vary slightly, on the whole a globular flat-based profile is quite standard. No. 5 has a very upright rim, and may be a storage jar rather than a cooking pot. Two vessels from the Peabody site (Nos. 9, 10) may have had lugged rims, but have broken in such a way as to make this uncertain; both are rather thicker walled than the other cooking pots. The rim of Fig 33, No. 84 appears to be copying an Ipswich-type ware form and may be of 8th-century date,

although this is a long-lived type. Similarly 'evolved' forms have been found at Maiden Lane (Blackmore 1988a, fig 25, no. 6) and at Portchester Castle (Cunliffe, 1970, 72), both provisionally dated to the first half of the 8th century.

The flat-topped, internally expanded rim with no neck (No. 14) may derive from a *sub-biconical jar*.

Two *small jars* were found, one plain (No. 15), the other with comb-point decoration (No. 20, see below). The latter is very similar in form to a small undecorated vessel from Colchester (Myres, 1977, fig 73, no. 3349). The *necked jar* is represented by one sherd (No. 16).

The *small bowl* with upright rim similar to the prehistoric 'hooked rim' is a new form, represented by only one vessel (No. 17); an almost identical form has been found at Mucking (Hamerow 1987, fig 13, no. 1). The presence of soot suggests that this may have been a lamp.

The *biconical bowl* (No. 18) is extremely well made in an exceptionally fine fabric, thin-walled and with carefully smoothed surfaces. This vessel would not be out of place on a 5th-century site, but could be of 6th-century date; it is not known how late this form continued. It certainly seems earlier than most of the other chaff-tempered forms from London, although it could just be contemporary with Nos. 19–22. The nearest parallels in the Lower Thames Valley are at Mitcham, Surrey, at Sutton Courtenay and Long Wittenham in Berkshire (Myres, 1977, fig 10, nos. 1992, 2617, 3398; fig 47, no. 2002), and at Mucking (Hamerow, 1987, fig 11, no. 4).

Decoration

Decoration is rare, and is generally limited to burnishing or smoothing, which may be

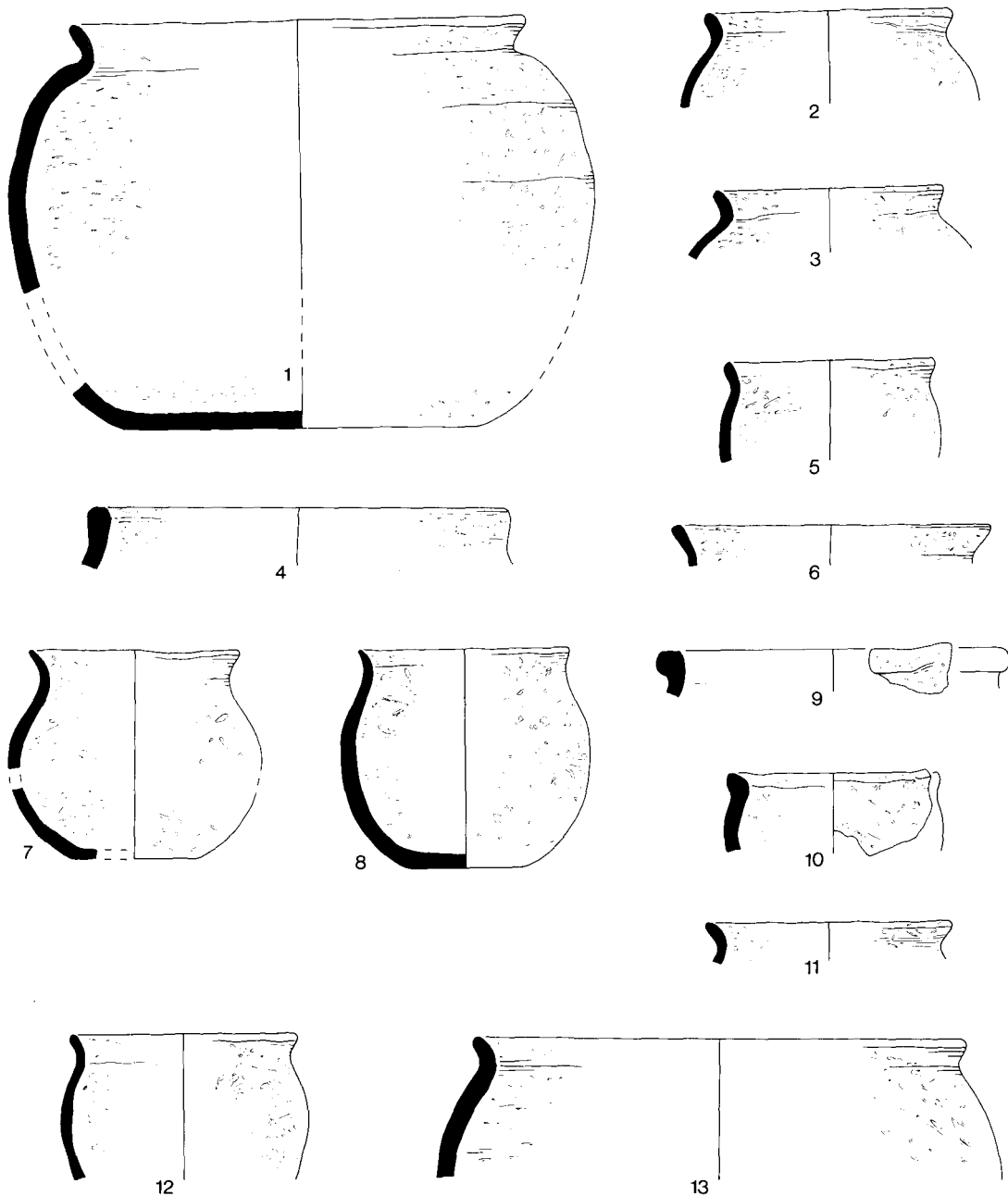


FIG 28 The Peabody site: chaff-tempered ware: cooking pots and jars (1/4)

functional as much as decorative. Five sherds from three vessels, however, have comb-point decoration (Nos. 19–22; Briscoe Type N1b). The small jar, No. 20, could be of 6th-

century date, but the globular form of Nos. 21 and 22 suggests that these pots date to the 7th century (Myres 1977, 64–5).

Sherds Nos. 21 and 22 are from the same

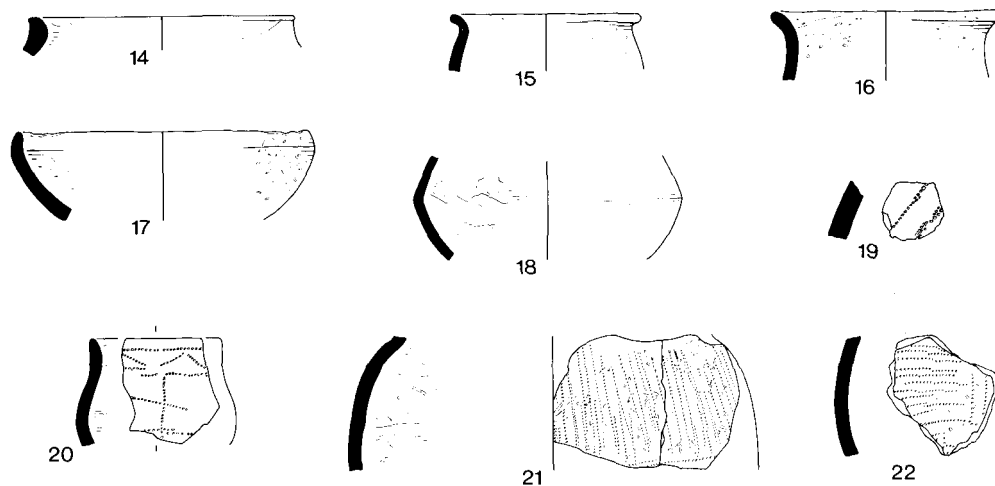


FIG 29 The Peabody site: chaff-tempered ware: other forms (1/4)

pot, with most of the impressions made by an eight-toothed comb. They have been illustrated separately since the orientation of the internal wiping (and thus presumably that of the external decoration) is quite different, while, being handmade, the angle of No. 22 can be easily adjusted to fit either alongside or below No. 21. The nature of the impressions in the lower left hand corner of No. 21 suggests that the direction of the comb-pointing may have changed at this point, and it seems likely that the overall scheme comprised alternating zones of horizontal and vertical decoration in keeping with the parallels noted below; the density of the decoration however is not matched on any other known example.

Comb-point decoration has been found on several other sites in south-eastern England. Some pots are from grave groups, but others come from settlement sites (Myres, 1977, 64–5, 353–4). Find-spots in Essex include Barking (Redknapp pers comm), Mucking (Hamerow, 1987, fig 14, no. 1), Stanford-le-Hope (Myres, 1977, fig 362, no. 3760), and a probable cemetery site near Rainham (Evison, 1955, 170, fig 7, no. 3; Myres 1977, fig 362, no. 419); other sites include Canterbury (Marlowe Theatre site: MacPherson-Grant pers comm) and Westbere in Kent, Croydon in Surrey, (*Ibid*, fig 362, no. 332) Long Wittenham in Berkshire (*ibid*

fig 362, no. 1995) and Hitchin in Hertfordshire (*Ibid* fig. 362, no. 2374). In London only one other small sherd has been found, at Maiden Lane (Blackmore, 1988a, fig 24, no. 1). Of the known finds, those from Essex, Long Wittenham and Hitchin have elements in common with the London finds, but none are as small as No. 20 from Peabody. The spatial analysis of different finds at Mucking shows that this form of decoration is a predominantly 7th-century trait on that site (Hamerow, 1987, 254); at Feddersen Wierde in the Netherlands, however, it appears to have continued into the 8th century (Schmid, 1986).

Condition and use

The Peabody material is of variable size and in variable condition. Many sherds are battered and abraded, either through use and/or after deposition, while a significant number have weathered or leached surfaces and/or a deposit of white 'veins' over all surfaces; these were mostly found in the grey earth in Area A. Most inner deposits probably derive from water or other liquid foods, but the purple deposit noted on Fig 28, No. 1 and other sherds may indicate the use of vegetable dyes such as madder. Some sherds are sooted, while the inner surfaces of others (especially No. 1) are worn through use. The

small amount of pottery from the National Gallery basement is in generally poor condition, with several small laminated fragments.

Ipswich-type wares

Ipswich was a major producer of pottery during the Middle Saxon period, and the known distribution of its products now extends from Lincolnshire to Hampshire, and from Buckinghamshire to Kent (Blinkhorn, 1989). The ware was clearly imported in some quantity to London during the 8th and 9th centuries, if not earlier, and appears to have dominated the market for some time. In addition to the previously-cited studies of Ipswich ware (Blackmore, 1988a), it should be noted that a report by David Williams on thin-section analysis of samples from Whitehall and other sites will appear in the publication of the Treasury site (Huggins, forthcoming).

Most of the pottery from the Peabody and National Gallery sites is quite consistent with that found elsewhere in London. A few exceptions do occur, however. These include a few sherds from the Peabody site made of poorly mixed, unevenly fired clays with some organic content. These sherds, which include Fig 30, Nos. 28 and 30, display Ipswich-ware traits, but are not entirely typical of the industry, although they may have been produced in the Ipswich area. These have been counted in with the fine and medium wares for the purposes of quantification.

Also of interest are two sherds which were examined in thin-section. David Williams comments: 'Both sherds are in a hard roughish sandy fabric, with light grey (5YR 6/1) to reddish brown (2.5 YR 5/4) outer surfaces, light to darker grey inner surfaces and darkish brown core. Thin-sectioning

shows a groundmass of frequent quartz grains mostly under 0.10mm in size, a scatter of much larger quartz grains, ranging up to 1.20mm across, some quartzite, chert, grog or iron oxide and flecks of mica'.

Macroscopically the sherds resemble the SLGS group, but although a slight red coating may be observed at the boundaries of some of the quartz grains, the distinctive iron-stone inclusions are absent. Thus although the sherds are not entirely typical of Ipswich-type ware, they have been classified as variants of the Ipswich tradition until a wider sample of Surrey wares is available. The closest *Hamwic* ware is Fabric 8 (Timby, 1988, 82), which itself may include some Ipswich-type ware.

The quantities of the different wares on the three sites (counting sherds from the same vessel as one) are as shown in the table below.

Manufacture

Ipswich-type ware is generally wheel-finished, although the wall and base thickness can vary considerably. Most wares are evenly fired and pale to dark grey throughout, but some oxidised or part-oxidised wares occur, while a few sherds are greyish-white in colour. The rims are of simple everted form and fall into a number of standard types, as defined by West (1963, 248). The upper body of the cooking pots/jars generally bears characteristic girth grooves, but there are exceptions, notably Fig 30, Nos. 25 and 37, the former a small jar or bottle in a fine, mainly oxidised ware (see also below). No. 37 is in an unevenly fired slightly sandy fine ware with dark grey surfaces, and has a groove at the neck, but the surfaces are unevenly wiped, both horizontally and vertically. The bases of all pots are normally sagging, and would

TABLE 1b Ipswich-type wares from PEA87, NGA87, NAG87

	IPSF	IPSM	IPSC	Total sherds	Rims	EVES
PEA87(strat)	41	9	24	74	7	0.86
'Dark earth'	45	19	18	82	10	0.66
NGA87	7	32	72	112	20	1.85
NAG87	16	3	12	31	—	—

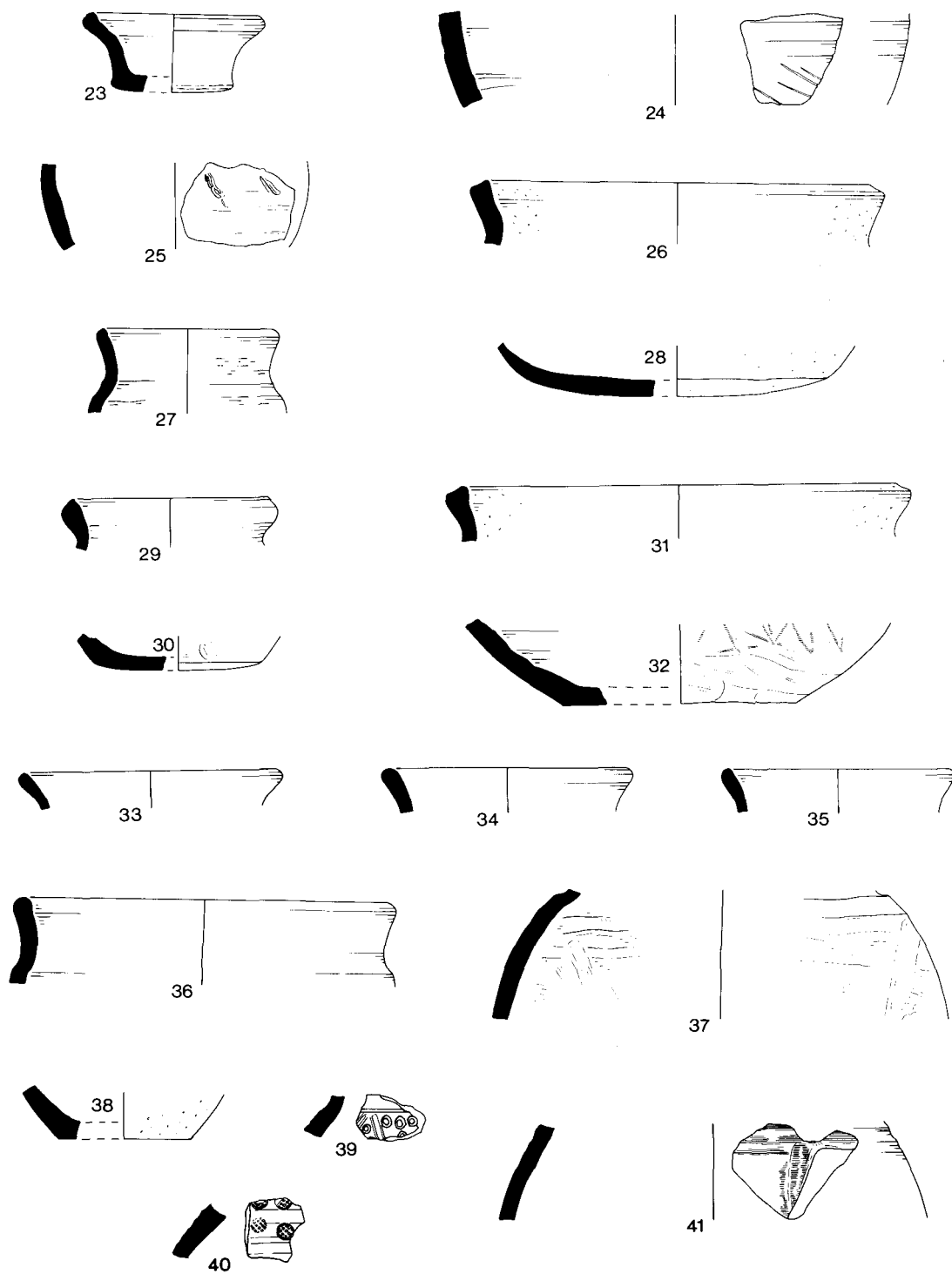


FIG 30 The Peabody site: Ipswich-type ware (1/4)

sometimes appear to be formed by inverting the pot over a last (Blinkhorn pers comm), a technique which would cause the stepped inner profile observed on many of the smaller vessels found in Ipswich, and also on Fig 30, No. 30. This pot has been carefully wiped across the base and around the base angle, with a finger print showing where it was held during this operation. No. 28, which has a very smooth sagging base and lacks the usual knife-trimming, appears to have been formed in a mould or smoothed in the manner described above. Flat bases are rare, but do occur in the Peabody assemblage (eg Nos. 32, 38). The latter is knife-trimmed and has traces of burnished decoration (see below).

Forms (PEA87: Fig 30; NGA87: Fig 33)

The Peabody and National Gallery basement assemblages include some new forms which were not obviously present in the Jubilee Hall and Maiden Lane collections, notably a lugged cooking pot rim, spouted pitchers, a flat-based pitcher, a jar/bottle and ?lamps.

As at Jubilee Hall and Maiden Lane, the *cooking pots*, in all three fabric types, fall into three size groups on rim diameter: small, medium and large. Following the study of this larger sample, the size groupings proposed for the Jubilee Hall/Maiden Lane material may now be refined as: 100–159mm; 160–219mm; 220–300mm, which is more consistent with the evidence from Ipswich itself. At the Peabody site ten of the 17 cooking pot rims derive from small cooking pots, with only two medium and five large; most rims are small and battered. At the National Gallery basement, however, fewer small pots are represented (Fig 33, Nos. 86, 90), but fragments from a number of pots with a rim diameter of 160–180mm were found (Fig 33, Nos. 87–88), together with sherds from larger vessels with diameters ranging between 220 and 280mm (Nos. 94–95), including one with a folded and lugged rim. This is the first example of this form from London (No. 92), although it is quite common in Ipswich (West, 1963, fig 44; Hurst, 1959, 16–17). Another new form in this group is a lip from a cooking pot

or pitcher (diameter unknown; not illustrated), with a black deposit over both surfaces.

Also present in the National Gallery basement assemblage are fragments of two large cooking pots or *storage jars* (up to 300mm in diameter) with upright rims (Nos. 91, 93).

The *spouted pitcher* is conclusively represented for the first time on the Peabody site by two rim sherds with part of the spout surviving (SF 172, fine ware, light burnish, from the dark earth [213]; PEA pit [205], fill [210], coarse ware, heavy burnish); on both sherds the burnish is horizontal on the rim and vertical on the spout. Neither are suitable for illustration, but the form is well illustrated elsewhere (Hurst, 1976, fig 7.8). Other sherds which probably derive from pitchers include Fig 30, No. 24, the two stamped sherds (Nos. 39, 40; see below), and a partly burnished fine ware body sherd with the scar of a vertical lug or handle (Fig 30, No. 41; cf Hurst, 1976, fig 7.8, nos. 1, 2). Possibly also in this group is a large handmade flat-based vessel (No. 32), which is knife-trimmed and appears to have the faint remains of a trellis burnish (see below). Flat bases are unusual, but the fabric, although of a lower quality than usual, with a very soft pinkish body with black interior and brown exterior, appears to be closely related to the Ipswich-type wares.

Small jar or bottle: One oxidised sherd (No. 25) has a roughly smoothed outer surface with oblique irregular impressions (?plant or bristle) which may be accidental or intentional (cf Hurst, 1976, fig 7.7, no. 3).

Other forms comprise a small sagging-based vessel with flaring rim (No. 23) and a small flat-based vessel (No. 38), both possibly *lamps*. No. 23 has a grey core and what appears to be a white slip over the oxidised surfaces.

Decoration

Horizontal or vertical *burnished decoration* is found on several sherds, and, in the case of No. 24, in combination with diagonally incised lines. The trellis burnish, possibly

present on the very worn sherd No. 32, is apparently in imitation of pitchers from Eastern Belgium or Northern France. It is rare in Saxon London, and was previously thought to date to the late 9th or 10th centuries. However, it has long been suspected that this style of decoration was copied in Ipswich, and the presence of such a vessel in a late 8th- or 9th-century pit [205] on the Peabody site should not be that surprising.

Stamped decoration thought to be a 7th to 8th-century trait, is present on two sherds from the Peabody site and one from the National Gallery extension. The Peabody examples comprise one fine ware neck sherd with ring and dot stamps contained within paired diagonal lines, which presumably defined pendent and standing triangles (Fig 30, No. 39), and one coarser sherd with four circular grid stamps, measuring 4 × 5mm (Fig 30, No. 40). The former falls into Briscoe's type A1bi (Archive No. 307-EM/3), a very common stamp found on many Anglo-Saxon sites. The latter, which falls into Briscoe's type A3av (Archive No. 307-EM/4) is also a common motif, although the circular grid is less common than the rectangular version. The (unstratified, oxidised) sherd from the National Gallery extension (Fig 35, No. 99) has a design of interlocking circles 23mm in diameter which could have been made with any tubular object.

Condition and use

At the Peabody site, 15 vessels have external sooting (two with internal deposits), three are sooted on both faces and two are internally sooted only. One vessel has both internal and external food deposits, while one sherd has both internal sooting and a white deposit. Internal deposits were observed on a further 29 sherds, two of which are also externally sooted. The most common deposit is white or yellow-white in colour, and probably derives from evaporating water (18 examples); also present are a brownish-white deposit (one sherd), and a purplish-white deposit which may derive from madder or a similar vegetable dye (sherds from four vessels).

The pottery from the National Gallery basement includes a number of sherds of different fabric types with a purple internal surface (?madder). Five sherds from two vessels in pit [214] have a white deposit over a purple deposit. Other traces of use include white internal deposits and sooting of one or both surfaces, observed on all the smaller illustrated vessels. A few sherds also have possible food deposits internally.

Other local and non-local wares

Sand-tempered wares: SSANA, SSANB, SSANC, *SSAND, *SSANE

This is a small group which embraces a range of both fine and coarser sand-tempered wares. Some may relate to other groups such as the possible Surrey-Hampshire wares. The various wares previously identified are listed in Table 1. Two new fabrics, SSND and SSANE, are described below.

Fabric SSANA occurs in small amounts on almost every site within the settlement area, the best example so far being a large cooking pot or jar from the Peabody site (Fig 31, No. 42), which is burnished externally and knife-trimmed both internally and externally. Further comparison with sandy wares from the Canterbury area reinforces the impression that this ware was produced in Kent.

Fabric SSANB was not common at either Jubilee Hall or Maiden Lane, but a number of sherds from the Peabody site appear to belong to the category. Two sub-groups are present, one with fine organic inclusions and occasional flint grits, the other without. The former is distinct from CHFS, and appears to match the description of *Hamwic* Fabric 13 (Timby, 1988, 84).

The most distinctive vessel in this group is a small fluted and burnished jar (Fig 31, No. 43) which was submitted for thin-section analysis. David Williams comments: 'Hard sandy fabric with dark grey (between 7YR 4/1 and 3/1) outer surface, lighter grey inner surface and black core. Thin-sectioning shows frequent well-sorted subangular quartz grains, average size 0.03 to 0.06mm, with a little quartzite and a few flecks of mica'. This

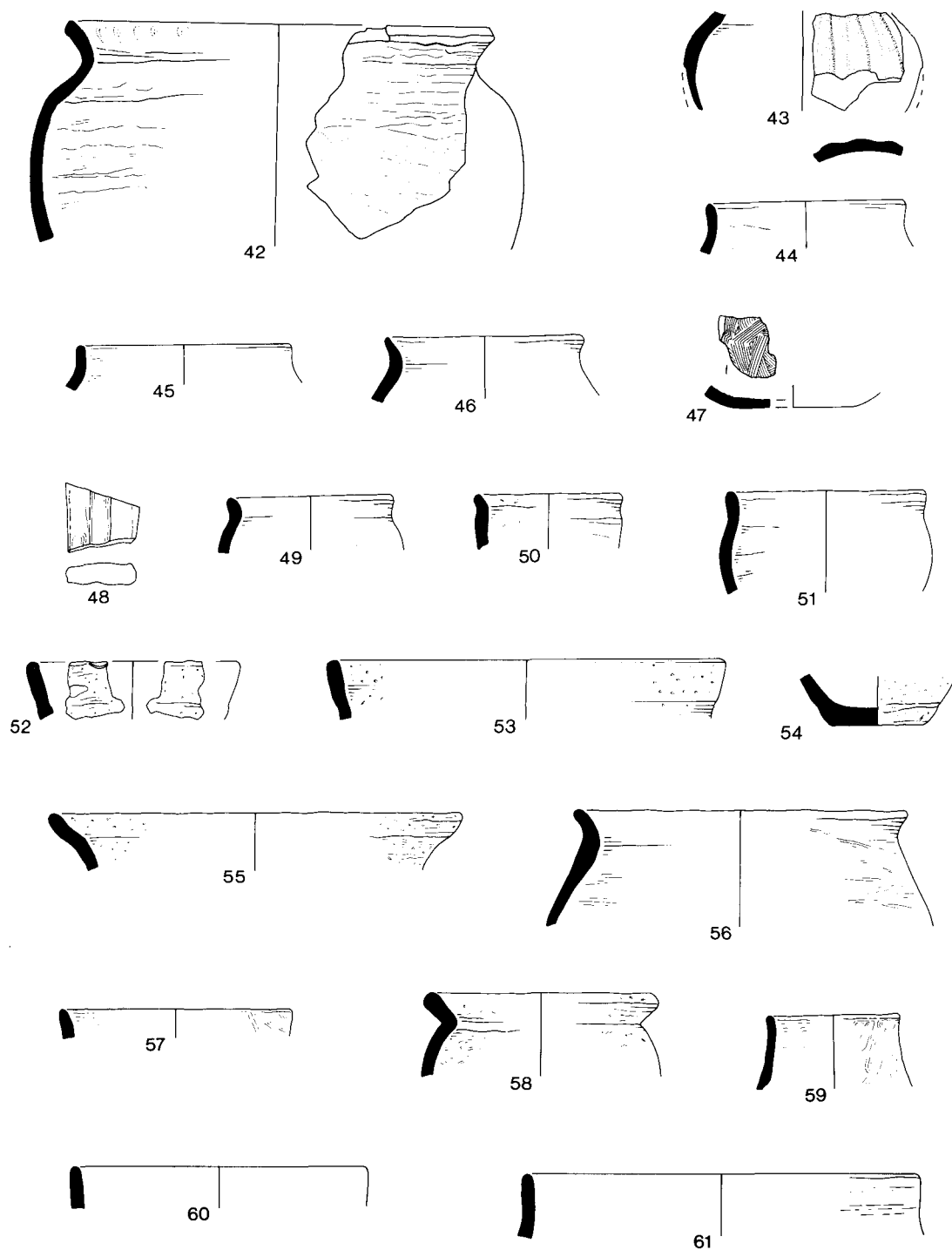


FIG 31 The Peabody site: non-local wares: sand-tempered (Nos 42-51); shell-tempered (Nos 52-55); various limestone-tempered (Nos 56-59); sandstone and quartz (Nos 60-61) (1/4)

vessel comes at the end of the early Saxon tradition of bossed vessels, and is decorated in the style sometimes known as 'melon-ribbing', which continued into the 8th century. The decoration comprises a continuous vertical ribbing of closely-spaced applied bosses, with a good all-over burnish. The closest local parallels for this form are two small necked jars from Banstead in Surrey (Myres, 1977, 11; fig 87, nos. 161, 4107), while related forms include the Drury Lane pot (Myres, 1937; 1977, fig 87, no. 713) and the necked jar from Maiden Lane (Blackmore, 1988a, fig 27, no. 46).

Other sherds from the Peabody site include three cooking pot rims, one everted and two upright (Fig 31, Nos. 44–46), of which No. 44 has an externally burnished surface and striations inside the neck which suggest that it was finished on a wheel. One base sherd from a handmade ?dish or bowl has a yellow-brown burnished outer surface, with scored geometric decoration over the dark brown inner surface (Fig 31, No. 47).

As before, fabric SSANC is rare, with only two sherds from the Peabody site, a strap handle (Fig 31, No. 48) and a (?underfired) body sherd from a ?jar in a similar fabric.

*SSAND. A hard dense fine ware with abundant very fine quartz sand, and sparse larger quartz grains; occasional organic inclusions occur in some sherds, but the ware is distinct from the fabric CHSF. Handmade, but well-finished, with carefully smoothed or burnished surfaces, this in many ways resembles the early Saxon sand-tempered vessels. Sherds in this group derive from small cooking pots/jars (Fig 31, Nos. 49–51).

PEA87, [208]: 8

*SSANE. A clean fine clay matrix with abundant fine quartz sand, moderate black iron/ironstone and occasional organic flecks; pale grey core, pale grey-brown burnished outer surface, dark grey interior. This appears to be very similar to the limestone-tempered wares.

PEA87, SF 215, [111]

Iron-rich sand and quartz: *SHISA

One vessel from the National Gallery site, in a very hard olive-grey ware with darker grey

surfaces, is tempered with abundant quartz sand and angular grits of black iron with a slag-like appearance. This may prove to be a Rhenish import.

NGA87, [241]: 20

Sandy-gritty wares: SLGSB

Three fabrics were identified on the Jubilee Hall and Maiden Lane sites, (Blackmore, 1988a) all containing a distinctive iron-stone sand which is characteristic of parts of the Lower Greensand around the Surrey-Hampshire Borders, in Bedfordshire and in Central Buckinghamshire (Vince, 1989, 170; 1990, 99). Interestingly, only one sherd, of fabric SLGSB, was found on the Peabody site; this is in a very coarse sandy fabric, with little organic content.

Mixed grit-tempered ware: *MSFGB,
*MSFGC, *MSFGD

*MSFGB. A reduced ware, it is closely related to fabric MSFG at Maiden Lane (Blackmore, 1988a, now coded MSFGA) but lacks the shell content, and the inclusions are much finer. These comprise sub-angular quartz grits with angular patinated flint grits up to 2mm, iron and very occasional organic (woody) fragments, and fine voids where these have burnt out. Both inner and outer surfaces are wiped. The closest parallels at *Hamwic* are fabrics 55 and 65 (Timby, 1988, 84–5).

PEA87, [77]: 1

*MSFGC. Reduced fabric with dark grey body and smooth black surfaces. Abundant angular flint, mostly red in colour and mainly 1–2mm, but with occasional larger grits up to 5mm; moderate sub-rounded clear and rose-coloured quartz, with sparse clumps of overgrown quartz grains, occasional iron. This may be related to the SLGS group; the closest *Hamwic* fabric is 62 (Timby, 1988, 85).

PEA87, SF 212 [14]
*MSFGD. Similar to MSFGA and MSFGB but paler grey, with less abundant and less well sorted inclusions and consequently a smoother fracture. David Williams comments: 'Hard, somewhat smooth coarse fabric, containing frequent visible inclusions of

quartz, flint, and some white limestone, mostly angular, but sometimes rounded with polished surfaces. Dark grey (10YR 3/1) outer surface, light grey (between 10YR 6/1 and 5/1) inner surface and core, with a hackly fracture. Thin-sectioning shows a fairly clean clay matrix containing many large angular pieces of flint (up to 2mm across), sparse quartz grains and limestone with flecks of mica'.

PEA87, [131]: 6

It is represented solely by sherds from one large thin-walled globular pot (maximum girth 300mm), from pit [162], an isolated feature on the Peabody site. Although handmade with wiped surfaces, this has a better finish and is more highly fired than the other Saxon wares, and was first thought to be Late Saxon or early medieval; but as all the other material in the pit is Saxon, it seems likely that this is another variant of the mixed grit wares.

Chalk-tempered ware: MSCH

One sherd only (PEA87, SF 86, [213]), in a fine micaceous sandy fabric with sparse organic matter. The scattered fine chalk inclusions are distinctively white in comparison to the chalk/limestone content of the other fabrics listed below.

Shell-tempered wares: MSSB, MSSC, MSSE, MSSF, *MSSG, *MSSH

It should be noted here that a radio-carbon date received since the completion of the Jubilee Hall pottery report now suggests that some shell-tempered wares from pit [57] on that site may be of Late Saxon date (HAR-9134, 950 ± 60 BP, AD 1010–1140 at 68% confidence level). These include sherds mentioned by Vince (1989, 170; fig 7.8) in a recent discussion of the potential of Middle Saxon pottery for fabric analysis. Similar wares were however found in stratified pre-'dark earth' contexts on the Peabody site, and so the real date of the Jubilee Hall sherds, which were found with other Middle Saxon wares, is uncertain. No Middle Saxon shell-tempered ware was found at either of the National Gallery sites.

Most sherds fall into the existing fabric groups (see Table 1), but two new groups were recognised. One sherd in fabric MSSB has possible finger-tip decoration on the rim (Fig 31, No. 52). The three sherds in fabric MSSE, all reduced throughout, include one base from a small roughly made pot (Fig 31, No. 54). One sherd (Fig 31, No. 53) submitted for thin-section analysis was found to belong to fabric MSSC. David Williams comments: 'Hard vesicular fabric with frequent plates of shell visible in fresh fracture; pinkish-grey (5YR 6/2) surfaces, light grey core. Thin-sectioning shows a groundmass of quartz grains generally under 0.10mm in size, with a few slightly larger quartz grains, flecks of mica, a little chert and frequent shell inclusions.' The vessel form is paralleled at Barking.

*MSSG. A coarse ware with grey core and grey-brown surfaces, tempered with abundant quartz sand and shell inclusions which vary in size and frequency. One fragment has very sparse, very fine shell. The other, a base sherd, has moderate ill-sorted shell up to 10mm across, and a white deposit internally. These could easily be mistaken for early medieval sherds, but although one was found in the 'dark earth', the finer sherd was found in a large pit [74], showing that they are contemporary with the Saxon occupation of the site.

*MSSH. Abundant shell ranging from very fine to 2mm, with a few larger fragments up to 5mm, and flecks of red iron oxide. Grey core; the oxidised surfaces have a soapy feel reminiscent of Maxey ware, but this is generally reduced and the rims are more upright (Addyman, 1964, 48–52, 56–58).

PEA87, [75]: 2

Limestone and/or chalk-tempered wares:

*SLCHA, *SLCHB

*SLCHA. Limestone/chalk and organic. One sherd only, pale grey throughout, with eroded surfaces. Very fine clay matrix, abundant very fine organic inclusions and moderate inclusions of soft greyish-white degraded chalk up to 2mm.

*SLCHB. Limestone/chalk and ?grog-

tempered. Fine grey clay matrix with abundant ill-sorted fine quartz grains, moderate medium-sized fragments of ?degraded chalk or limestone, moderate large rounded pellets (up to 7mm) of ?soft white and red clay or grog, sparse larger quartz grains, sparse burnt out organic inclusions. One vessel only (Fig 31, No. 56), from the Peabody site, a large low-fired jar, with a porridge-like texture and a very lumpy fracture; pale grey throughout, with wiped outer surface. PEA87, [213]: 9

Shelly-limestone: *MSSLA

Three sherds were submitted for analysis. Two have a burnished outer surface, the third (Fig 31, No. 58) has a roughly smoothed exterior. David Williams comments: 'All three sherds have a hard smoothish fabric with small inclusions of white limestone clearly visible in fresh fracture, and are dark grey (between 7.5YR 4/1 and 5YR 3/1) throughout. Thin-sectioning shows frequent inclusions of shell, calcite, shelly limestone and limestone with some quartz grains (notably in Fig 31, No. 57), sparse organic inclusions and flecks of mica. Oolites appear in some of the limestone in two sherds. There are also a number of voids in the clay matrix of all the sherds, which presumably derive from some of the calcareous or organic material before it was burnt out or leached out'. The presence of oolitic limestone points to an origin in the Jurassic belt, well to the west of London. PEA87, [197]: 7

Oolitic limestone: MSOL

One sherd only, with grey core, red inner surface, smoothed grey-brown outer surface; fabric as Blackmore 1988a, but with additional sparse organic matter; there are numerous fine voids where the calcareous content has leached out.

Limestone and chert: *MSLCA

One sherd only. David Williams comments: 'Hard, smooth, somewhat vesicular fabric with inclusions of chert and white limestone visible in fresh fracture; dark grey (between 5Y 4/1 and 3/1 throughout), with burnished

outer surface. Thin sectioning shows a fairly clean clay matrix containing a scatter of quartz grains, average size under 0.30mm across, cryptocrystalline limestone, chert and sparse flecks of mica and red iron oxide. There are also voids 2–3mm across in the matrix where the original limestone has since disappeared'.

PEA87, [42]: 4

Limestone and quartz: *MSLQA

David Williams comments on sherd No. 59 (Fig 31): 'Very hard, slightly rough sandy fabric with scattered pieces of white limestone; dark grey (5YR 4/1) outer surface, orange outer margin, grey core and dark grey inner wall with pitted surface. Thin-sectioning shows a groundmass of scattered quartz grains under 0.10mm in size, a few larger quartz grains ranging up to 1mm across, flecks of mica, red iron ore, calcite and limestone containing clastic sand grains of quartz'.

PEA87, [42]: 6

Sandstone and quartz: *MSSQ

David Williams comments: 'Hard smoothish sandy fabric with a very hackly fracture; dark grey surfaces (10YR 4/1) with a reddish tinge, orange outer margin, black core. Thin-sectioning shows a fine-textured clay matrix containing a scatter of ill-sorted quartz grains and several pieces of a fairly coarse quartz sandstone'. Other sherds in this group include Nos. 60 and 61, which are reduced throughout; all have a micaceous appearance. The ware is macroscopically very similar to SSSL, but lacks the shelly-limestone content.

PEA87, [64]: 5

Sandstone and ?shelly-limestone-tempered wares: SSSL

Sherds from the Peabody site (most probably from the same thick-walled vessel) are broadly similar to the fabric described from Jubilee Hall. One sherd, which possibly also belongs to this group, has a pinkish-brown outer surface but lacks the organic content, while the limestone is very sparse indeed. The few sherds from the National Gallery derive from

a very hard thin-walled vessel with a slightly vesiculated silver-grey body and darker grey surfaces, and have a superficial similarity to fine Ipswich-type ware; the inclusions comprise moderate limestone and sandstone up to 2mm with numerous voids and blue-black streaks from burnt-out fine organic inclusions.

The imports

The range of imports found on the Peabody and National Gallery sites is very similar to that from Jubilee Hall and Maiden Lane, and most of the observations made about those assemblages still stand (Blackmore, 1988a). However, there are a few new fabric types, while further study has resulted in some minor changes to the original fabric descriptions and attributions. All the imported wares are wheel-made; a variety of forms and sizes is present, and their dating probably spans the early 7th to mid 9th centuries.

In addition to the small size of the sherds, which precludes the precise identification of vessel form in most cases, a major problem is the similarity of the inclusions in many of the black, grey and oxidised wares currently thought to derive from France; most appear to contain quartz sand, black iron and red iron oxide amongst other inclusions. At present, most sherds have been classified on the basis of factors such as the density of the different inclusions, firing and surface treatment, but sherds which are unevenly fired could fall into two or more groups, and it may well prove in due course that some black, grey and white wares are products of the same industry. Until such time as a proper research programme has been carried out on the French pottery industries in the late Merovingian/early Carolingian period, it seems better to overclassify the imported wares from London. Research in progress on the finds from *Quentovic* may help to resolve some of these problems (Hill *et al.*, 1990, 55–9).

North French Black: NFBWA, NFBWB, NFBWC, *NFBWD

These wares correspond broadly with Class 14 (Hodges, 1981, 21–25; 68–70), fabrics

130–140 (Timby, 1988, 93–6). Fabrics NFBWA-C have already been described (Blackmore, 1988a). Only one new type has been recognised.

*NFBWD. Very similar to NFBWA, but with abundant larger grains of quartz sand. One sherd from Jubilee Hall, originally classed as NFBWA (Blackmore, 1988a, fig 22, no. 31), now belongs to this group.

PEA87, [69]: SF 324.

NFBWA. The largest group of North French blackware is NFBWA, which includes the earliest French import, a carinated jar with rilled shoulder which appears to be of 7th-century date (Fig 32, No. 62); although small and finely made, the presence of soot deposits on both surfaces show that this vessel was used for heating the contents in some way. The closest parallel in London, albeit in a grey ware, is a jar/bowl from Maiden Lane (Blackmore, 1988a, fig 27, no. 51). Other sherds in NFBWA include a body sherd with the faint remains of a trellis burnish (Pit [490], fill [307], not illustrated).

NFBWB. This fabric is represented by very few sherds, including Fig 32, No. 63.

NFBWC comprises four sherds, probably from the same vessel (Fig 32, Nos. 64 and 65), all with traces of glue indicating where tinfoil decoration was applied in the tradition commonly known as Tating-type ware.

PEA87, [210]: 3

Tating-type ware, has been discussed by Hodges (1981, 17, 64–8), Redknap (1984, 413–4) and Timby (1988, 90). In the *Hamwic* assemblage sherds with the distinctive applied tinfoil were classified separately (Hodges Class 6; Timby Fabrics 120–1), but as noted by Timby, sherds from the same vessel could be assigned to a different blackware category if they lacked the decoration. The London wares are thus first classed by fabric type, and specifically identified in the computer record. The Peabody sherds derive from a small pear-shaped jug with a flanged rim very similar to that of Fig 32, No. 68. The applied decoration comprises vertical and horizontal strips defining a grid, with a band of circles and lozenges around the girth, lozenges in the grooved upper surface of the rim, and strips in the groove of the strap

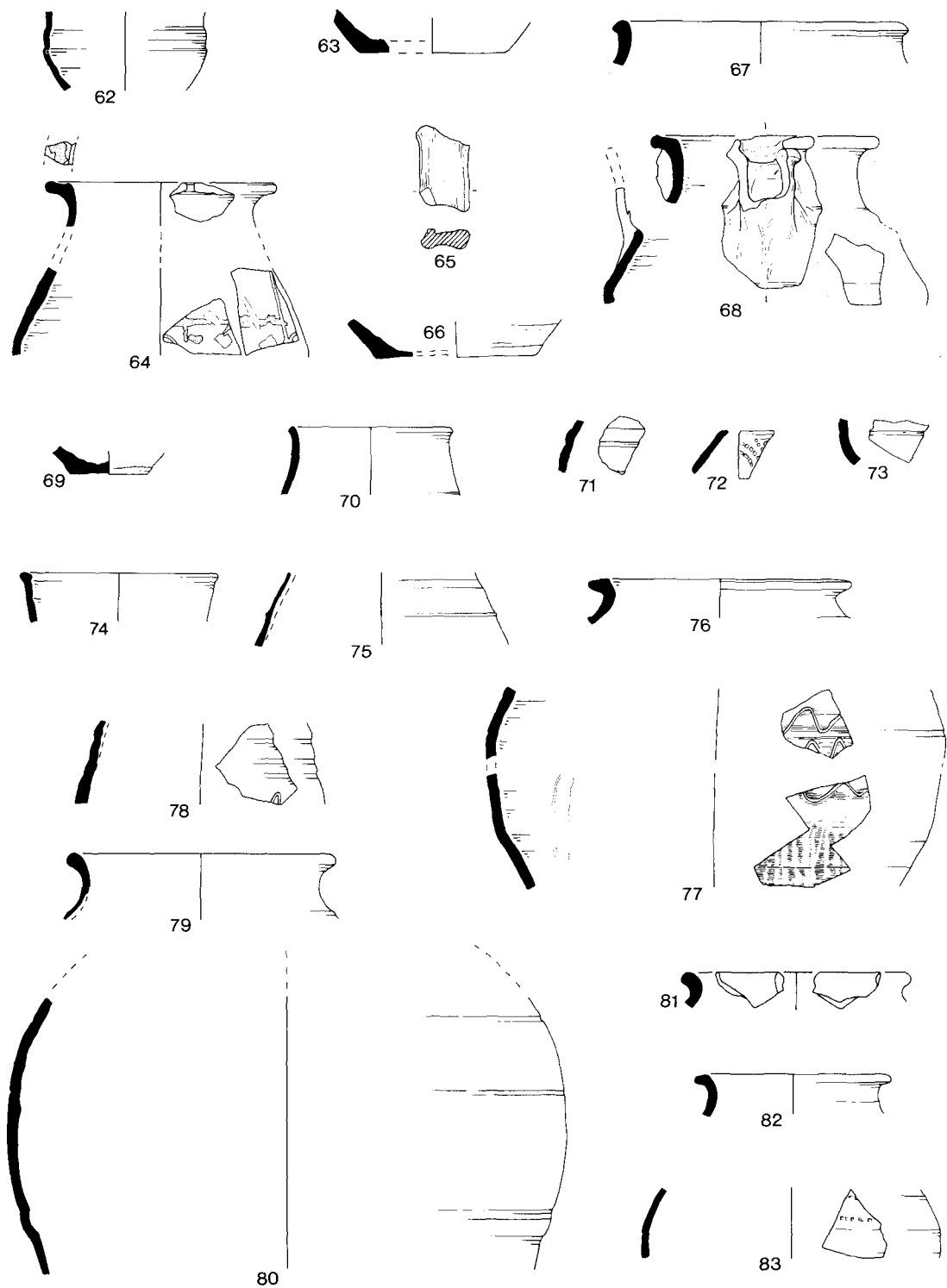


FIG 32 The Peabody site: imported wares: North French blackwares (Nos 62-65); North French greywares (Nos 66-75); North French/Belgian (Nos 75-77); ?North French redware (Nos 78-79); Seine Valley (No. 80); ?Beauvais red-painted (No. 81); Badorf-type ware (Nos 82-83) (1/4)

handle. The decoration is closely matched at the Treasury site, Whitehall (Huggins, forthcoming); the ware is (so far) absent at Barking, but has been found at Old Windsor, (Dunning *et al.*, 1959, fig 24), and in Ipswich, Canterbury and York. Tating-type ware was widely distributed across the Baltic (notably to Birka) and northern Europe (notably to Dorestad) in the 8th–9th centuries and a wide range of fabric types has been found: some wares were clearly produced in the Rhineland, others (*eg* finds from St Denis) in northern France, but further centres remain to be identified.

North French Grey: NFGWA, NFGWB, NFGWC, NFGWD, NFGWE, *NFGWG

This group corresponds broadly with *Hamwic* Class 15 (Hodges, 1981, 21; 25–28), fabrics 151–161 (Timby 1988, 96–8). With the exception of one sherd, all fall into the categories established for Jubilee Hall and Maiden Lane (Blackmore, 1988a); Fabric NFGWF is apparently not represented (but see below, MSWWA).

*NFGWG. One sherd only, very hard pale greyish-white body with darker grey surfaces. The inclusions are very fine quartz, mica and quartzite with occasional feldspars. This is exactly matched by sherd SARC24 P1319 at *Hamwic* (Timby, 1988, 96; fabric 152).
PEA87, [346]: 7

The sherds in this ware group include the rim of a large jar (Fig 32, No. 67; although this may be a less highly fired version of NFEBB), a spouted pitcher in NFGWA (No. 68), two jars, one with an internally beaded rim (Nos. 70, 74), and two base sherds with wire marks underneath, one not fully reduced (No. 66), the other with a characteristic ridge just above the base angle (No. 69). This last trait is also present on the rather uneven base sherd from the National Gallery basement (No. 96).

As at Jubilee Hall and Maiden Lane, a number of sherds in all fabric groups have horizontal cordons which reflect their Frankish/Merovingian origin, including Fig 32, Nos. 68 and 70–73. Of these, No. 70 has broken just above the first cordon at the junction of the neck and body, while No. 72

has a stamped or rouletted decoration of segmented arcs between the cordons, which is very similar to that on the large urn from Maiden Lane (Blackmore, 1988a, fig 28; pl 5). This stamp has also been found at Barking Abbey (Redknapp pers comm, BA.1,85 2211), at Ipswich (Evison, 1979, fig 19i) and at Fishergate, York (Mainman pers comm, 1986.9 3360; 1986.9 10183).

North-French or East Belgian: NFEBB.

These wares correspond broadly with *Hamwic* Class 13 (Hodges, 1981, 21), fabric 129 (Timby, 1988, 93), and are thought to come from eastern Belgium (Blackmore, 1988a, production centre unknown). NFEBA is not present. NFEBB appears both in a highly fired form, with the characteristic grey/red 'sandwich' effect, and in a less highly fired ware.

The forms comprise jars and pitchers with strap handles (Fig 32, Nos. 75, 76); the latter form has been found at Maiden Lane (Blackmore, 1988a, fig 27, no. 52), the Peabody site, the National Gallery basement and other sites in London, at Barking (Blackmore and Redknapp, 1988, fig 5, no. 5) and at Fishergate, York (1986.9, 5239; Mainman pers comm). The decoration normally consists of vertical burnishing on the lower body and horizontal burnishing on the upper body; No. 76 also has horizontal bands of incised wavy lines around the shoulder.

North French Red Burnished ware: NFRW

Unlike the Jubilee Hall examples (Blackmore, 1988a, fig 24, no. 22), which appear to be related to the NFEB group, the one sherd from the Peabody site is oxidised throughout, with an all-over horizontal burnish. This ware falls into *Hamwic* Class 21 (Hodges, 1981, 30), fabric 181 (Timby, 1988, 100), although not exactly matched at *Hamwic*.

?Seine Valley: NFSVA, NFSVB, *NFSVC

Two fabric types are present. The first (a few sherds from the Peabody site) is very similar to fabric NFSVA from Jubilee Hall (Blackmore, 1988a), although slightly coarser. NFSVB is not represented, but another new

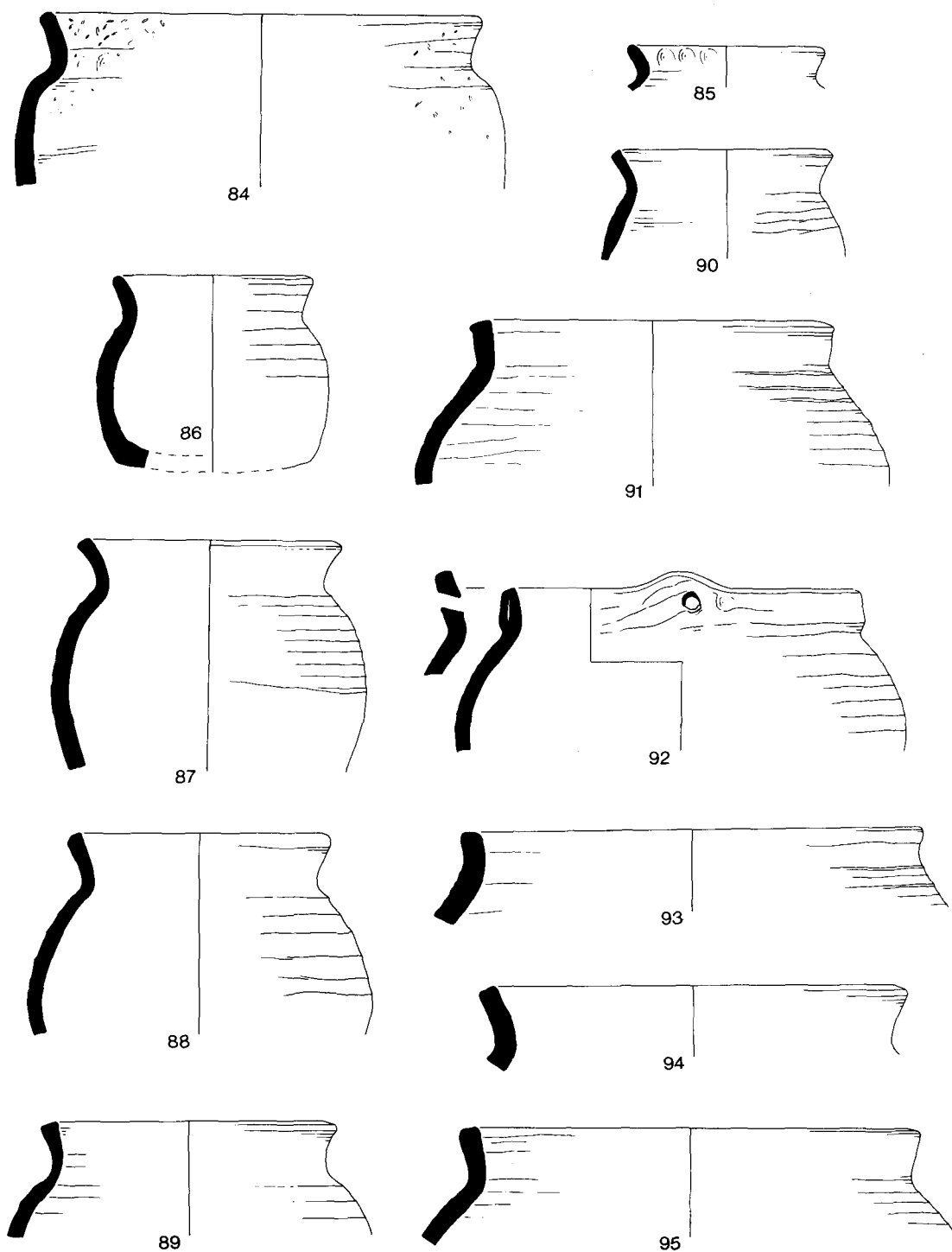


FIG 33 The National Gallery basement: chaff-tempered ware (Nos 84–85); Ipswich-type ware (Nos 86–95) (1/4)

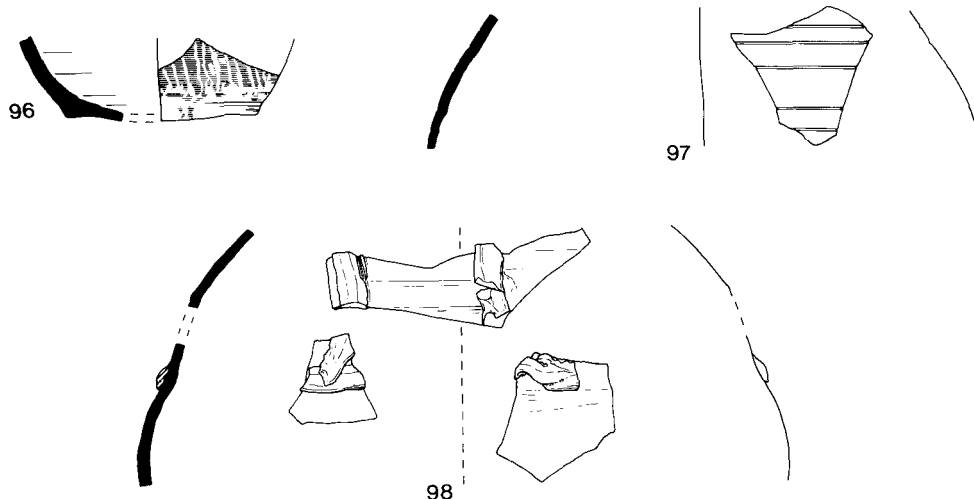


FIG 34 The National Gallery basement: imported wares: North French grey ware (No. 96); Seine Valley (No. 97); Badorf-type (No. 98) (1/4)

ware was found at the National Gallery basement which, although quite different as a fabric, is included in this broad ware group.

***NFSVC.** One sherd from a large jar with incised horizontal lines (Fig 34, No. 97), in a very hard fine white ware, with a slightly sandy feel. The inclusions comprise abundant very fine angular quartz sand (not visible to the naked eye) with some mica; the occasional larger quartz grits appear to be accidental inclusions. This fabric appears to match the description of *Hamwic* Class 11, Fabric 127 (Hodges, 1981, 19; Timby, 1988, 91), identified by Hodges as Seine Valley ware. If so it would be a precursor of the fine medieval white wares from Paris and Rouen.

NGA87, [248]: 31

Other ?North French or German oxidised ware: ***MSRWA**, ***MSRWB**

***MSRWA.** Fine sandy ware. Two sherds with abundant very fine quartz sand and iron inclusions (Fig 32, Nos. 78, 79), possibly from the same vessel. The rim, previously published as ?Lower Rhenish (Blackmore and Redknap, 1988, fig 3, no. 17), appears to have broken at the junction with a spout or handle, suggesting that this was a pitcher. The neck sherd, which is partly burnt, has horizontal cordons and incised zig-zag decor-

ation. These may be related to NFGWE or/and NFSVA.

***MSRWB.** Assorted coarse sandy wares, pinkish-orange throughout, with abundant fine and medium quartz and red iron, and pellets of red and white clay. All sherds are roughly wiped but the surfaces have a pimply feel. Coarser and darker pink than NFSVA, coarser but paler than BADO, this may be related either to the Normandy wares or to those from the Rhineland. The large globular jar with incised horizontal lines (No. 80) was previously published as possibly of Lower Rhenish origin (Blackmore and Redknap, 1988, fig 3, no. 17).

Other ?North French or German whitewares:

***MSWWA**

One partly burnt sherd from the Peabody site is exactly matched by *Hamwic* Class 12 (Hodges, 1981, 20–21), fabric 128 (Timby, 1988, 92). This is a very fine micaceous white ware, with faint traces of red paint over both surfaces. A possible source at Trier has been suggested (Hodges 1981, 21, 83).

PEA87, [80]: 7

?Beauvais red-painted: **BEARP**

One rim sherd only (Fig 32, No. 81), in a very hard fine sandy ware. Previously

published as Pingsdorf (Blackmore and Redknap, 1988, fig 3, no. 19), but probably closer to Beauvais, although rather more olive-brown than the usual Beauvais wares. Unfortunately, insufficient survives to determine the style of the decoration, and a third source should not be ruled out. The tradition of red-painted wares dates from the 7th century, but only became widespread in the Carolingian period. The precise start date of Beauvais and early Pingsdorf ware (Hunneschans, or Badorf-Pingsdorf) is uncertain, but is unlikely to be before *c.* AD 800. PEA87, [69]: 23

Badorf and Walberberg-type: BADOA, BADOB, BADOC

Pottery was produced at many centres in the Rhineland from the Roman period onwards, notably in the Cologne Vorgebirge, at Mayen, and in the Badorf area. In the absence of genuinely provenanced material for comparison with the London sherds, the attribution of the Rhenish wares is confined for the time being to sub-groups of 'Badorf-type ware.' The amount of Rhenish pottery from Saxon London is small, but is nonetheless greater and more varied than that from *Hamwic* (Hodges, 1981, 18, 83-4).

BADOA. One sherd from the Peabody site in a fine buff ware with fine sand and occasional iron inclusions.

BADOB. A fine yellow-buff ware with a sandy feel but few visible inclusions, and slightly fused surfaces. The National Gallery sherds (Fig 34, No. 98) are rather thin-walled for an amphora, although the applied strips are usually associated with this form; they probably derive from a large pitcher.

NGA87, [248]: 28

BADOC. A coarse sandy fabric, with slightly rough surfaces ranging from yellow-orange to reddish-orange, possibly from the Walberberg kilns near Cologne. This ware has also been found at Westminster Abbey, where sherds from a jar or pitcher with strap handles were found with other residual Middle Saxon wares in the fill of an 11th-century ditch (Blackmore and Redknap 1988, fig 3, no. 9). Two sherds (Fig 32, Nos. 82, 83) bear a

TABLE 2. 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 listed in comments)
Deposits (working from external to internal)	
B	brown
DE, DI, DEDI	deposit: external, internal, both
F	food
L	localised
P	purple
S	slight
SE, SI, SESI	sooting: external, internal, both
W	white
Y	yellow
Surface (working from external to internal)	
ABRE, ABRI, ABR	abrasion: external, internal, both
BURE, BURI, BUR	burnish: external, internal, both
EROE, EROI, ERO	erosion: external, internal, both
KNE, KNI, KN	knife-trimming: external, internal, both
SME, SMI, SMESMI	smoothing: external, internal, both
WE, WI, WEWI	wiping: external, internal, both
Decoration	
APP	applied
BUR	burnished
INCS	incised
MULT	multiple
ROUL	rouletted
STAM	stamped
TINF	tin foil
Comments	
CF	internal parallels
GRAFF	graffiti
HAND	handle
OXD	oxidised throughout
OXD EXT	oxidised externally
OXD INT	oxidised internally
RDCD	reduced
SHL	sherd link

CATALOGUE OF THE ILLUSTRATED POTTERY

(for abbreviations in the 'Comments' column, see Table 2; 'SF' in that column denotes a 'small find' number)

THE PEABODY SITE (Fig 28 Chaff-tempered ware cooking pots)

No.	Feature	Context	Fabric	Total sherds	Rim diameter in mm	EVES	Comments
1.	LAYER 42	42	CHFS	53	240	27	DI(P) SF.530
	S-HOLE 38	38	CHFS	1			DI(P)
	DARK E 213	213	CHFS	8			DI(P)
2.	LAYER 69	69	CHAF	1	140	10	WEWI, SF.409A
3.	CESSPIT 86	89	CHAF	1	130	12	SE, WEWI
4.	CESSPIT 91	102	CHFS	1	240	5	WEWI, SPLIT
5.	LAYER 126	126	CHAF	1	120	12	SME; WI
6.	LAYER 131	131	CHFS	1	180	10	WEWI
7.	LAYER 123	123	CHAF	2			SE, WEWI
	GULLY 127	127	CHAF	1	120	22	SME; WI
	GRAVE 138	138	CHAF	1	120	8	SME; WI
8.	PIT 135	135	CHAF	1	120	15	SI, SME; WI
	TRIAL UNPUBL.		CHAF	1			SESI; SME; WI
9.	PIT 162	165	CHAF	2	200	8	WEWI; LUGGED?
10.	PIT 205	209	CHAF	1	120	17	SESI, WEWI; LUGGED?
11.	PIT 205	208	CHAF	1	140	12	SI, SMESMI
12.	PIT 205	207	CHAF	5	130	22	SESI(SLIGHT), PART OXD
13.	PIT 205	208	CHAF	2	280	2	WEWI

(Fig 29 Other chaff-tempered forms and decorated sherds)

14.	LAYER 69	69	CHAF	1	140	3	WEWI
15.	LAYER 129	129	CHAF	1	100	12	SIDI, SME
16.	PIT 143	146	CHAF	1	120	10	BURE; WI, SF.240
17.	PIT 205	207	CHAF	1	155	5	SESI, WEWI
18.	PIT 205	207	CHSF	1			SMESMI, BUR
19.	PIT 158	158	CHAF	1			COMB-POINT
20.	GRAVE 138	138	CHAF	1	70	21	SME; WI, COMB-POINT
21.	LAYER 129	129	CHFI	1			WEWI, COMB POINT
	LAYER 128	128	CHFI	1			WEWI, COMB POINT
22.	P-HOLE 193	193	CHFI	1			WEWI, COMB POINT

(Fig 30 Ipswich-type wares)

23.	PIT 64	64	IPSF	1			LAMP? EXT SLIP?
	PIT 205	210	IPSF	1	110	17	LAMP? EXT SLIP?
24.	LAYER 69	69	IPSF	1			BUR; INCS
25.	LAYER 69	69	IPSF	1			DI(F), WEWI, OXD, DEC?
26.	CESSPIT 86	90	IPSC	1	250	8	
27.	CESSPIT 190	—	IPSF	1	110	24	SESI
28.	LAYER 167	167	IPSC	1			SME, SF.175
	PIT 74	83	IPSC	1			SME
29.	PIT 76	80	IPSM	1	130	9	SESI
30.	PIT 200	200	IPSC	1			WE
31.	PIT 205	209	IPSC	1	280	7	SE, ABRI
32.	PIT 205	210	IPSF?	1			KNE; SME, TRELIS BUR?
33.	LAYER UNPUBL.		IPSF	1	160	4	
34.	DARK E 213	213	IPSF	1	150	8	SF.44
35.	DARK E 213	213	IPSF	1	140	7	SI; DI(W), SME, SF.58
36.	CUT 117	120	IPSF	1	230	7	SMESMI; ABRI
37.	DARK E 213	213	IPSF?	1			WEWI, SF.179
38.	DARK E 213	213	IPSM	1			LAMP, SF.91
39.	DARK E 213	213	IPSF	1			INCS; RING + DOT, SF.79

CATALOGUE (continued)

No.	Feature	Context	Fabric	Total sherds	Rim diameter in mm	EVES	Comments
40.	DARK E 213	213	IPSF	1			ABR, GRIDDED CIRCLES, SF.120
41.	DARK E 213	213	IPSF	1			BUR, VERT LUG SCAR

(Fig 31 Non-local wares)

42.	PIT 76	83	SSANA	3	260	10	WEWI; KNI, BUR
43.	PIT 168	168	SSANB	1			BUR, FLUTED
44.	LAYER 69	69	SSANB	1	120	10	SI, WI, BUR
45.	PIT 71	71	SSANB	1	130	4	WEWI
46.	PIT 162	165	SSANB	1	120	13	DI(W), WI, BUR
47.	DARK E 213	213	SSANB	1			INCS
48.	PIT 205	208	SSANC	1			WEWI, STRAP HANDLE
49.	LAYER 129	129	SSAND	1	100	6	SI; SMESMI
50.	LAYER 131	131	SSAND	1	80	12	SESI, SME; WI, SF.352
51.	PIT 205	208	SSAND	4	120	16	SESI, BUR
52.	PIT 205	210	MSSB	1	130	6	WEWI, DEC RIM?
53.	DARK E 213	213	MSSC	1			SF.53
54.	LAYER 111	111	MSSE	1			WE; ABRI, SF.217
55.	PIT 76	80	MSSH	1	250	4	SMESMI
56.	LAYER 69	69	SLCHB	10	200	10	SMESMI
57.	S-HOLE 34	34	MSSLA	1	140	5	WEWI
58.	PIT 135	135	MSSLA	1	140	18	WEWI
59.	LAYER 42	42	MSLQA	1	80	14	WE; ABRI
60.	PIT 64	64	MSSQ	1	180	3	SME; WI
61.	PIT 76	80	MSSQ	1	240	5	SME; ABRI

(Fig 32 The imported pottery)

62.	PIT 205	208	NFBWA	1			SESI, BICONICAL
63.	DARK E 213	213	NFBWB	1			WEWI, SF.107
64.	PIT 205	210	NFBWC	1	100	15	BUR, TINF, TATING
	PIT 205	209	NFBWC	1			BUR, TINF, TATING
	PIT 205	209	NFBWC	1			BUR, TINF, TATING
65.	PIT 205	210	NFBWC	1			BUR, TINF, TATING
66.	GULLY 127	127	NFGWA	1			WE; KNE
67.	LAYER 69	69	NFGWA	1	180	6	BUR
68.	PIT 205	208	NFGWA	3	140	18	BUR
69.	PIT 196	197	NFGWA	1			WE; KNE
70.	LAYER 68	68	NFGWB	1	100	10	BUR, SF.227
71.	DARK E 213	213	NFGWC	1			BUR, CORDON, SF.48
72.	PIT 153	153	NFGWD	1			BUR; ROUL, SF.205
73.	LAYER 68	68	NFGWE	1			BUR, RILL, SF.224
74.	LAYER 69	69	NFGWD	1	120	9	BUR, SF.325
75.	PIT 76	82	NFEBB	1			EROI, BUR, CORDONS
76.	CESSPIT 91	102	NFEBB	1	160	24	AS 77?
77.	PIT 205	208	NFEBB	2			BUR, INCS, AS 76?
	DARK E 213	213	NFEBB	1			BUR, INCS, AS 76?
78.	PIT 74	78	MSRWA	1			CORDONS; INCS
79.	GRAVE 138	138	MSRW?	1	160	16	WE; ABRI
80.	PIT 162	165	NFSVC	3			WEWI, RILL
81.	LAYER 69	69	BEARP?	1	140	11	RED-PAINTED
82.	DARK E 213	213	BADOC	1	120	16	
83.	LAYER 167	167	BADOC	1			WE, ROUL

CATALOGUE (continued)

No.	Feature	Context	Fabric	Total sherds	Rim diameter in mm	EVES	Comments
NATIONAL GALLERY BASEMENT (Fig 33. Chaff-tempered and Ipswich- wares)							
84.	PIT 226	245	CHAF	1			SME; WI
	PIT 226	241	CHAF	2	260	7	DI(W), SME; WI
	PIT 248	248	CHAF	1			SME; WI
85.	PIT 222	225	CHSF	5	120	15	DI(Y) SLIGHT, BURE; WI
	PIT 226	247	CHSF	1	120	15	BURE; WI
86.	PIT 214	218	IPSM	5	120	17	SE, ABRE
87.	PIT 214	219	IPSC	3	160	15	SESI
	PIT 214	218	IPSC	2	160	15	SESI
	PIT 214		IPSC	1			
88.	PIT 214	219	IPSC	2			SESI
	PIT 214		IPSC	1	160	10	SESI
89.	PIT 248	248	IPSC	2	180	8	SE (SLIGHT)
90.	PIT 248	248	IPSC	1	140	4	SE
91.	PIT 226	243	IPSC	1	220	13	
92.	PIT 226	241	IPSM	1	220	12	PERFORATED LUG
	PIT 248	248	IPSM	1			
	UNSTRAT		IPSM	1	220	10	
93.	PIT 248	248	IPSC	1	280	12	
94.	PIT 248	248	IPSC	1	260	18	
	PIT 248	248	IPSC	1	260	5	
95.	PIT 248	248	IPSC	1	280	11	
(Fig 34 Imported wares)							
96.	PIT 226	247	NFGWA	1			VERT BURNISH
97.	PIT 248	248	NFSVC	1			INCISED HORIZ LINES
98.	PIT 248	248	BADOB	5			APPLIED STRIPS
(Fig 35 National Gallery extension)							
99.	UNSTRAT		IPSF	1			STAMPED DEC
100.	QUARRY 256	265	LSS	1	260	10	
101.	QUARRY 256	302	EMSS	4	200	5	SESI
		306		2	200	10	
102.	QUARRY 256	302	EMSS	4	260	15	SESI
103.	QUARRY 256	345	SHER	1	130	20	OXIDISED
104.	QUARRY 256	308	EMSS	1	280	7	THUMBED RIM
105.	QUARRY 256	308	SHER	2	200	13	
		345		1			
106.	QUARRY 256	317	EMFL	1	260	11	RILLED
107.	QUARRY 256	345	SHER	1	240	9	
108.	QUARRY 256	308	ESUR	1	280	10	DEC RIM
109.	QUARRY 256	308	LOND	29	150	50	
110.	QUARRY 256	308	ESUR	1	280	8	
111.	PIT 330	330	EMFL	5=1	240	26	SE; DI
112.	PIT 346	357	EMSS	1	240	9	DE; SI
113.	PIT 346	360	SHEL	1	280	6	
114.	PIT 346	363	SHER	2	240	13	
115.	PIT 346	361	SHER	1	280	10	SE

superficial resemblance to Mayen ware in that they are very hard and have the pellets of clean yellow clay associated with that ware, but the wider range of volcanic inclusions is not obviously present; these sherds are more likely to derive from the Cologne Vorgebirge, possibly also from the Walberberg kilns.
PEA87, [42]: 3

STRATIGRAPHIC ANALYSIS

The Peabody site

Introduction

The excavations at the Peabody site produced a total of 774 sherds, or 666 sherds when fragments from the same vessel are counted as one; the total weight is 15.490kg. Of these one sherd is prehistoric, 20 are Roman and 43 (=51) are medieval or post-medieval. The remaining 602 (=702; including seven unstratified) are of Middle Saxon date (14.344kg, 6.68 EVEs). The general composition of the assemblage (excluding medieval and later sherds) is illustrated in Table 3.

It was hoped that the long stratigraphic sequences on the site would enhance the ceramic chronology for Saxon London, but in fact the distribution of the wares is quite mixed, with later 8th and 9th-century wares in stratigraphically early deposits, and sherds of earlier date mixed in with other material in the later contexts. The problem is compounded by the fact that on the whole the material from all areas, including that from the deeper pits and wells, is in generally poor condition. Together with the fact that sherds from the same vessels occur in different features, this gives the impression that much of the material was redeposited during the Saxon occupation of the neighbourhood. However, some larger fragments are present, with one substantially complete chaff-tempered vessel (Fig 28, No. 1).

Most wares are the same as those found on the Jubilee Hall and Maiden Lane sites, but a number of new types are also present. The distribution of the stratified pottery is presented according to the sequence described above, with additional tables of the wares in

pits [74] (Table 4) and [205] (Table 5). The 169 sherds from the 'dark earth' in all areas of the site are briefly described as one group; a further 37 sherds from the subsequent deposits are also summarised. The Saxon fabric codes are listed in Table 1; medieval and later fabrics, which are classified according to the standard DUA and DGLA codes, are not discussed here.

The gravel pits and early ground surface

No finds were recovered from the gravel pit [1], while the probable early Saxon ground surface [2] produced only one sherd of Roman pottery and a few flakes of chaff-tempered ware. Only one sherd of chaff-tempered pottery was recovered from the many stakeholes [3]. No pottery was found in the metallurgy or features associated with it in Area A, but one sherd of Roman pottery and four chaff-tempered sherds were found in Area B (layer [9]), while another chaff-tempered sherd was found in gully [10]. One sherd of probable Ipswich-type fine ware was found in the north part of the gravel metallurgy [9]. The fact that it is encrusted with iron pan deposits shows that the sherd is not intrusive, but it is very battered and may be Roman. The early posthole [6] in Area C contained two sherds of iron-rich chaff-tempered ware.

AREA A

The silty sand [17] and other early features in this area produced no pottery, and the earliest stratified sherds comprise one base/body sherd of Ipswich-type fine ware with a white internal deposit and three sherds of chaff-tempered ware; the former was found in the 'middle' fill [23] of the barrel-lined well [19], the latter in well [26] (two in the third and one in the fourth, penultimate, fill).

A group of stakeholes [34] produced one rim sherd in fabric MSSLA (Fig 31, No. 57), while posthole [38] contained one base sherd in fabric CHFS, with a distinctive purple deposit over the eroded inner surface. This is from the same vessel as Fig 28, No. 1, most of which was found in layer [42], suggesting that these early features were filled when the subsequent deposits were laid. Of these deposits, layer [41] contained one sherd of

CHAF, while the grey earth [42] produced, in addition to 53 sherds from Fig 28, No. 1 (2.09kg), nine assorted chaff-tempered sherds, two of fabric SLCHB (from the same vessel as Fig 31, No. 56), one of fabric MSLQA (Fig 31, No. 59) and one apparently of Badorf/Walberberg-type ware (BADOC). The latter would suggest a date around or later than AD 800 for these deposits. A further eight sherds from No. 1 were found in the 'dark earth'.

The second layer of grey earth [51] produced two sherds of CHAF, one with food/soot deposits on both surfaces. Of the features which cut this deposit, four intercutting pits contained pottery. Pit [52] contained one Roman sherd, while posthole [54] produced one of CHAF; two sherds, one of CHAF, one north French (abraded NFBWA), were found in pit [55]. Pit [59] produced one eroded sherd of Ipswich-type coarse ware, while pit [60] contained one sherd of CHAF. Of the other pits, [62] yielded two sherds of CHAF and two of CHFS, one with a thick yellow-white internal deposit which possibly comes from the same vessel as a sherd in pit [64]. The latter contained six sherds: two chaff-tempered, two with sandstone and quartz (including Fig 31, No. 60, MSSQ) and two of Ipswich-type ware, including a small bowl or lamp (Fig 30, No. 23), which joins with a sherd from pit [205] in Area E. Occupation layer [65], which seemed to be contemporary with these features, contained one sherd of CHAF and two of Ipswich-type ware. Of the two pits which cut this deposit, only [67] contained pottery, a single sherd of CHFI.

AREA B

Unlike the early layer in Area A, the 'grey earth' and clay over the metallated surface (layers [68] and [69] produced one of the largest groups from the site, a total of 107 (=123) sherds (1.647kg) of which 65 were found in the lowest spit excavated.

Chaff-tempered ware is by far the most common fabric in this group, with 76 sherds in all. Sixty-two are CHAF (including Fig 28, No. 2), ten are CHFS, one is CHSF, two are CHFQ and one is CHQF. A number of sherds join, while others clearly derive from

the same or very similar vessels, either in these deposits or in the early layers in Area A. Only six sherds of Ipswich-type ware are present, including Fig 30, Nos. 24 and 25. Other wares comprise one prehistoric sherd, three Roman, various sandy wares (including Fig 28, No. 11), one limestone tempered, part of a ?chalk/limestone tempered jar (No. 56), five North French grey and black wares (including Nos. 67, 70, 73, 74) and one rim sherd with red-painted decoration (Fig 32, No. 81), which although in a rather coarse olive-coloured fabric appears to be more like Beauvais ware than Pingsdorf.

Of the features cutting this dump and thought to be broadly contemporary with the cut features in Area C (the grave, pits [135], [143], [151], trenches [150], [152] and gully [153]), the following contained pottery: posthole [70], pit [71], cesspits [86] and [91], and pit [74].

Posthole [70] contained one sherd of CHAF; pit [71] produced one sherd of CHAF and one of SSANB (Fig 31, No. 45). Cesspit [86] contained three sherds of CHAF (including Fig 28, No. 3) and one of CHFS in its lower fills, and two sherds of Ipswich-type ware (including Fig 30, No. 26) in the upper fill. Cesspit [91] contained 22 sherds, of which five are of CHAF and one is of CHFS (Fig 28, No. 4). This is the first feature with Ipswich-type ware in every fill (15 sherds in all, including Fig 30, No. 27). One sherd is shell-tempered, and one from North France/Eastern Belgium (Fig 32, No. 76), possibly from the same vessel as sherds in pit [205] (No. 77).

The distribution of the pottery from pit [74] is shown in Table 4. Ipswich-type ware is found in the upper fills, but not in the lower; the presence of two sherds of Badorf/Walberberg-type ware (BADOB, BADOC) near the bottom in layers [76] and [77], however, suggests a 9th-century date. The various wares comprise: Roman (one sherd); CHAF (six); CHFI (one); Ipswich-type ware (eight, including Fig 30, No. 28, from the same pot as a sherd in layer [167]; and No. 29); sand-tempered (three including Fig 31, No. 42); chalk-tempered (one); mixed gritted ware (one); shell-tempered (two, including Fig 31, No. 55); sandstone and

quartz tempered (Fig 31, No. 61). The imports comprise one sherd of NFBWA; one of sandy grey ware very similar to Fig 32, No. 68 in pit [205]; two of NFEBB (including Fig 32, No. 75); one oxidised sherd (Fig 32, No. 78, MSRWA); one sherd of fine white ware with traces of red paint (MSWWA), possibly from Trier, and two sherds of Badorf-type ware.

The occupation layer [111] which sealed pit [74] but pre-dated the 'dark earth' contained five sherds of CHAF, one of

Ipswich-type ware, one shell-tempered base sherd (Fig 31, No. 54) and one of fine sand-tempered ware (SSANE). Pit [114] contained one sherd of CHAF and one of CHFS, one of Badorf-type (BADOA) and one sand-tempered. Posthole [116] produced one sandy sherd (SSANB).

AREA C

Layer [122], which overlay the early stake-holes, contained one sherd of Roman pottery, but no pottery was found in pit [121]. Layer

TABLE 3. The general composition of the pottery assemblage from PEA87, based on sherd count and weight (excluding medieval and later sherds)

Code	Fabric	Sherds	%	Weight g	%
PRE	Prehistoric	1	0.16	4	0.02
RPOT	Roman	20	3.21	305	2.08
CHAF	Chaff-tempered	304 (375)	48.79	7239	49.45
IPS	Ipswich-type	156	25.04	4738	32.36
SSANA	Sand-tempered	13 (15)	2.08	302	2.06
SSANB	Sand-tempered	12	1.92	129	0.88
SSANC	Sand-tempered	2	0.32	72	0.49
SSAND	Sand-tempered	4 (7)	0.64	84	0.57
SSANE	Sand-tempered	1	0.16	8	0.05
SLGSB	Surrey?	1	0.16	42	0.29
MSFG	Mixed flint/grit	6 (14)	0.96	244	1.66
MSCH	Chalk-tempered	1	0.16	13	0.08
MSS	Shell-tempered	15	2.40	205	1.40
SLCH	Limestone/chalk	9 (23)	1.44	105	0.71
MSSLA	Shelly-limestone	3	0.48	81	0.55
MSLCA	Limestone/chert	1	0.16	12	0.08
MSLQA	Limestone/quartz	1	0.16	12	0.08
MSSQ	Sandstone/quartz	3	0.48	65	0.44
SSSL	Limestone	5	0.80	133	0.90
NFBWA	North French black	15	2.40	165	1.12
NFBWB	North French black	2	0.32	35	0.23
NFBWC	North French black	4	0.64	55	0.37
NFBWD	North French black	1	0.16	11	0.07
NFGWA	North French grey	9	1.44	281	1.91
NFGWB	North French grey	1	0.16	10	0.06
NFGWC	North French grey	2	0.32	14	0.09
NFGWD	North French grey	3	0.48	26	0.17
NFGWE	North French grey	1	0.16	6	0.04
NFGWG	North French grey	1	0.16	4	0.02
NFRW	North French red	1	0.16	1	0.01
NFSVA	Seine Valley	3	0.48	18	0.12
NFEB	France/Belgium	8	1.28	153	1.04
MSRW	Misc. red ware	5 (7)	0.80	13	0.08
BEARP	?Beauvais (painted)	1	0.16	4	0.02
BADO	Badorf-type	8	1.28	50	0.34
Total		623 (723)		14639	

(*N.B. sherds from the same vessel are counted as one for the purpose of the percentages; sherd numbers in brackets are the actual totals of sherds present. Details of chaff-tempered and Ipswich-type wares are given on p. 74 and 77.*)

[123], which contained three assorted sherds of chaff-tempered ware, and the subsequent layers would appear to have been deposited in a short period of time since they contained sherds from the same vessels. The first spreads of earth and clay ([126], [128]) produced nine assorted sherds of chaff-tempered ware. These include Fig 28, No. 5, and one sherd with comb-point decoration (Fig 29, No. 21) which joins with others found in the subsequent deposits ([129] and [130]). Pit [127], which cut layer [126], contained one sherd of samian, one of CHAF (Fig 28, No. 7) which joins with a sherd found in the grave, and one base sherd of NFGWA (Fig 32, No. 66).

Layers [129]–[131], which sealed [126] and [128], produced ten sherds: six chaff-tempered, including Nos. 15 and 21 (the latter with comb-point decoration), three sand-tempered, including Fig 31, No. 48 (SSANB) and Fig 31, No. 49 (SSAND), and one of North French grey ware. Posthole

[132], which cut layer [129], contained one sherd of chaff-tempered ware. Layer [131], which sealed layer [129], contained one sherd of CHFS (Fig 28, No. 6).

Pit [158] contained one sherd of chaff-tempered ware with comb-point decoration (Fig 29, No. 19), possibly a different vessel from those noted above. Among the other rubbish pits of this phase, only [135] contained pottery: three sherds of CHAF, including Fig 28, No. 8, one shelly-limestone with chaff (Fig 31, No. 58), and one of NFBWA (burnished). Layer [141] produced one sherd of CHAF. The grave fill produced seven sherds: six chaff-tempered, including Fig 28, No. 7 and part of a very small jar with comb-point decoration (Fig 29, No. 20), and one rim, possibly north French (Fig 32, No. 79, MSRW?). One sherd joins with one from pit [127], another with a sherd from layer [129].

As for the second phase of pits in this area, only [296] contained any pottery, 13 sherds

TABLE 4 The distribution of the pottery in Pit [74]

Fill	Fabric												
	CHAF	IPS	SSAN	MFSG	MSS	SLCH	MSSQ	NFBW	NFGW	NFEB	MSRW	MSWW	BADO
75						1							
76													1
77	1			1									
78	1									1			1
80	1	2	1		1		1		1	1		1	
81	2	3	1					1					
82										1			
83	1	3	1		1								
74	2												
Total	7	8	3	1	2	1	1	1	1	2	1	1	2

TABLE 5 The distribution of the pottery in Pit [205]

Fill	Fabric								
	RPOT	CHAF	IPS	SSAN	MSS	NFBW	NFGW	NFEB	BADO
206		2							
207	1	7				1			
208		8		4	2	2	2	3	
209		5	10	2	1	3			
210		2	9	2	1	2			1
Total	1	24	21	8	4	8	2	3	1

of chaff-tempered ware (including Fig 29, No. 16) scattered through all three fills. In a third phase, trench [150] (which cut feature [148], which in turn cut the grave) contained one sherd of chaff-tempered ware, while pit [151] yielded two chaff-tempered sherds, one of SSANA, and one of Ipswich-type ware. Finally, in the fourth phase, trench [152], which cut pit [151], contained a flat chaff-tempered base sherd, while feature [153], which cut [152], yielded two sherds, one of CHAF, and one of NFGWD (Fig 32, No. 72) with rouletted decoration very similar to that on the Maiden Lane urn (Blackmore 1988a).

The later clay layer [167], which predated the 'dark earth', contained six sherds of chaff-tempered ware, four of Ipswich-type ware (including Fig 30, No. 28), one shell-tempered (MSSC), one of North French red burnished ware and a body sherd of Badorf-type ware (Fig 32, No. 83) with rouletted decoration. Pit [168], which cut this layer and must be one of the latest Middle Saxon features, contained a sherd from a 7th-century fluted burnished jar in fabric SSANB (Fig 31, No. 43).

Of the isolated features, pit [162] produced 20 sherds. This cut layer [160], which produced two chaff-tempered sherds, one possibly with a lugged rim (Fig 28, No. 9). The first fill [164] in the pit contained two chaff-tempered sherds; the next [165] four chaff-tempered (two CHFS), one mixed grit joining with others in layer [166], one sandy (Fig 31, No. 46 SSANB) and one large fragment of coarse ?North French/Rhenish ware (Fig 32, No. 80). Layer [166] contained six sherds of chaff-tempered ware, one of Ipswich-type ware, three with mixed grit temper, one with sandstone and quartz, and one of North French blackware.

AREA D

The earliest stratified pottery from this area is a sherd of CHAF found in layer [175], which sealed the early stakeholes. The initial fill [179] of ditch [178] contained one sherd of CHAF. Above this, layer [181] contained two sherds of Ipswich-type ware, while layer [182] contained two sherds of CHAF and one of Roman date. Layer [184] produced

one sherd of CHAF and two fragments of medieval Kingston-type ware. Layer [186] yielded a sherd of 14th-century Coarse Border ware and a sherd of CHFS.

AREA E

The first stratified pottery is from the earth floor [188] (six sherds of CHAF, of which three join). Of the early structural features, only two produced any pottery. A group of stakeholes [191] yielded one sherd of CHAF, while posthole [193] contained one of CHAF and one of CHFI with comb-point decoration (Fig 29, No. 22). The collapsed daub [194] also yielded two sherds of CHAF. Pit [196] contained seven sherds: four assorted chaff-tempered wares, one of MSSLA, and two of NFGWA (including Fig 32, No. 69). Over these features, layer [198] contained one sherd of NFBWA. Pit [200] yielded three sherds, one of CHAF, two of Ipswich-type ware, including Fig 30, No. 30, while pit [202] produced one sherd of CHAF very similar to one from pit [205].

Pit [205] produced more pottery than any other cut feature on the site, 62 sherds in all, the distribution of which is shown in Table 5. Chaff-tempered wares are present in all deposits, but Ipswich-type wares only occur from the third pottery-producing fill onwards [208]; North French wares are present from the second fill with pottery [207]; and Badorf ware is confined to the uppermost fill [210]. The dominant fabrics are chaff-tempered ware and Ipswich-type ware. The former (24 assorted sherds) include Fig 28, Nos. 10–13 and two unusual, possibly 7th-century forms, a biconical vessel and a bowl or lamp (Fig 29, Nos. 17 and 18). The latter (20 sherds) include the rim of a bowl or lamp (Fig 30, No. 23, joining with a sherd from pit [64]), a large cooking pot rim (Fig 30, No. 31) and a flat-based vessel with the remains of a trellis burnish (Fig 30, No. 32). Other English fabrics include sand-tempered ware (Fig 31, Nos. 47, 50: SSANC, SSAND) shell-tempered ware (Fig 31, No. 53) and one sherd of Roman pottery. The imports derive mainly from northern France. The blackwares include part of a small jar probably of 6th- or 7th-century date (Fig 32, No. 62

NFBWA)), one sherd with traces of lattice burnish (NFBWD, not illustrated), and fragments of a jug in Tating-type ware (Fig 32, Nos. 64 and 65, NFBWC); the greywares include Fig 32, No. 67. Other types comprise Seine Valley ware (NFSVA), North French/East Belgian ware (Fig 32, No. 77), possibly from the same vessel as No. 76 from cesspit [91], and one sherd of Badorf-type ware.

Finally, pit [212] contained six sherds, three of CHAF, two of SSANA and one of NFBWA.

The 'dark earth'

The 'dark earth' produced a total of 169 sherds (3.332kg), of which seven are Roman, 12 medieval or later, and the remainder Saxon.

The chaff-tempered wares (39 sherds) include eight sherds from Fig 28, No. 1, and a body sherd with a grass-wiped external surface. Ipswich-type wares comprise 74 sherds, of which over half are of the fine variety. The forms include both small and large cooking pots/jars (Fig 30, Nos. 33–36); one body sherd from a cooking pot lacks the usual surface rilling (Fig 30, No. 37). The spouted pitcher is represented by two rims broken at the junction with the spout and three body sherds, probably from pitchers (two with stamped decoration, and one with the scar of a vertical lug (Fig 30, Nos. 39–41).

Five sherds are in sand-tempered wares: two SSANA (one joining with a sherd in pit [212], one from a ?dish in a coarse sandy ware with incised decoration internally (Fig 31, No. 47)). Six sherds are shell-tempered, including Fig 31, No. 53, and three are in fabric SLCHB, possibly from Fig 31, No. 56. Other fabrics are MSCH and MSOL (one sherd each).

The imports comprise six sherds of NFBWA, including Fig 32, No. 63, and one of NFBWB; five of North French greyware (NFGWA, NFGWC, NFGWG), including Fig 32, No. 71; two of NFSVA; two of ?North French sandy red ware (MSRWB); and two North French or Belgian (including Fig 32, No. 77), possibly from the same vessel as No. 76 from cess-pit [91]. Two sherds are of

Badorf-type (BADOB, BADOC), including Fig 32, No. 82.

The subsequent features produced 37 sherds, of which three are chaff-tempered, 12 of Ipswich-type ware, four of other Saxon wares, and the remainder medieval or post-medieval. A few unstratified sherds of chaff-tempered and Ipswich-type ware were also collected. Details of these are available in the pottery archive.

National Gallery basement: the pottery

Introduction

In all a total of 186 sherds was recovered (6.918kg including two unstratified sherds belonging to stratified vessels), with 24 rims (2.37 EVEs). Fifteen Middle Saxon fabric types were identified, as shown in Table 6. The dominant fabric is Ipswich-type ware, in terms of both sherd numbers (111 fragments) and weight, with several large sherds weighing over 100g. Other wares are limited to 13 non-local sherds, probably from two vessels, and 23 imports, probably from six vessels. These comprise North French black and greywares, a fine white ware probably from the Seine Valley, and Badorf/Walberberg-type ware. Comments on specific sherds have been made in the ware descriptions above. The distribution of the different wares in each pit is illustrated in Table 6.

As mentioned above, this assemblage is quite different from the Peabody collection, and appears to represent the primary deposition of specific rubbish, since large fragments of pottery are present and there is little abrasion of the surfaces. A number of sherds of different fabric types show traces of use, notably sooting and white or purple internal deposits; the latter are found on chaff-tempered ware, fabric SSANA and Ipswich-type ware. Two sherds from a large Ipswich-type ware vessel with a heavy purple deposit internally were submitted to the North East London Polytechnic for analysis, but the results are not available at the time of going to press. A few sherds also have food deposits.

TABLE 6. National Gallery basement: the distribution of the pottery within the pits

	Pit [214]		Pit [222]		Pit [226]		Pit [284] (Modern)		Unstratified	
	Sherds	g.	Sherds	g.	Sherds	g.	Sherds	g.	Sherds	g.
CHAF			2	20	13	340	3	16		
CHFS			5	33						
CHSF			5	57	1	15				
CHFI					5	130	2	61		
IPSF	3	161			1	67	2	114		
IPSM	11	674	2	39	9	99	7	247	1	73
IPSC	12	884	2	44	32	1024	8	432	1	51
SSANA			2	42	9	55	1	16		
MSIS					3	92				
NFBWA					9	65	1	10		
NFGWA					2	108				
NFGWD			1	1						
NFSVC							1	26		
BADOB					1	5	6	138		
BADOC					1	6				
Total	26	1719	20	236	86	2006	31	1060	2	124

	Over pit [214]		Over pit [226]		Over pit [248]	
IPSF	1	20				
IPSM	2	265				
IPSC	3	81			8	240
BADOB					1	19
Total	6	1013			9	259

Stratigraphic distribution

Few sherd links were found between pits but there are several sherd links between layers within pits and/or the overlying deposits, which suggest that these features were filled within a short space of time. For this reason the contents of different pit fills have been amalgamated in Table 6.

Pit [214] contained only Ipswich-type ware, and five more sherds were recovered from the surface cleaning over it. Sherd links between the two fills and the overlying deposit show that quite large fragments of pottery had been broken nearby before arriving in the pit (Fig 33, Nos. 86, 87, 88).

Pit [222] contained 20 assorted sherds, mainly chaff-tempered ware (Fig 33, No. 85) and Ipswich-type ware, including one rim from a cooking pot with a lip which has internal food deposits and external sooting.

Pit [226] contained 86 sherds, of which 32 were found in the middle fill [241]. The

distribution of the pottery suggests that the pit may have been filled in two stages, with a roughly equal mix of the different wares in the lower fills but mainly Ipswich-type wares in the upper. The presence of both Ipswich-type ware and Badorf-type ware in the lower fills ([228] and [231]), however, indicates that this is a late 8th- or 9th-century feature. The Ipswich-type wares include a range of both small and large cooking pots/storage jars, one with a lugged rim (Fig 33, Nos. 89–93). The imports include both North French (Fig 34, No. 96) and Rhenish wares (one sherd from Fig 34, No. 98). In addition, nine sherds (eight Ipswich-type, one Badorf-type), which derive from the same vessels as those in pit [226], were found when the pit was first exposed.

Thirty-one sherds, mainly derived from vessels in pit [226], were found in the fill of a later pit [248] which cut into it. These include Ipswich-type ware (Fig 33, Nos. 92,

94, 95) and Badorf-type ware (Fig 34, No. 98, a storage jar with applied strips). One sherd of fine white ware, probably from the Paris/Rouen area of France, was also found in this pit (Fig 33, No. 93).

The unstratified material includes one illustrated sherd (Fig 33, No. 91).

National Gallery extension: the stratigraphic distribution of the pottery

Introduction

The site produced 1142 sherds (10.576kg, 5.2 EVEs), ranging in date from prehistoric to post-medieval. A few, apparently stratified, Middle Saxon sherds are present, but the assemblage is quite different from the Peabody and National Gallery basement collections, being mostly of late 11th- to late 12th-century date; the prehistoric and Roman sherds are all residual. The condition is generally poor, with many sherds weighing less than 10g and being battered or eroded.

The prehistoric, Saxon and medieval pottery is summarised by feature within period groups. A further 69 sherds (609g) of mixed date from the uppermost deposits, including three Saxon, are included in the pottery archive but not discussed here. The distribution by fabric type and feature is illustrated in Table 7.

The wares

These have been recorded using the codes listed above for the Middle Saxon wares, with standard DGLA/DUA fabric codes for the later wares, although the medieval material includes a wide variety of coarse wares. For the purposes of this report these have been classified within broad ware groups as described below, since much of this material is the subject of a current research programme by the Department of Urban Archaeology. Some of these sherds appear to match the fabric descriptions for the early medieval pottery from Northolt (Hurst, 1961, 259–265, fabrics h, i, j), which remains one of the best collections of this date from Greater London.

Prehistoric

A total of 14 residual sherds of flint-gritted pottery (54g) were recovered from the following contexts: quarry [256], layer [308] (one); pit [346], layer [357] (one), layer [264] (one), and layer [375] (11, from at least three vessels). Two main fabric types are present, one with sparse large flint grits (up to 5mm), the other with abundant finer flint grits. The small size and poor condition of the sherds precludes precise classification, but the one featured sherd from layer [264] has a horizontal groove which suggests a possible Iron Age date.

These sherds are of interest as one of the few prehistoric land finds in this area. Isolated residual prehistoric sherds and flints occur on most Saxon sites in the Strand area, but few features may be definitely assigned to the period. The probability of prehistoric settlement on this part of the gravel terrace has been reinforced however by the discovery in 1989 of residual Bronze Age and Iron Age pottery, together with a cluster of truncated postholes of possible prehistoric date, just to the north of the National Gallery on the south side of Leicester Square (Hoad, 1989).

Roman

Roman pottery occurs on virtually every site in inner London, with a handful of sherds from most Saxon sites in the area of the Strand; there is nothing remarkable about the 18 residual finds from this site.

Saxon

A total of 22 sherds of Middle Saxon Ipswich-type ware (IPSF, IPSM, IPSC) was recovered from the lower fills of quarries [256] and [274], with ten residual Middle Saxon sherds in the upper fills. The latter comprise Ipswich-type ware, sand-tempered ware (SSANA) and a hard pale grey ware with sandstone/limestone temper (SSSL). A wheel-thrown shell-tempered rim sherd (Fig 35, No. 100), found in one of the lower fills of quarry [256] (layer [265]), appears to be of Late Saxon date (fabric LSS). This may be an intrusive find derived from the upper

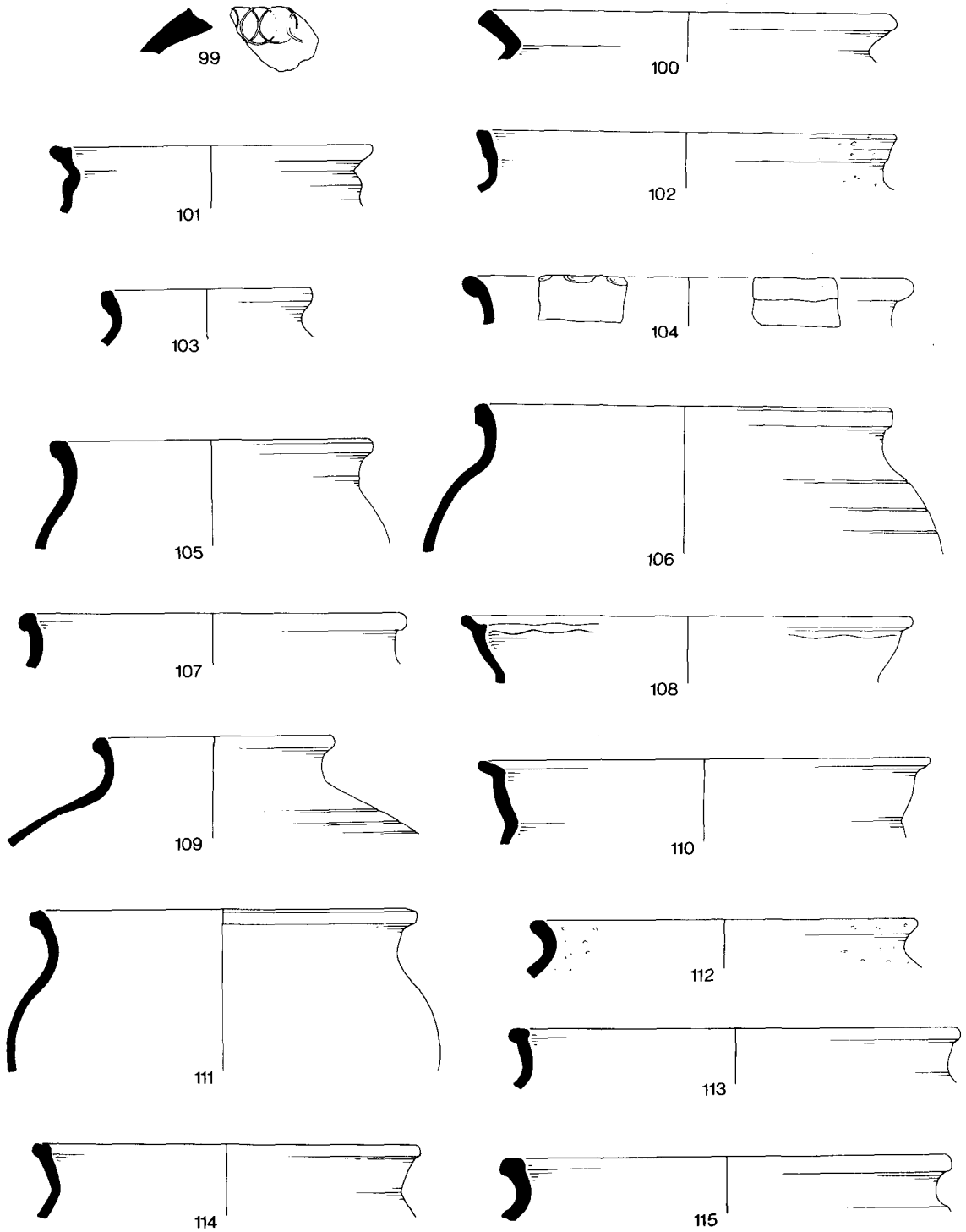


FIG 35 The National Gallery extension: the Saxon pottery: Ipswich-type ware (No. 99); the 11th to 12th-century wares (Nos 100–115) (1/4)

quarry fills, but if not some of the lower deposits in quarry [256] must date to the late 9th century or later, when wheel-thrown shell-tempered ware was quite new and Ipswich-type ware had just gone out of use. An archaeomagnetic date of *c.* AD 800–900 for an oven at Botolph Lane in the City, which was associated solely with Late Saxon shell-tempered ware (LSS; Milne, 1980, 423–4; Vince, 1985, 31), suggests that a later 9th-century date is not out of the question, but the precise point at which the ware was introduced (and how it relates to the handmade Middle Saxon shell-tempered wares) is unknown. The intermediate fills in both quarries [256] and [274] produced no pottery. In addition to the above, five Saxon sherds were found in later features, including one sherd in pit [346]. The most interesting piece is an unstratified sherd of oxidised Ipswich-type ware found during trial work on the site, which has a stamped design of interlocking circles (Fig 35, No. 99).

Late Saxon and medieval

The upper fills of the two quarries are quite different in that [274] (layers [326]–[329]) produced very little pottery (see Table 7), whereas [256] yielded 331 sherds (2917g). The most productive layers were [308] (124 sherds, 1011g), and [302] (117 sherds, 1003g). Sherd links between various layers suggest that after the initial silting [256] was backfilled as one operation in the mid 12th century. The main wares present in this feature and those which cut it are listed below (for fabric descriptions see Vince, 1985).

Early medieval sandy ware (EMS). This dates from the last quarter of the 10th century, but is more common in the 11th century (no diagnostic forms present).

Early medieval sand-and-shell (EMSS), which probably comes from the same source as EMS, dates from the early 11th century. Later examples have the same collared rim as is found in the finer shell-tempered ware (EMSH), which dates from the late 11th century, and is possibly a Norman influence (Fig 35, Nos. 101, 102, 104).

South Hertfordshire-type greywares (SHER). Many of these are handmade and thus earlier than the main South Hertfordshire industry; some have since been shown to belong to the group of local greywares distinguished by the presence of freshwater shell inclusions (LOGR). The firing and inclusions vary greatly, and this group includes both oxidised and reduced sherds. These wares probably derive from a number of centres to the north of London; no attempt has been made to isolate the different fabrics. Also present are a number of wheel-finished if not wheel-thrown vessels. These were formerly thought to have been introduced in *c.* AD 1150, but the archaeomagnetic date from pit [346] shows that wheel-finished greywares began to reach London during the second quarter of the 12th century (see below). Sherds of interest include Fig 35, Nos. 103, 105 and 107, part of the spout from a spouted pitcher, and a few small fragments with rouletted decoration, probably also from a spouted pitcher (see Vince, 1985, fig 5 no. 6 now identified as LOGR).

Early medieval sand and flint-tempered ware (EMFL, Fig 35, No. 106) and early medieval chalk-tempered ware (EMCH). These are minority groups, although closer examination of the greywares may boost the numbers identified.

Early Surrey ware (ESUR) is well represented in terms of sherds if not in actual vessel numbers. This handmade ware was used in London from the mid 11th to the mid 12th century; it is thought that there was no continuity through to the 13th-century Kingston-type wares (Vince, 1985, 37; Pearce and Vince, 1988, 13), but sherds from a number of lid-seated whiteware cooking pots found in quarry [256] appear to be wheel-finished if not wheel-made, and presumably represent the later products of the early Surrey industry (Fig 35, Nos. 108, 110). Some of these have finger-tipped or incised decoration on the rim.

A few jug sherds in London-type ware (LOND) and London coarse ware (LCOAR) are also present. The date at which these were introduced is uncertain, but excavations at Seal House (waterfront II) in the City,

where a series of dendrochronological dates was obtained, show that they were in use by *c.* AD 1140 (Pearce *et al* 1985, 13–21); sherds from early rounded forms with rilled necks are thus not out of place in quarry [256]. The fine London ware vessel from layer [308] (Fig 35, No. 109) is of interest since it would appear to be a storage jar. The form is not matched by any of the cooking pots/jars in the corpus of London-type wares from the City, which during the 12th century were apparently produced in the coarse ware only (Pearce and Vince, 1988, 19).

A few sherds from a cooking pot with horizontal rilling and incised zig-zag lines are in a low-fired fine micaceous ware with abundant grog/red clay pellets up to 3mm, occasional fine flint grits and other inclusions which give a lumpy feel to the surface. The surfaces are oxidised, the core a pale grey. It is similar to Mill Green coarse ware, but lacks the quartz inclusions which characterise that ware; it would appear to be the early medieval grog-tempered ware EMGR (*c.* 1050–1150). The fabric suggests another source in Essex, perhaps closer to Harlow.

Non-local and imported wares in quarry [256] are limited to one sherd of ?Stamford ware with a clear/yellow glaze, from layer [306], and one sherd of blue-grey (BLGR) ware from the Limburg area on the Dutch/German border). One sherd of 13th-century Kingston-type ware from layer [308] is presumed intrusive.

Layer [345], the uppermost fill of quarry [256], and the various features which cut the quarry contained a very similar range of early-mid 12th-century pottery (see Table 7), with several sherds from the same vessels scattered through different contexts. Sherds of interest include Fig 35, No. 111, part of a ?spouted pitcher with rouletted decoration (from pit [330] also found in layer [308] of quarry [256]; *cf* Vince, 1985, Fig 5, No. 6), and part of a very low-fired shell-tempered vessel (EMSH) in very poor condition found in posthole [331]. Layer [341], which was immediately below machine clearance, contained a number of 13th-century and later sherds.

The various fills of pit [346] produced a

total of 120 sherds (1106g). Most are of South Hertfordshire-type coarse greyware, both wheel-finished and handmade (Fig 35, Nos. 113–115). Shell-tempered wares are the second most common fabric (Fig 35, No. 112). Jug sherds are few but include a rod handle in a coarse red fabric with stabbed decoration. One sherd of Kingston-type ware (KING) found in layer [357] is assumed intrusive. Viewed in conjunction with the archaeomagnetic date of AD 1120–1155, the pottery suggests that the second hearth in pit [346] dates to *c.* AD 1150, when wheel-thrown grey wares were just coming into use. In the north-west part of Area D, a stakehole cutting layer [364] contained one sherd of South Hertfordshire greyware. Layer [364] and the subsequent deposit, layer [375], both produced prehistoric pottery (see above).

The dumps over layer [345], pit [346] and quarry [274] produced a homogeneous group of 12th-century wares with very little later material, and are thus amalgamated in Table 7. Sherds of interest include fine London-type greyware with rouletted decoration. This trait was not noted on the London ware cooking pots in the recent corpus of forms (Pearce *et al* 1985). The few 13th-century sherds comprise two fragments of Kingston ware (layers [371] and [368]) and a fragment of coarse Saintonge ware (SAIN) was also found in [371]. Other 14th-century and later sherds from layer [368] may be intrusive, since it underlay machine clearance. As noted before, sherds from the same vessels appear in several deposits, suggesting that pit [346] and the features over quarry [274] were shortlived and/or back-filled with material derived from them, probably in the third quarter of the 12th century. Apart from a few later medieval sherds, there is then a gap in the sequence until the late 16th–17th century, when the site appears to have been levelled again.

Discussion—the Middle Saxon pottery

The Middle Saxon pottery from these sites has added significantly to the corpus of fabrics and form types from London, but precise dating remains a problem; the following is an attempt to summarise the

TABLE 7. National Gallery extension: the stratigraphic distribution of the pottery

Fabric	Context													
	Quarry 256	Quarry 274	Quarry 256	Quarry 274	Pit 330	PH 331	PH 333	Layer 334	Ditch 335	Layer 345	Pit 346	Layer 364/PH 365	Dumps over [345-6] and [274]	
PRE			1									1	1	11
RPOT	1		1	1					1	2	2			8
IPS	7	15	3	2							1			
SSANA				3										
SSSL				2										
LSS	1													
EMS			27		2				3	2	4			2
EMSS			84	17		2			16	2	17			20
EMSH			32				21		6	6	15			
SHEL				2							3			1
ESUR			30	1	4		7	1	6	3	2			9
EMFL			10	1	8			1	1	3	1			6
EMCH									2					2
SHER			64		50		7		20	22	60			95
EMGR			3						2	1	2			
LCOAR			28	1		1	2		1	2	9			113
LC-SHELL									2					2
LOND			43	7	1	1			7	3	1			20
LCALC			1							1	1			
OSR			1					1	1	3	1			4
KING			1						3		1			4
CBW														1
CHEA														1
TUDB														1
PMR									2					1
BORD														1
STAM			1											
BLGR			1											
ANDE														2
SAIN														1
Total														
Sherds	9	15	331	37	65	4	37	3	73	50	120	1		306
Weight	281	763	2917	405	655	25	202	76	566	468	1106	9		2751

London evidence so far. At the time of writing, research is still ongoing in *Hamwic*, Canterbury, Ipswich and York, and the state of knowledge has changed little since the overview presented in the Jubilee Hall and Maiden Lane report (Blackmore 1988a), which is not repeated here.

With the proviso that the distribution of the different wares might reflect site/feature function as much as dating, the stratigraphic distribution from Jubilee Hall (353 sherds) and Maiden Lane (672 sherds) appeared to confirm the hypothesis (Vince, 1984, 433; 1990, 99) that there were two ceramic phases in Saxon London. Of these, the first (pre-

Ipswich-type ware) appeared to date from *c.* AD 650 to 750, the second, with Ipswich-type ware, from *c.* AD 750 to 850. Badorf-type wares appeared to come in around *c.* AD 800, while shell-tempered wares, although limited in number, also seemed to be a late 8th- and 9th-century tradition.

It was first hoped that the longer sequence of deposits and features on the Peabody site would permit a tighter ceramic chronology, and resolve some of the problems raised by previous research. Three points however make this difficult. First, much of the stratified pottery comprises small sherds of mixed date and fabric, with fragments of the

same pots in different, sometimes widely dispersed, features. Secondly, Ipswich-type ware occurs very early in the sequence in most areas of the site, while Badorf-type ware and Beauvais-type red-painted ware also appear in only slightly later contexts. The earliest stratified sherd of probable Ipswich-type ware is from the gravel metalling [9] in Area B. The layer over this ([69]) produced, amongst other wares, five substantial fragments of Ipswich-type ware and a rim sherd of Beauvais-type red-painted ware which should date to the late 8th/9th century. In Area A the middle fill of an early well [19] also produced one sherd of Ipswich-type ware; the pottery from a subsequent deposit of grey earth (layer [42]) includes one sherd of Badorf-type ware. The pattern in Area C is slightly different, and appears to reflect a more complex sequence of 'early' features, perhaps associated with the grave; the first Ipswich-type ware here is one sherd from the third phase of cut features (pit [151]). In Area E two sherds of Ipswich ware were found in pit [200], one of the second phase of features there. All other sherds of Ipswich and Badorf-type ware were found in deposits which postdate the above (mostly in the central part of the site). Cesspit [91] is the only feature with Ipswich-type ware in every fill; pit [74] has Badorf-type ware in the lower fill, and Ipswich-type ware in the upper fills. Pit [205] has Ipswich-type ware in most fills except the first two, while Badorf ware is only present in the uppermost fill.

Thirdly, despite the early appearance of Ipswich-type ware, the dominant fabric is chaff-tempered ware (see Table 3). This is in keeping with the Jubilee Hall and Maiden Lane sites, where chaff-tempered sherds exceed Ipswich-type wares by 2.7:1 and 3.2:1 respectively; the weights are approximately equal. On the Peabody site, stratified chaff-tempered sherds outnumber Ipswich-type wares by 3.5:1, but almost twice as many Ipswich-type sherds were found in the 'dark earth' as chaff-tempered. The combined totals reduce the overall ratio of chaff-tempered to Ipswich-type ware to *c.* 2:1. In terms of sherd numbers, approximately six times as much chaff-tempered pottery was

recovered from the stratified contexts as from the 'dark earth'; in terms of weight, this increases to over eight times (6338g stratified, 901g from the 'dark earth'/later features). Ipswich-type wares are present from all parts of the site, but over half the sherds were found in the 'dark earth'; in terms of weight the distribution is fairly equal (2676g stratified, 2062g from the 'dark earth'/later features). This may indicate that some of the latest features on the site had been truncated and mixed with the 'dark earth' during later agricultural activity.

Other local/non-local wares are limited in both number and distribution. Only 15 shell-tempered sherds were found on the Peabody site, six from the 'dark earth' and nine stratified (including two from pit [74] and four from pit [205]). At Jubilee Hall fourteen sherds were shell-tempered, but most were in a feature which radio-carbon dating now suggests may be Late Saxon. On sherd counts, imports comprise 10.1% of the Peabody assemblage and 11.8% of the Jubilee Hall collection (5.7% and 11.4% respectively on weight). At Maiden Lane imports account for 8.2% of the total sherds, but the weights are distorted by a near-complete North French greyware urn.

When considering the implications of the above for the chronology of the Peabody site, the presence of Ipswich-type and Badorf-type wares in early contexts may be explained as follows. First, the sherds may be intrusive. However, while this may be true for the metallated surface [9] and the well, the size and condition of the sherds in Area B suggests that this is unlikely. Alternatively, the site as a whole may have started later than might otherwise be thought from the amount of chaff-tempered ware. The small number of sherds involved, however, would seem insufficient evidence for this. The third option, that the first features date to the end of ceramic phase 1, *ie* some time between *c.* AD 725 and 775, and that Ipswich-type wares were fairly new to London when these features were backfilled or replaced, seems most likely. This would agree with the poor condition and scattered disposition of the wares, which suggests that at least some

pottery represents secondary or tertiary deposition/redeposition of general rubbish on the site. It is proposed therefore, that activity probably increased *c.* AD 750, and that the main period of occupation probably spans the late 8th and 9th centuries.

The pottery from the National Gallery Basement is quite different from the above; the assemblage is much smaller, and comprises large well-stratified sherds which appear to represent *in situ* household rubbish. Ipswich-type ware outnumbers chaff-tempered ware by exactly 3:1 on sherd count (111 sherds), and by 7:1 on weight (69.8% Ipswich-type, 9.7% chaff-tempered). Together with the presence of Badorf-type ware, this suggests a date of *c.* AD 800 or later for this site. The difference between the Saxon pottery from the basement and the extension could hardly be more marked, and the few sherds of Ipswich-type ware from the gravel quarries on the latter site are not considered here.

To conclude, some of the Peabody site sherds, and material from other sites in the area, are of 7th-century date and show that there was certainly a settlement of some sort in the Strand area in the 7th century, if not earlier. These earlier wares include a complete pot from Drury Lane (Myres, 1937), nos. 46 and 50 from Maiden Lane (Blackmore 1988a), and Nos. 18, 20–22, 43 and 61 from the Peabody site. The way in which the settlement grew is unclear, but whether it was the gradual expansion of a small nucleated settlement, or the gradual merging of scattered homesteads, the ceramic evidence suggests two points.

First, pottery found its way, together with other general rubbish, onto the open land surrounding the first buildings. As this land was occupied, the pottery and other finds were turned over and incorporated into later features. This pattern has been observed at *Hamwic*, where no site was found to have pottery dating exclusively to an early, middle or late period, but all fell into a general middle period of *c.* AD 750–850 (Timby, 1988, 116). In both London and *Hamwic*, however, trends may be seen in the distribution of different wares, and in London the ratio of Ipswich-type wares to chaff-tempered

wares increases as one moves westwards and/or northwards across the settlement area, while the proportion of imports appears to decrease. On sites such as Jubilee Hall and Maiden Lane, therefore, Ipswich-type ware mainly occurs in the upper fills of features, but elsewhere, notably at the National Gallery basement and Shorts Gardens, it is very clearly the dominant ware. The distribution of the imports is problematical due to the smaller amount of material, but the relationship of Badorf ware to the North French black and greywares appears at present to follow the same pattern. This suggests that the original occupation was closest to the river bank, as has been suggested for *Hamwic* (Timby, 1988, 117), and that there was a phase of (possibly rapid) expansion in the mid 8th century. Whether the settlement grew as a planned town, and/or whether there was a decline in the waterfront area, will only be determined by further investigation of the archaeological deposits.

THE OTHER FINDS

Loomweights and spindlewhorls (Figs 36-7)

by CAROL WILLIAMS

Introduction

The loomweight fragments from the three sites are discussed in general terms of fabric and form; the weights from the Peabody site are then discussed in more detail. Due to the small number of finds, comments on the weights from the National Gallery sites are included in the discussion only.

Loomweights

Fabrics

The fabrics are basically those identified at Jubilee Hall and Maiden Lane (Blackmore, 1988b), but type 2b is not present:

Type 1a—London clay, soft, fine with some organic content

Type 1b—As 1a, hard, with some organic content

Type 1c—As 1a, with sand and flint

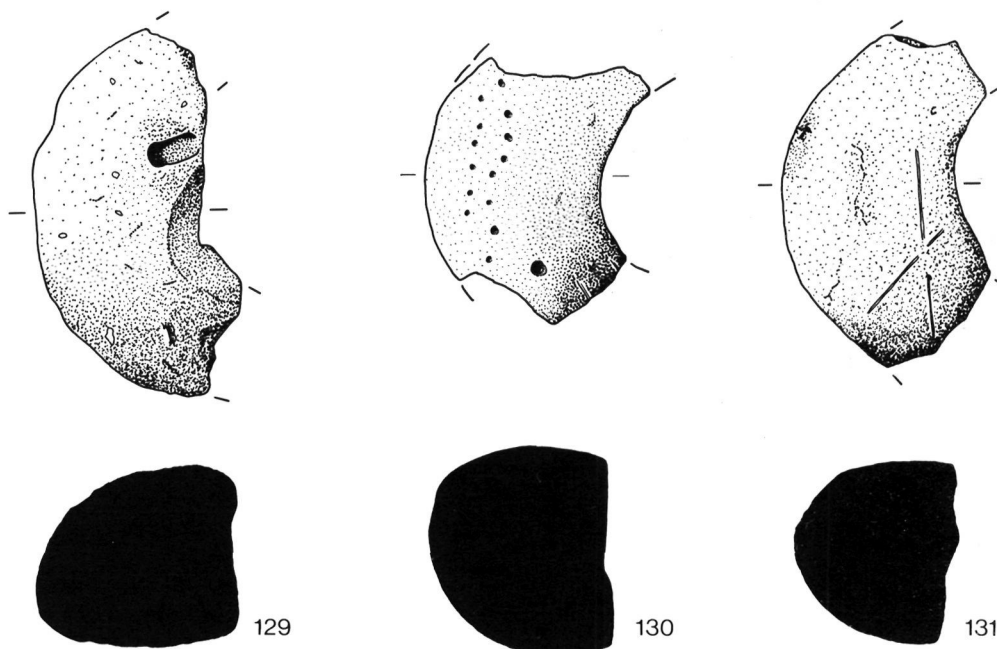


FIG 36 The Peabody site: the loomweights (1/2)

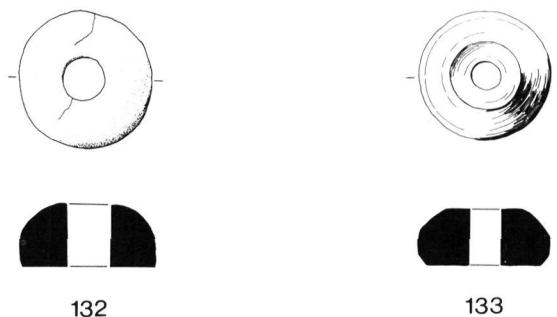


FIG 37 The Peabody site and National Gallery basement: spindlewhorls (1/2)

Type 1d—As 1a, with abundant sand and flint

Type 2a—Brickearth with abundant sand

Variations include one weight (No. 116; PEA87, SF 344, context [83]) in fabric 1a with occasional fine chalky inclusions, and one in an iron-rich variant of fabric 1d (No. 117; SF 309, pit fill [107]). It was found that although the distribution of the fabric types is similar to that on the previous sites, the weights are generally harder and coarser, and fabrics 1a and 1b are almost equally

well-represented in the Peabody site assemblage (Table 8). The samples from the National Gallery are too small to enable any conclusions to be drawn.

One weight (No. 118; SF 27, pit fill [239]) from the National Gallery basement appears to be unfired. Although unfired weights have been noted on sites elsewhere in England, such as Grimstone End in Norfolk and Mucking in Essex (Brown *et al* 1957; Jones and Jones, 1975, 155, 161, fig 52), this is the first example from London.

TABLE 8. Loomweights: distribution of the fabric types

Site	1a	1b	1c	1d	2a	Total
PEA87	32 (3746g)	27 (2604g)	6 (393g)	6 (932g)	3 (250g)	74 (7925g)
NGA87	3 (306g)	2 (392g)				5 (698g)
NAG87	1 (117g)	2 (56g)				3 (173g)

Forms

All the weights were examined for shape, dimensions, fabric type and decoration, and were classified according to the typology devised by Hurst (1959, 24), which had been used to classify the Jubilee Hall and Maiden Lane assemblage (Blackmore 1988b):

Group 1: flattened/annular

Group 2: rounded

Group 3: biconical

There appears to be little correlation between fabric and shape. One weight (No. 119; PEA87, SF 565, gully [153]) has a horizontal split around the outer surface which shows that, as at Jubilee Hall and Maiden Lane, some, if not most weights were formed by joining two 'sausages' of clay. The largest weight from the Peabody site has a maximum thickness through the central hole of 65mm. An interesting feature is the presence of a white scale inside the central holes of two weights (Nos. 120–121; PEA87, SF 553, [194]; NGA87, SF 26, pit [248]). The reasons for this are unknown.

Loomweights from the Peabody site

A total of 74 fragments (7.925kg) was recovered from 32 contexts. The main concentration was in the two upper fills of pit [205] (layers [209] and [210]), which together produced 17 fragments (1.965kg). The heaviest pieces are Nos 122–124 (SF 449, layer [69]), and SFs 360 and 369 from pit [205], which each weigh about 300g. The last of these has a height of 65mm, and has numerous large flint pebble inclusions. Of the identifiable profiles, most fall into group 2 (26 examples). Groups 1 and 3 are represented by seven and four fragments only, while 37

fragments are too small to be assigned to a form. Most fragments are quite battered, but in generally good condition. No complete weights were found; four weights had between 50 and 60% of the original circumference. Six had between 35 and 50%, 46 had less than 35%. Nearly one third (23 fragments) were too small for measurement.

Several weights have organic impressions. Three from pit [205] (Nos. 125–127; SFs 329 and 485, fill [210], and SF 384, fill [209]) show reeds or stems 22mm, 25mm and 30mm long respectively. No. 122 has an impression of bark or wood on the outer surface (18 × 15mm), and voids in the fabric from further woody inclusions which burnt out during the firing. One fragment from the 'dark earth' (No. 128; SF 567) has a seed impression.

As at Jubilee Hall, a few weights have stabbed or comb-pricked holes. Whether these are purely decorative or a manufacturing technique (perhaps to aid firing) is not known. These include one weight obliquely stabbed on the upper surface beside the central hole (Fig 36, No. 129; SF493, pit [205] fill [210]) and one (Fig 36, No. 130; unstratified SF 133) with an extensively stabbed surface. Another (Fig 36, No. 131, SF 95 unstratified) has 'X' scored on the outer face; a further two have possible finger prints made while forming the central hole (SF 473, layer [167]; SF 495, pit [205], fill [210]), and another (SF 299, pit [76], fill [83]) has a finger impression in the outer surface.

The spindlewhorls

Two spindlewhorls were found, one from the Peabody site, the other from the National

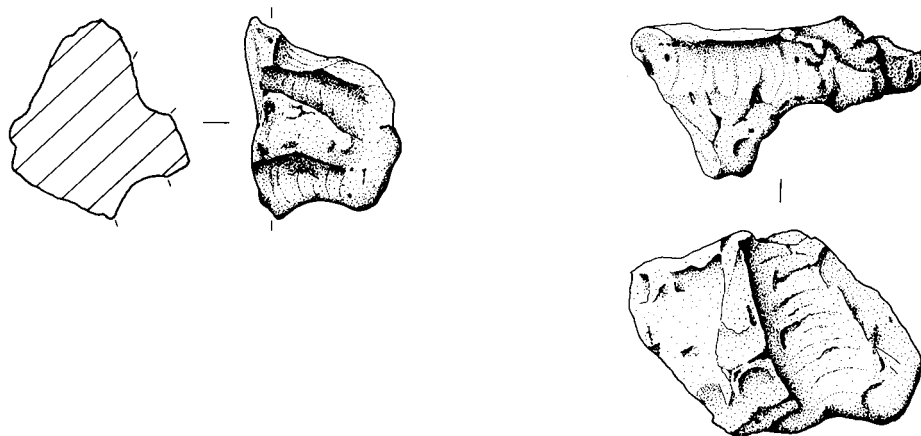


FIG 38 The Peabody site: daub fragments with structural impressions (1/2)

Gallery basement. The former is of chalk (Fig 37, No. 132; context [137]), has a flat base *c.* 35mm in diameter and a simple hemispherical profile with a height of 15mm; the surface is slightly pitted, but otherwise it is in good condition. The latter (pit [222], fill [225]) is of shale, with a similar hemispherical section (Fig 37, No. 133). The slightly convex underside is 35mm in diameter, the slightly dished upper surface *c.* 20mm, and the central hole 8mm; the height is 15mm. It is badly laminated.

The daub (Figs 38–9)

by RICHENDA GOFFIN

Method

The daub was recorded on *pro forma* sheets, where fabric type, colour, weight and number of fragments were catalogued. Fragments with impressions, surface deposits and other noteworthy features were recorded individually (see Goffin, 1988). These records, with illustrations, are included in the archive.

The fabrics

The two main fabrics were first identified in assemblages from the nearby mid-Saxon sites at Maiden Lane and Jubilee Hall. The predominant fabric on these sites was Fabric 1, which contained fine quartz grains and organic inclusions. The less common type

(Fabric 2) contained coarser quartz (Goffin, 1988).

The Peabody site

Over 600 fragments of daub (over 9kg) were recovered on PEA87, but there was no systematic sampling policy. A total of 553 fragments (8.2kg, 90% by weight) belong to Fabric 1. A further five fragments (74g) contain calcareous inclusions less than 1mm in diameter. Only 41 fragments (680 g, 7% by weight) belong to Fabric 2. Four of these (11g) contain calcareous inclusions, one with a piece of bone 2mm in length. A small quantity of material (23 fragments, 338g) is

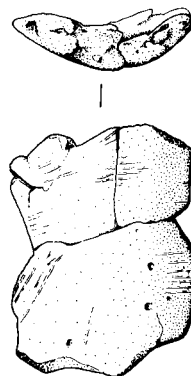


FIG 39 The National Gallery basement: baked brick-arth fragment (1/2)

either partly or totally vitrified, and so it is not possible to identify the fabrics with certainty. Both fabrics vary considerably in colour and hardness, partly due to the amount of heat that individual fragments have received. Often pieces are pale orange or buff, with patches of brick red and/or dark grey. The distribution of the fabrics across the site is apparently random, and in many cases they were present in the same features.

Surface deposits

Limewash has been found on Saxon daub elsewhere in the area (Goffin, 1988), but was not positively identified on any fragment from PEA87. One fragment has an off-white external surface, which appears to be calcareous but may not necessarily have been deliberately applied. Six other fragments have smooth external surfaces of a milky white colour, which appear to be part of the daub itself showing the first signs of vitrification. Further analysis is being undertaken to identify these deposits.

Timber and wattle impressions

Ninety burnt daub fragments have wood impressions. Of the 117 that can be measured, 55% are between 10 and 15mm in diameter, a size of rod often used for interweaving between larger rods, and typical of wattle infill. Three have impressions which run in more than one direction. One fragment (Fig 38, right), from posthole [193], has two parallel rod or withy impressions, 10 and 13mm in diameter. The rods were placed immediately behind the external surface of the daub, *c.* 46mm apart. At right angles to these, and set behind them, was a larger rod *c.* 33mm wide, but whose full diameter may have been up to 40 mm. It seems likely that the larger rod was positioned vertically, while the narrower horizontal rods were woven around it. A second fragment from the posthole has similar impressions: a rod 13mm wide ran immediately behind the external surface of the daub, with a second rod, 23mm wide, at right angles behind it. A third fragment, from [188], also has three small impressions, *c.* 12mm wide, passing in front

of and at right angles to a rod *c.* 18mm wide (Fig 38, left).

Discussion

No daub was associated with the large number of stakeholes [3] early in the stratigraphic sequence. This supports the theory that the stakeholes represent bare wattle fences for enclosures, rather than more substantial structures. The lack of daub from slot [14] and adjacent postholes in Area A might suggest that the structure there was built with planks rather than with wattles. The remains of mid-Saxon buildings incorporating planks have been found at the Treasury site, Whitehall (Green and Thurley, forthcoming), and possibly in King Street, Covent Garden (Cowie, 1988b), as well as elsewhere in England as at West Stow (West, 1985). However, a larger number of Late Saxon structures made of posts and planks have been found, notably in the City (Horsman, 1988, 75–82).

A substantial amount (2.95kg, 32.5%) of daub came from deposits associated with possible wattle and daub structures in Area E, where it seems likely that there were two separate phases of building. Two fragments were recovered from a posthole [193] (see above) at the junction of two lines of stakeholes at right-angles to one another. A third fragment (see above) came from a possible earth floor [188], which had a concentration of daub on its south side. Although it is not clear where these fragments originated, they show parts of the interwoven infill of withies from wattling; but there are no impressions of additional posts supporting the wattling, such as those found at Maiden Lane (Goffin, 1988). Apart from posthole [131] the stakes forming this structure apparently did not have additional supports, which might suggest that it was not substantial.

In general, however, a large quantity of the burnt daub in the Peabody assemblage came from cesspits, rubbish pits and the 'dark earth'. The fragments are poorly preserved by comparison with material from other mid-Saxon sites in the area, and they have added little to the interpretation of structures on the site.

The National Gallery basement

Twenty-nine fragments (450g) of burnt daub were recovered from Middle Saxon pits. Nearly all are of Fabric 1, although with slightly less evidence of the organic material; only three (24g) are of Fabric 2. Two fragments from a modern pit [248] have wattle impressions, 8mm and 10mm wide respectively.

A small quantity of material was recovered from pit [222], and these pieces may have served a different function. Three joining fragments are in Fabric 1, *c.* 10mm thick. They have a smooth convex outer surface and a rough uneven inner surface, in which impressions of the organic material can be clearly seen (Fig 39). The pit also produced 42 fragments (246g) of baked brickearth, identified as Fabric 1, which may not have been used as daub. They are between 8mm and 10mm thick; most are light orange, although some have dark patches. They are slightly convex, and some have wiped surfaces (P1 2a). A few have slight external ridging, suggesting wiping with the fingers (P1 2b), and at least four bear textile impressions (P1 2c). The function of these fragments is unclear, but those with wiped surfaces may have come from crude containers.

Pits [214] and [226] produced 32 fragments

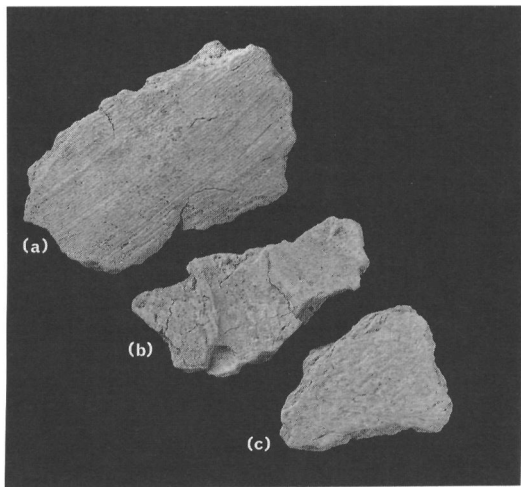


PLATE 2 The Peabody site: baked brickearth fragments: a) with wiped surface; b) with ridges; c) with a textile impression

(326g) of hard-baked material similar to Fabric 1, but without organic inclusions. These are provisionally identified as hearth lining, although this has yet to be confirmed by analysis. Some fragments have two flat surfaces, one surface covered with a calcareous deposit. The area immediately under the surface deposit is partially reduced.

The National Gallery extension

Two hundred and thirty seven fragments (1.57kg) of burnt daub were recovered. Most (1.44kg, 91.5% by weight) are of Fabric 1, and six (42g, 2.6% by weight) of Fabric 2. Three fragments (21g) have been either partly or completely vitrified, so that it is not possible to identify the fabric with certainty. A variant of Fabric 1 was found in the 12th-century pit fill [352]; it consisted of 69g of daub characterised by frequent round and subangular fine quartz less than 0.5mm in diameter, but apparently with no flint, organic material or other inclusions. Only two fragments have wood impressions, both from layer [356], above hearth [354]. Each has a single impression, 5mm and 12mm wide respectively, possibly of withies from wattle infilling.

The Saxon glass

by VERA I. EVISON

The glass fragments from the Peabody site are mostly from drinking vessels, but other items are present. The two pieces of window glass are not likely to indicate Saxon glazed windows as one (No. 134) is light blue-green and 3.5mm thick, so that it could be of Roman origin. The other (No. 135) has the weathered appearance of potash glass, which belongs to the 9th century or later. The three beads (Nos. 136–138) are of common shapes and colours, and cannot be precisely dated. One fragment (No. 139) from a blown spherical shape, 3.5mm thick, has deep scratches on the outside, and so is no doubt part of a linen smoother. Amongst the featureless fragments there are some which are in a vivid green-blue current in the mid-Saxon period (Nos. 140–141). One of the two tiny fragments (No. 142) is a translucent

garnet red, a rare colour which sometimes occurs with swirled effect in vessel glass (Holmqvist, 1964, 251, Fig 113). Single small fragments of clear garnet red have been found at the Brough of Birsay, Orkney (Harden, 1956, 154), at Dundurn, Perthshire (Alcock, 1980) and Southampton, Six Dials (God's House Museum).

Most of the Peabody fragments are from vessels of the shapes which developed from the palm cup (Ypey, 1962-3, Abb. 40) through the tall palm cup to the funnel beaker. Among the earliest, belonging to the 7th century, are the kicked base of a vertically ribbed palm cup (No. 143, Fig 40) and the deep outward folded rim of another palm cup (No. 144, Fig 40) (Ypey, 1962-3, Abb. 40, 1 and 5). With these or the tall palm cups may be grouped other ribbed wall fragments (Nos. 145-147) and plain wall fragments (Nos. 148-152). Rims rolled or folded inwards, either with or without a cavity, may belong to tall palm cups (Nos. 153-156, Fig 40). The rims more simply rolled inwards are probably from funnel beakers (Nos. 157-160). Similar rims have been published from Southampton (Hunter, 1980, fig 11.2.2, 12 and 14; fig 11.4.4 and 8).

The particular form of funnel beaker with a horizontal rib (No. 161, Fig 40) is rare, perhaps because it is very thin-walled and its form is not easily recognisable from small fragments. It also occurs at Dorestad (Baumgartner and Krueger, 1988, 62-3, no. 3), where some of the fragments compared with Merovingian bell beakers are no doubt also from funnel beakers of this type (Isings, 1980, fig 152, 2-3, 5-7). The funnel beaker form was used as a lamp as well as a vessel, and a rib in this position would have acted as a stop against the holder. A similar fragment has also been found at Six Dials, Southampton (24/524).

Another rare form of funnel beaker is the light blue-green sherd (No. 162, Fig 40) where the rim is surmounted by a self-coloured and white reticella trail. This unusual positioning for a reticella trail was once limited to Southampton, but further examples have recently been found in France,

at St. Denis, where the trails occur both marvered and unmarvered (Hunter, 1980, figs 11,2.13, 11,3.8, 11,3.11, 11,4.1, 11,6.1 and 11,6.4; Baumgartner and Krueger, 1988, 74-5, no. 19; Foy and Sennequier, 1989, 145, 60, e, f, pl VI). A date of the middle of the 8th century is given by the context of the Southampton fragment, and of 8th to 9th century by the context of the St. Denis fragments. The technique was used much earlier, from the 1st century BC, on mosaic bowls (Harden, 1987, 39-40, nos. 15 and 16), and continued later in the Middle East.

Among the featureless fragments from the National Gallery basement there are a vivid green-blue example and a light green fragment with white trails, both of which occur in mid-Saxon contexts. Two very small sieved fragments show distinctive reticella trails. No. 163 (Fig 40) comes from a light blue-green, thin-walled vessel with a wide self-coloured and yellow reticella trail half melted into the wall. It shows the dots which occur on the edge of the reticella twist when the thread applied to the basic rod has been left unmarvered (Evison, 1988a, fig 12, 5 and 6; Youngs, 1989, 204, fig 12,5 and 6; Youngs, 1989, 204, 205b, which relates to the description 205a).

No. 164 comprises two thin-walled, dark blue fragments of a cylindrical vessel, each with marvered reticella thread, one consisting of straight threads and the other twisted (Fig 40). Reticella threads and their distribution have been frequently discussed (Hunter, 1980; Evison, 1983a, 91-3; Evison, 1983b, 11-12, 20-1; Nasman, 1986, 76ff; Koch, 1987, 265-7; Baumgartner and Krueger, 1988, 69ff; Evison, 1988a, 240ff; Evison, 1988b). No. 165 was also a very thin-walled vessel, but decorated with thick trails applied in an arcade pattern, a pattern which appears on both tall palm cups and funnel beakers (Fig 40; Arbman, 1940, Taf. 189, 1; Ypey, 1962-3, Abb. 40, 10-12; Isings, 1978, fig 3).

Two of the fragments from the National Gallery extension are probably Saxon, a green-blue chip (No. 166) and a rolled, cavity rim (No. 167). A colourless fragment (No. 168) was found in a 12th-century layer.

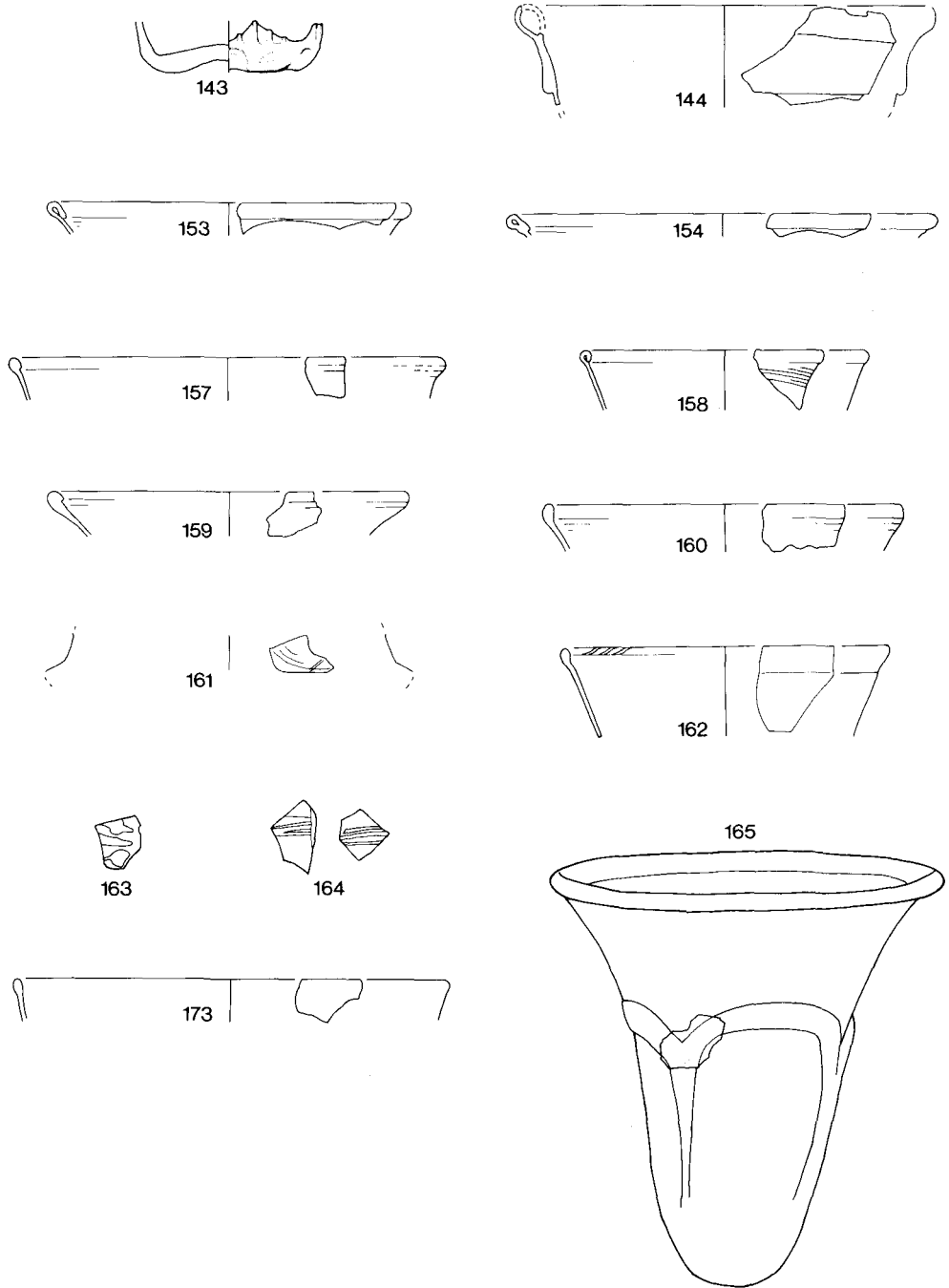


FIG 40 The Peabody site and National Gallery: the glass

Discussion

The three sites produced fragments of a variety of good quality glass vessels of the mid-Saxon period. They include palm cups of the 7th century, and tall palm cups and funnel beakers of the 8th and 9th centuries. It is possible that some of the fragments might belong to the other form of vessel common at this time, the squat beaker, but there is no definite evidence of this, such as would be provided by a base. The three fragments with reticella decoration show three of the many widely differing effects which could be brought about by variations in both the twist of the rod and its application on the wall of the vessel. The trail on the rim (No. 162, Fig 40) is small and neat, *c.* 1mm in diameter, regularly twisted and almost fully rounded. The trails on the blue fragment (No. 164, Fig 40) are only slightly twisted, and are marvered flat into the wall of the vessel where they are *c.* 2mm wide. The third trail (No. 163, Fig 40) is more substantial; the yellow trail had been left unmarvered on the surface of the basic rod so that a dotted effect resulted when the trail was half melted into the wall to a width of *c.* 9mm. There is close correspondence, therefore, with the glass found at Jubilee Hall and Maiden Lane, where there were also reticella fragments, and where palm cups and funnel beakers predominated, with one or two possible squat jars and a linen-smoother (Evison, 1988b). No particular conclusions regarding more distant connections can be drawn from the fact that some specific similar fragments have been found at Southampton, as identical types occur also at Dorestad and St. Denis. London, however, may now take its place amongst the numerous sites in north-west Europe, settlements, towns, ports and religious establishments, where high quality glass was available in the 8th and 9th centuries (Evison, 1989).

CATALOGUE OF GLASS

134. *Not illustrated* (PEA87, SF 391, context [209])
Light blue-green, length 41mm, thickness 3.5mm.
Window, two parallel edges grozed, one face smooth and dull, the other rough with a dark surface line. Iridescent.
135. *Not illustrated* (PEA87, SF 28, context [213])
Light olive, length 23mm, thickness 1.5mm.
Window, one edge grozed, mark of came, iridescent and surface pitted, ?potash.
136. *Not illustrated* (PEA87, SF 477, context [148])
Opaque blue-green, diameter 7mm, height 4.5mm.
Bead, short cylinder.
137. *Not illustrated* (PEA87, SF 479, post-medieval context (not described above).
Opaque green-blue, height 6mm. Bead fragment, disc, exterior discoloured.
138. *Not illustrated* (PEA87, SF 559, unstratified)
Opaque green-blue, diameter 8mm, height 5.5mm.
Bead, disc, weathered surface.
139. *Not illustrated* (PEA87, SF 536, unstratified)
Light green-blue, length 29mm, thickness 3.5mm.
Curved wall fragment, iridescent, small bubbles, scratched exterior. ?Linen smoother.
140. *Not illustrated* (PEA87, SF 467, context [88])
Vivid light green-blue, length 20mm, thickness 4mm. Small bubbles.
141. *Not illustrated* (PEA87, SF 582, context [69])
Vivid green-blue, length 4.5mm. Chip.
142. *Not illustrated* (PEA87, SF 579, context [81])
Light blue-green, length 8mm, thickness 0.5mm.
Garnet red, length 2.5mm, thickness 0.25mm.
143. Fig 40 (PEA87, SF 66, context [117])
Light blue-green, length 42mm, thickness 2–4mm.
Kicked base of palm cup, vertical ribbing, exterior abraded, small bubbles.
144. Fig 40 (PEA87, SF 534, context [6])
Light green-blue, length 44mm, thickness 1mm.
Fragment of rim folded outwards to a depth of 24mm with a cavity at the top. Bubbles, streaky weathering. Diameter *c.* 110mm.
145. *Not illustrated* (PEA87, SF 155, context [213])
Light green, length 12mm, thickness 1mm. Vertical ribbing, dull abraded surface.
146. *Not illustrated* (PEA87, SF 397, context [208])
Light green-blue, length 31mm, thickness 1mm.
Vertical ribbing, iridescent.
147. *Not illustrated* (PEA87, SF 516, context [208])
Light green-blue, length 20mm, thickness 0.5–1mm.
Vertical ribbing, small bubbles, iridescent and streaky weathering.
148. *Not illustrated* (PEA87, SF 144, context [167])
Light blue-green, length 28mm, thickness 2.5–4.5mm. Curved base, remains of pumty mark, bubbles.
149. *Not illustrated* (PEA87, SF 237, context [213])
Very light green, length 14mm, thickness 1mm.
Cylindrical.
150. *Not illustrated* (PEA87, SF 522, context [42])
Light green-blue, length 27mm, thickness 4–5mm.
Curved wall fragment, iridescent.
151. *Not illustrated* (PEA87, SF 523, context [129])
Light green-blue, length 38mm, thickness 2–4mm.
Curved wall fragment ?near base of palm cup.
152. *Not illustrated* (PEA87, SF 528, context [9])
Light green, length 19mm, thickness 2mm. Curved wall fragment.
153. Fig 40 (PEA87, SF 256, context [81])

- Light blue-green, length 44mm, thickness 0.5mm. Rim hollow-rolled inwards. Diameter *c.* 100mm.
154. Fig 40 (PEA87, SF 317, context [210])
Light blue-green, length 27mm, thickness 1.25mm. Rim folded inwards, hollow at top. Iridescent. Diameter *c.* 120mm.
155. *Not illustrated* (PEA87, SF 526, context [125])
Light blue-green, length 13mm, thickness 1.5mm. Rim fragment, folded with cavity, discoloured with iridescence.
156. *Not illustrated* (PEA87, SF 577, context [213])
Light green, length 10mm, thickness 1mm. Rolled-in rim, one opaque yellow marvered horizontal trail. Second fragment: length 7mm, thickness 0.5mm. Wall fragment.
157. Fig 40 (PEA87, SF 42, context [213])
Very light green-colourless, length 15mm, thickness 1mm. Rim, rolled inwards, iridescent.
158. Fig 40 (PEA87, SF 97, context [114])
Colourless, length 20mm, thickness 1mm. Rim rolled inwards, iridescent and striations. Diameter *c.* 80mm.
159. Fig 40 (PEA87, SF 136, context [213])
Light blue-green, length 18mm, thickness 1mm. Rim rolled inwards, iridescent, surface abraded.
160. Fig 40 (PEA87, SF 194, context [213])
Light green, length 24mm, thickness 1.5–3.5mm. Rim rolled inwards, bubbles.
161. Fig 40 (PEA87, SF 501, context [60])
Very light green, length 20mm, thickness 0.5mm. Wall fragment, widening into a horizontal rib, iridescent.
162. Fig 40 (PEA87, SF 539, context [213])
Light blue-green, length 29mm, thickness 0.75–2mm. Rim fragment, slightly cupped, fine dark streaks, tiny bubbles. On top of the rim a self-coloured and white reticella trail. Diameter *c.* 90mm.
163. Fig 40 (NGA87, SF 40, context [223])
Light blue-green, length 8mm, thickness 1.5mm. Yellow and light green reticella trail half melted on thin wall.
164. Fig 40 (NGA87, SF 43, context [247])
Dark blue, length 7mm, thickness 0.5mm. Iridescent, marvered reticella trail with longitudinal yellow and light green threads. Second fragment: length 10mm, thickness 0.5mm. Reticella trail as above, but slightly twisted.
165. Fig 40 (NGA87, SF 44, context [241])
Light blue-green, length 20mm, thickness 0.25mm. Thick, half-melted arcaded trails on very thin wall.
166. *Not illustrated* (NAG87, SF 16, context [279])
Green-blue, length 9mm, thickness 6mm. Chip.
167. *Not illustrated* (NAG87, SF 30, context [341])
Light green, length 35mm, thickness 1–4mm. Rim rolled inwards with cavity. Diameter *c.* 100mm.
168. *Not illustrated* (NAG87, SF 35, context [316])
Colourless, length 25mm, thickness 1.5mm. Cylindrical, weathered.
169. *Not illustrated* (PEA87, SF 41, context [213])
Very light green, length 12mm, thickness 1mm. Cylindrical, striations, iridescent.
170. *Not illustrated* (PEA87, SF 99, context [213])
Very light blue-green, length 7mm, thickness 0.5mm. Iridescent.
171. *Not illustrated* (PEA87, SF 174, context [213])
Colourless, length 21mm, thickness 2.5mm. Thickened rim, iridescent. Diameter *c.* 100mm.
172. *Not illustrated* (PEA87, SF 273, context [186])
Light blue-green, length 25mm, thickness 1.5mm. Wall fragment near curved base.
173. Fig 40 (PEA87, SF 465, context [213])
Very light green, length 19mm, thickness 1mm. Rim, slightly thickened. Diameter *c.* 80mm.
174. *Not illustrated* (PEA87, SF 481, context [206])
Light green-blue and colourless, length 9mm. Chip, streaky.
175. *Not illustrated* (PEA87, SF 575, context [213])
Light blue, length 4.5mm, thickness 0.5mm. Cracked.
176. *Not illustrated* (PEA87, SF 576, context [108])
Very light green-blue, length 16mm, thickness 1mm.
177. *Not illustrated* (PEA87, SF 578, context [83])
Opaque rust red, diameter 6mm, height 7mm. Bead, five-sided cylinder.
178. *Not illustrated* (PEA87, SF 580, context [109])
Very light blue-green, length 7.5mm, thickness 0.5mm. Second fragment: very light green, length 5.5mm, thickness 0.5mm.
179. *Not illustrated* (PEA87, SF 581, context [137])
Very light green, length 10mm, thickness 1mm.
180. *Not illustrated* (PEA87, SF 583, context [81])
Light green, length 11.5mm, thickness 0.75mm.
181. *Not illustrated* (PEA87, SF 584, context [165])
Brown, length 8mm, thickness 1.5mm. Second fragment: light blue-green, length 5mm, thickness 0.5mm.
182. *Not illustrated* (PEA87, SF 585, context [60])
Light blue, length 3.5mm, thickness 0.5mm.
183. *Not illustrated* (NGA87, SF 2, context [225])
Vivid green-blue, length 13mm, thickness 1.25mm. Wall fragment, small bubbles.
184. *Not illustrated* (NGA87, SF 39, context [218])
Light green, length 9mm, thickness 1mm. Iridescent.
185. *Not illustrated* (NGA87, SF 41, context [247])
Light green and white, length 7.5mm, thickness 1.5mm. Two parallel marvered trails.
186. *Not illustrated* (NGA87, SF 42, context [246])
Very light blue-green, length 12mm, thickness 1mm. Small bubbles.
187. *Not illustrated* (NAG87, SF 10, post-medieval context (not described above))
Light green, length 35mm, thickness 1.5mm. Window, discoloured and iridescent, ?potash.

The mid-Saxon coins by PETER STOTT

The significance of finds of mid-Saxon coins in the Strand area, and the evidence provided by finds of *sceattas* for the economy of mid-Saxon London, have been discussed elsewhere

(Stott, 1988). The present report will deal therefore with the four *sceattas* from these two sites in terms of what information they offer on the types represented. However, it is worth noting that, at the time of writing (February 1990), there have been a considerable number of discoveries of *sceattas* in London since 1987, when the present coins were unearthed, both as a result of excavation by the DGLA in the Strand area, and of less formal investigation on the Thames foreshore in west London.

The four coins here are included in the catalogue of Stott (1991).

188. *Not illustrated* (PEA87, SF 7, context not described above)

Sceat: Series L, Type 18 (Stott, 1991, 306, Pl 27a and b).

O: Diademed bust right.

R: Figure, facing and standing on crescent, with cross in right and bird in left hand.

0.48g

A late Secondary type, dating from about AD 730 and current probably well into the second half of that century (Grierson and Blackburn, 1986, 188). Series L is widely accepted as having been minted, at least predominantly, in London. Several carry the inscription DE LUNDONIA. Series L is well represented amongst finds of *sceattas* in London and this coin, together with two others found on the Thames foreshore at Wandsworth in 1989, add to the list compiled by Rigold and Metcalf (1984,

254–5). The present example is worn and it is not clear whether the obverse carries any inscription.

189. *Not illustrated* (PEA87, SF 47, unstratified).

Sceat: Series M, Type 45 (Stott, 1991, 306, Pl 30a and b).

O: 'Hound' right.

R: Spiral branch.

0.76g.

Probably of the mid-Secondary phase, current during the first quarter of the 8th century (Grierson and Blackburn, 1986, 188). The few single finds of this series are distributed across the south of England in Southampton, the Thames Valley and Kent, with a noticeable concentration at Reculver (Metcalf, 1984, 44 and fig 17). This and the two river finds from London (Rigold and Metcalf, 1984, 255) do not alter the suggestion that the series was minted in Kent.

190. *Not illustrated* (PEA87, SF 192, dark earth [213]).

Sceat: Series S, Type 47 (Stott, 1991, 307, Pl 40a and b).

O: 'Sphinx'

R: Wolf-whorl.

0.81g.

A late Secondary type, current probably about the fourth decade of the 8th century (Grierson and Blackburn, 1986, 188). An East Saxon origin for this series has been suggested on iconographic grounds as well as on the evidence provided by the distribution of finds (Stewart, 1984, 17; Metcalf, 1984, 56), although Grierson and Blackburn (1986, 180) have tentatively proposed that it may be Kentish. This is a very rare type with seven finds known from England so far. On this basis, it is difficult to argue a satisfactory case for the location of the mint. In trade terms, however, it is now more feasible to suppose that the English attribution of the series (four in Greater London, one each in Houghton Regis, Hitchin and Maldon) demonstrates the influence of London over the East Saxons rather than *vice versa* (Metcalf, 1984, 56).

191. Pl 3 (NAG87, SF 17, [327]).

Sceat: Series T, Type 9, (Stott, 1991, 307, Pl. 43a and b).

O: Porcupine.

R: Bust right, legend LCLV.

0.89g

Early/mid-Secondary phase *sceat*, current probably during the first two decades of the 8th century (Grierson and Blackburn, 1986, 188). Two specimens of this series are known with the legend (D)E LUNDONIM (Grierson and Blackburn, 1986, 172), and a stylistic connection with the bust of the 'London' Series L has been suggested (Grierson and Blackburn, 1986, 181). Otherwise the legends are, as here, meaningless with the exception of one type which reads MONITASCORV (*Moneta Sanctorum?*) (Metcalf, 1984, 39). This is the third Series T to have been discovered in Greater London (see Stott, 1991, 307).



PLATE 3 The National Gallery extension: the obverse of a series T *sceat*

An intaglio ring from the National Gallery extension (Fig 41; Pl 4)

by MARTIN HENIG

This copper alloy ring (No. 192) consists of a ribbon hoop, slightly convex on the exterior to give a D-shaped section (Fig 41). The lower portion is missing, presumably corroded away; the upper part, which expands markedly to a flattened bezel, is quite well preserved and retains some gilding, especially around the bezel. The bezel contains a glass inset of oval form with a flat upper face bearing a moulded intaglio device (Pl 4). This shows a satyr walking to the right (or to the left upon an impression), holding a bunch of grapes and a staff (meant to be a curved *pedum*). Justine Bayley of the Ancient Monuments Laboratory comments on the intaglio that 'the colour was meant to be black, using an olive green glass, which looks black when thick'.

Dimensions: the external diameter of the ring 19.5mm; internal diameter 17mm; width across narrowest surviving point (below shoulder) 2.5mm; width across bezel 12mm. The upper surface of the intaglio is 11.5mm in length by 8.5mm in breadth, and rises *c.* 1mm above the surface of the ring.

The ring is of a common type, a development of an Antonine form (Henig, 1978, 37–8, type V), which in its base metal variants would often appear to belong to the

3rd century (Henig, 1978, 39, types XI and XII; the National Gallery ring is quite close to pl 1xvii, App. 88 of type XII). The gilding was an attempt to make the ring appear to be a much higher status object than indeed it is.

Satyrs walking or dancing with bunches of grapes were immensely common both on cut gems and, as here, on moulded glass gems, as evocations of prosperity (see Henig, 1978, nos 161–70, especially no. 168 set in a somewhat similar ring from Chesters, Northumberland; Guiraud, 1988, nos 255–66). For style, note also Hattatt, 1987, 256, fig 80, pl, 2, nos 1217, 1218 (two 'black glass' intaglios set in disc brooches). The National Gallery 'gem' like these shows signs of the extreme simplification typical of the 'Romano-British imitations', and it seems that all of these settings were made in insular workshops.

The real interest of this somewhat modest antiquity arises not from its intrinsic value but from its findspot. Quite a number of intaglios are recorded from early Saxon sites, mainly down to about the 7th century. Some were reset in new rings, such as the one from Snape, Suffolk, or in brooches like those from Lyminge, Kent and Alveston, Warwickshire. However, others, such as the copper alloy ring with glass inset from the cemetery at Highdown, Sussex, were evidently regarded simply as *objets trouvés*, perhaps kept as amulets (see Henig, 1978, 159–61; Hunter, 1974, 49–50 note 6). We cannot be certain whether this ring was recovered from some extra-mural settlement or burial site, or whether it was the result of foraging in the ruins of *Londinium*.

The copper alloy

by LYN BLACKMORE

The Peabody site produced a total of 44 fragments of copper alloy, most of which were stratified beneath the 'dark earth;' the remainder may be Saxon or of later date. The few fragments from the National Gallery basement are in very poor condition; all were found in pit [226] and may derive from the same object, although this cannot be ident-



PLATE 4 The National Gallery extension: detail of the intaglio setting in the Roman ring

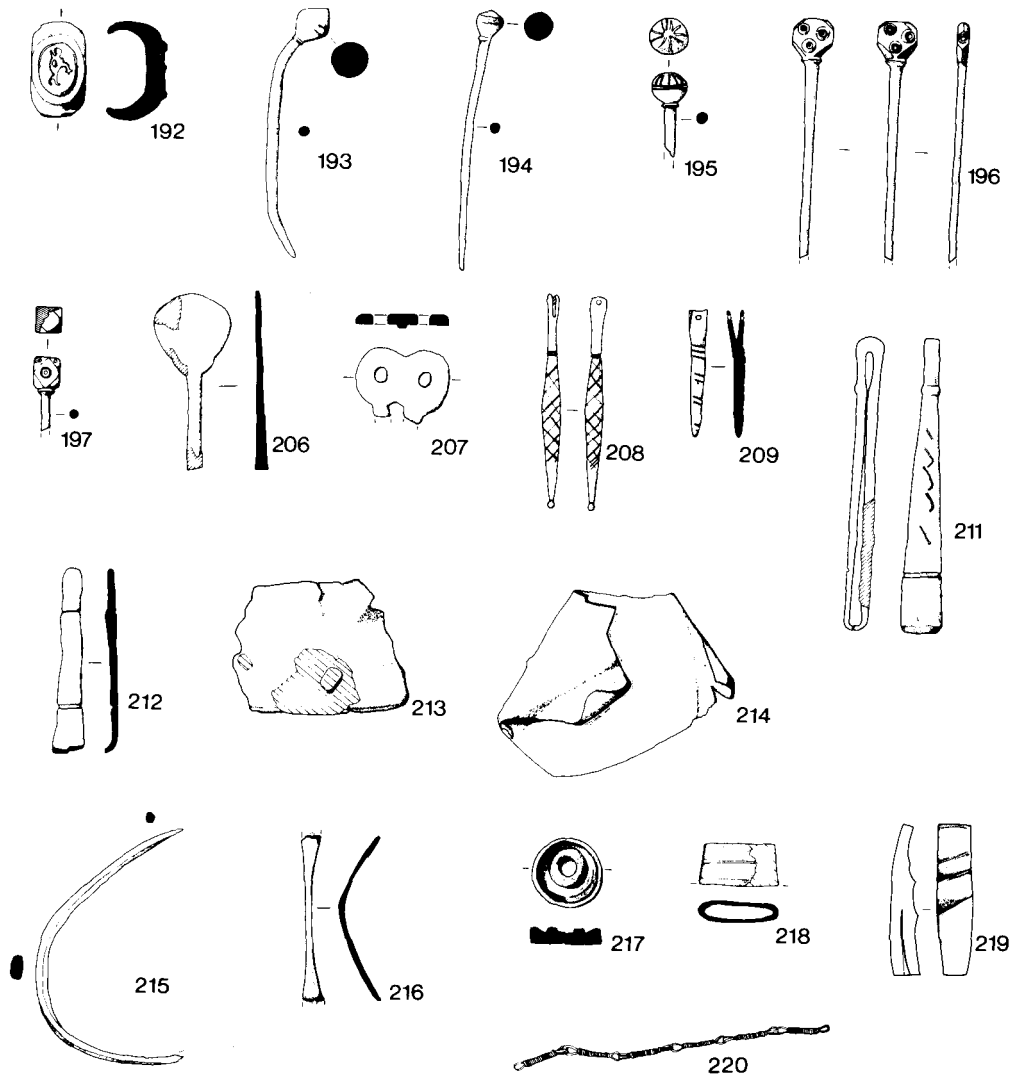


FIG 41 The Peabody site and National Gallery extension: the copper alloy (1/3)

ified. The four finds from the National Gallery extension range from Roman to post-medieval, with only one pin being definitely Saxon. The Roman intaglio ring from this site (Fig 41, No. 192) is discussed above. Details of the medieval and later finds are included in the site archives.

Pins
by SEAMUS ROSS

The twelve Middle Saxon pins and pin fragments from the Peabody site are all of

cast copper alloy. The quality of casting is quite high, and they seem to have required only limited filing or other secondary work; alternatively, all evidence of filing has been polished away. In five cases the head is extant but only two (Nos. 194, 196) have sufficient of the shaft for the type of shaft to be determined; for the other three (Nos. 195, 197, 198) it is possible to cite only the most general of parallels. However, the range of pins and pin-heads is typical of the Middle Saxon period, and comprises types recovered

in some number from excavations at sites such as *Hamwic*, Portchester, Colchester, Ipswich, Maxey, and York, and in London at Whitehall and Shepperton Green. The dating remains quite general at present because few come from contexts which can be precisely dated and many come from pits in which they may have been residual. At Shepperton Green, for example, one pin, dated to the early 8th century, was found in a sunken-featured structure; others, found in an early medieval ditch, were dated to the 9th/10th century but may be earlier (Clark, 1979, 118). The best collection of pins from London is that from the Shorts Gardens site in Covent Garden.

193. Fig 41 (NAG87, SF 18, context [327])
Pin with biconical or 'hot-air-balloon' head and ring collar; length 52mm. Bent.
194. Fig 41 (PEA87, SF 77, 'dark earth' [213])
Complete pin with biconical or 'hot-air-balloon' head and ring collar, slightly bent; length 65mm. It is very similar to examples from Shepperton Green (Clark, 1979, fig 13, no. 5) and Whitehall (Huggins, forthcoming). Other parallels are from Canterbury (two similar pins from the Marlowe Theatre and Marlowe IV sites: Ross, forthcoming a), Ipswich (Wade and Hatton, pers comm), Southampton (Addyman and Hill, 1969) and Whitby (Peers and Radford, 1943). An example from Brandon has the head adorned with ring and dot decoration (Carr, 1985, fig 13.2). This type of pin has only been recovered from settlement, monastic and possible market sites; it was certainly established by the 9th century, and was probably widely used during the 8th. Two other finds from Canterbury (Marlowe III and IV), are from contexts dated to AD 850–1050 and 1100–1400; the latter is certainly residual, the former probably so. At Brandon, the limited presence of Thetford ware and the few late 9th-century coins led the excavator to argue that the site was abandoned 'very near the end of Ipswich ware's currency' (*ibid* 40). This places the pins from this site before that horizon. Further confirmation that the type was established in the 8th century comes from Southampton (Brisbane, pers comm). The finds from Whitby belong to the period between the foundation of the monastery in AD 657 and AD 867. This would seem to be the *floruit* of this type of pin.
195. Fig 41 (PEA87, SF 305, pit [205], upper fill [210])
Pin with spherical or ball head and a collar at the junction of the head and shaft. The decoration comprises radiating vertical lines over the upper half of the head, bounded by a horizontal line around the girth. Surviving length 18mm. Since the shaft is incomplete it is impossible to determine whether this was hipped or not. Similar decoration on both spherical and biconical flat-topped pin-heads has been found at *Hamwic* (Hinton, 1980, 73, not illustrated; Addyman and Hill, 1969, fig 26, no. 10, with expanded and flattened tip). While ball-headed pins are quite common, those with this form of linear decoration are not, the usual style being wrythen ornament like that seen on ball-headed pins from the Six Dials site, *Hamwic* (SOU 31 11; Wilthew, 1984), Meols (Bu'lock, 1960, fig 3b), Ipswich (IAS 154 4601Cu, Ross, forthcoming b), Colchester (Crummy, 1983, 30, fig 31.499) and Canterbury (Marlowe 3, Ross, forthcoming a).
196. Fig 41 (PEA87, SF 130, layer [167])
Pin with collared neck and flat-facet head (a slightly irregular octagon, maximum dimensions 8×8mm, 2mm thick); surviving length 51mm (point missing). The head is decorated on the main flat faces with a triple ring-and-dot design, and on the two vertical side faces with a single ring-and-dot. The angled edges are all bevelled. Similar pins of 7th to 9th-century date have been found at *Hamwic* (Wilthew, 1984), Ipswich (Wade and Hatton, pers comm) and Brandon (Carr, 1985). This type is a Middle Saxon variation of the cuboid- and rectangular-facet-headed pins; the former have heads equal in width, length and thickness (cf No. 197) and the latter tend to have heads c. 1–2+mm longer than they are wide or thick. On flat-facet-headed pins the head is generally c. 2–3m thick, whereas the width and length of the head is in the standard range of 5–7mm (Ross, in prep.).
197. Fig 41 (PEA87, SF 96, dark earth [213])
Cuboid-facet-headed pin fragment; surviving length 17mm. Each vertical face and the upper facets of the head are decorated with a ring-and-dot motif; the top and lower facets are plain. The head is 5mm wide on all faces, and measures 7.5mm from the top of the collared neck to the upper surface. The shank is c. 1.5mm in diameter. The comparative similarity of late Roman cuboid-facet-headed pins and Middle Saxon examples has led to the suggestion that there was some continuity in manufacture. These claims, as I have argued elsewhere, are tenuous at best (Ross, forthcoming a). In some instances facet-headed pins occur in Saxon graves, but these tend to be in late 7th/early 8th-century cemeteries such as Lackford (Lethbridge, 1951, fig 28). They appear to have had a broad geographic distribution during the Middle Saxon period. A cross-section of sites which have produced them includes Brandon (Carr, 1985, figs 13.3 and 13.4), Canterbury (Ross, forthcoming a), Southampton (Addyman and Hill, 1969, fig 26, Nos 6, 7), Ipswich (Wade and Hatton, pers comm; Ross, forthcoming b), Sedgford (Wade, pers comm), Whitby (Peers and Radford, 1943, fig 14), York (Waterman, 1959, figs 11.2, 25.2) and Shepperton Green, Surrey (Clark, 1979, fig 13, no. 2). Other variants found at *Hamwic* and

Portchester have a larger square head with three or four ring-and-dot stamps (Addyman and Hill, 1969, fig 26, no. 8; Cunliffe, 1976, 217, fig 139, no. 54).

198. *Not illustrated* (PEA87, SF 258, pit [143])
Pin with squared and faceted head 6mm across, and ?rolled shaft *c.* 2mm in diameter; two joining fragments, surviving length 55mm. Very poor condition.
199. *Not illustrated* (PEA87, SF 399, cesspit [91], fill [107])
Lower end and point of a pin or needle, surviving length 20mm. Poor condition.
200. *Not illustrated* (PEA87, SF 480, pit [66])
Shaft and point of a pin or needle, surviving length 45mm. There is no trace of either a pin head or an eye.
201. *Not illustrated* (PEA87, SF 521, layer [129])
Two fragments of a ?pin shaft with a slightly polygonal section, as if filed to a rounded shape; very eroded (lengths 19mm and 17mm, diameter 2mm).
202. *Not illustrated* (PEA87, SF 417, layer [129])
Part of the shank of a pin or needle with decoration consisting of two incised bands 1mm apart, 4mm above one of the broken ends; surviving length 14mm, diameter 1.5mm.
203. *Not illustrated* (PEA87, SF 126, dark earth [213])
Shaft and point of a pin or needle, slightly bent; length *c.* 35mm, diameter *c.* 2mm.
204. *Not illustrated* (PEA87, SF 106, dark earth [213])
Pin shaft, surviving length 37mm, diameter 1.5mm.
205. *Not illustrated* (PEA87, SF 180, dark earth [213])
Pin shaft and point; surviving length 23mm. The X-ray suggests that it has a swelling in the shaft *c.* 8–9mm above the point, in the manner of the *Hamwic* pins (eg Addyman and Hill, 1969, fig 26, no. 5).

Pin/toilet article

206. Fig 41 (PEA87, SF 367, pit [205], upper fill [210])
Object with flattened spatulate end, possibly part of a toilet article, strap end or pin, although the shank is rather square in section for the latter (L. Webster pers comm). Surviving length 37mm, of which the head is 16mm; the maximum width of the spatulate end is 17mm.

Mount

207. Fig 41 (PEA87, SF 76, dark earth [213])
Mount or dress fitting, possibly tinned, with a lobed terminal and one ?rivet on the underside. The perforations in each lobe are oval, while the central perforation at the broken end is lozenge-shaped. Maximum width 19.5mm, surviving length 15mm. Probably of Saxon date. Openwork mounts and dress-hooks, with both square and rounded ends, have been found at Shouwen in Holland (Capelle, 1978, fig 16, nos 81, 82; fig 18, 99).

Strap-ends

208. Fig 41 (PEA87, SF 166, dark earth [213])
Strap-end with baluster-shaped shaft. The plain rounded split attachment plate has a single perforation, with the rivet still *in situ*. The central part of the shaft is decorated with an incised lattice design (20mm), bounded at the top by two incised horizontal lines. The lower end of the shaft is plain, tapering to a collar and drop at the terminal. Length 45mm, maximum width 2.5mm. This characteristic swelling of the shaft begins in the 7th century and continues into the 8th (L. Webster pers comm).
209. Fig 41 (PEA87, SF 491, dark earth [213])
Strap end (length 27mm), with sub-rounded shaft and a flattened split attachment plate (8mm × 4mm max.) with a single rivet hole. The upper side is decorated with groups of incised transverse bands on the shaft, and an incised vertical line joining the perforation and the centre of the lobed edge of the attachment plate. The reverse is plain. This is an unusually small and elegant strap end (L. Webster pers comm). Similar tags, with round or oval shafts, have been found at Maxey (Addyman, 1964, 62, fig 17, no. 1) and Winchester. Larger examples, with a square shaft, have been found at Portchester (Cunliffe, 1976, 216, fig 136, no. 52) and in a Late Saxon context at Westminster Abbey.
210. *Not illustrated* (PEA87, SF 512, grey/dark earth [65])
Part of a small ?strap-end *c.* 12mm wide, with a lobed terminal and a perforation within each lobe. The two plates have snapped diagonally; surviving length 7mm, approximate thickness 3mm.

Tweezers

211. Fig 41 (PEA87, SF 246, pit [143], fill [145])
Pair of tweezers with inturned tips, length 162mm, width at lower end 8mm. The delicate decoration on both sides comprises a series of segmented arcs *c.* 3–4mm across, angled diagonally from top left to bottom right.
212. Fig 41 (PEA87, SF 113, layer [186])
One half of a pair of tweezers, with inturned tip; in very poor condition, but with traces of horizontal incised decoration. Length 40mm, maximum width 6mm.

Other finds

213. Fig 41 (PEA87, SF 211, pit [143], fill [146])
Vessel fragment or binding, with one edge rolled inwards. Distorted, maximum surviving dimensions 35mm × 28mm.
214. Fig 41 (PEA87, SF 527, layer [17])
Bent and twisted sheet of white metal; the upper edge is more or less straight, the lower edge has a shield-shaped point. Possibly a fitting, but no rivet holes are apparent; more likely a patch or piece of scrap metal.
215. Fig 41 (PEA87, SF 370, trench [152])
Curved object with rectangular section; broken at one end, bevelled at the other on one side for

- c.* 9mm to give a pointed tip. Total length if straight would be 80mm, width 3–4mm, thickness 2mm. Possibly an awl or similar tool, but since one end is missing the function cannot be ascertained.
216. Fig 41 (PEA87, SF 458, dark earth [213])
Waisted strip (bent, surviving length 38mm), with an oval cross-section at the centre and irregularly flattened ends, both of which have snapped at a rivet hole.
217. Fig 41 (PEA87, SF 469, dark earth [213])
Flat circular object, probably a weight (3g), 15mm in diameter, 3mm thick. The upper face is decorated with two concentric rings, the inner 8mm across. An exact parallel has been found at Yngso, Ahus parish in the province of Scania, Sweden, together with glass and coins giving a date of *c.* AD 700–750 (Kalland pers comm).
218. Fig 41 (PEA87, SF 2, dark earth [213])
Binding/ferrule with oval section, made from a soldered strip 9mm wide, tapering conically from 17mm to 15mm across. The decoration comprises a single horizontal incised line 1mm above the wider circumference, and two incised horizontal lines around the centre. Possibly medieval.
219. Fig 41 (PEA87, SF 470, post-medieval well, not described above)
Small wedge-shaped object *c.* 3.2mm long, tapering from 6mm at the thicker end to 3.5mm at the thinner; both ends appear to have been snapped off. The upper face has two oblique grooves approximately 7mm and 10mm across, the broader of which contains two shallower grooves. There are also grooves on each side at the thicker end, with which the object may have been held in place. Function unknown, possibly part of a tool.
220. Fig 41 (PEA87, SF 270, layer [186])
Length of chain with six links each *c.* 12mm long. Each link comprises a length of wire less than 0.5mm in diameter, looped three and a half times, and then tightly bound round itself to give a loop at each end and a constricted central portion (thickness 7mm). Probably medieval.
- stud and from the same object as No. 222. Surviving length 7.5mm, diameter at broken end *c.* 2mm.
224. *Not illustrated* (PEA87, SF 312, pit [205], fill [210])
Part of a stud. Surviving length 7mm, width 4mm.
225. *Not illustrated* (PEA87, SF 320, pit [74], layer [81])
Part of a small stud or rivet, surviving length 6mm.
226. *Not illustrated* (PEA87, SF 198, layer [111])
Small flat object, 7 × 8 × 1mm, with one side apparently partly folded back on itself; probably part of a strip or binding.
227. *Not illustrated* (PEA87, SF 430, layer [69])
Part of a small object comprising two strips bent to form a right angle; surviving dimensions 7 × 7mm; 7 × 4mm.
228. *Not illustrated* (PEA87, SF 362, layer [69])
Five very small flat fragments, the largest of which appears to be diamond-shaped (7mm across, surviving length from pointed end 9mm, less than 1mm thick).
229. *Not illustrated* (PEA87, SF 239, pit [143], fill [146])
Two small flat fragments of a mount or binding.
230. *Not illustrated* (PEA87, SF 378, layer [111])
One fragment of bent strip, length 7mm.
231. *Not illustrated* (PEA87, SF 261, dark earth [213])
Very small diamond-shaped fragment, 7mm × 5mm, with a 'V'-shaped notch on one side.
232. *Not illustrated* (PEA87, SF 488, pit [205], fill [210])
Three joining fragments, possibly from a decorative strip, in very poor condition. Surviving length *c.* 2.5mm.
233. *Not illustrated* (PEA87, SF 475, layer [69])
Fragment with rounded edges, 15mm × 12mm; the thickness tapers from 6mm to *c.* 2mm; the X-ray shows no obvious shape.
234. *Not illustrated* (PEA87, SF 116, dark earth [213])
Complete ring with rounded edges and flattened surfaces; diameter 18mm, thickness 2mm. Date and function uncertain; this may be a medieval object.

The iron

by LYN BLACKMORE

The Saxon objects from the Peabody site and the National Gallery basement are listed individually, as are objects of Saxon/medieval date from the 'dark earth'; Saxon nail fragments are also listed. A few medieval and later objects are described; details of the remainder are available in the site archives.

Spear

221. *Not illustrated* (PEA87, SF 402, layer [69])
Sub-rounded object, 9 × 8 × 6mm, possibly a pin-head or part of a stud or mount.
222. *Not illustrated* (PEA87, SF 353, layer [69])
Hemispherical object *c.* 7mm in diameter, height *c.* 3mm; probably the head of a stud.
223. *Not illustrated* (PEA87, SF 366, layer [69])
Small hooked object, probably the bent shank of a
235. Fig 42 (PEA87, SF 504, grave [138])
Spearhead in four pieces. The blade is *c.* 385mm long, apparently straight-sided though slightly wider towards the socket and tapering to a broad point at the tip; the maximum width is *c.* 60mm, the maximum thickness *c.* 10mm. The handle socket, which is *c.* 145mm long, is slightly oval in shape, 25 × 28mm. The method of manufacture, or

Miscellaneous

The following include fragments from studs, bindings and unidentifiable stratified Saxon objects and finds of uncertain date from the 'dark earth'. Medieval and later finds, which comprise a lace chape, buckle fragments and a number of post-medieval pins found in the upper deposits, are not detailed here.

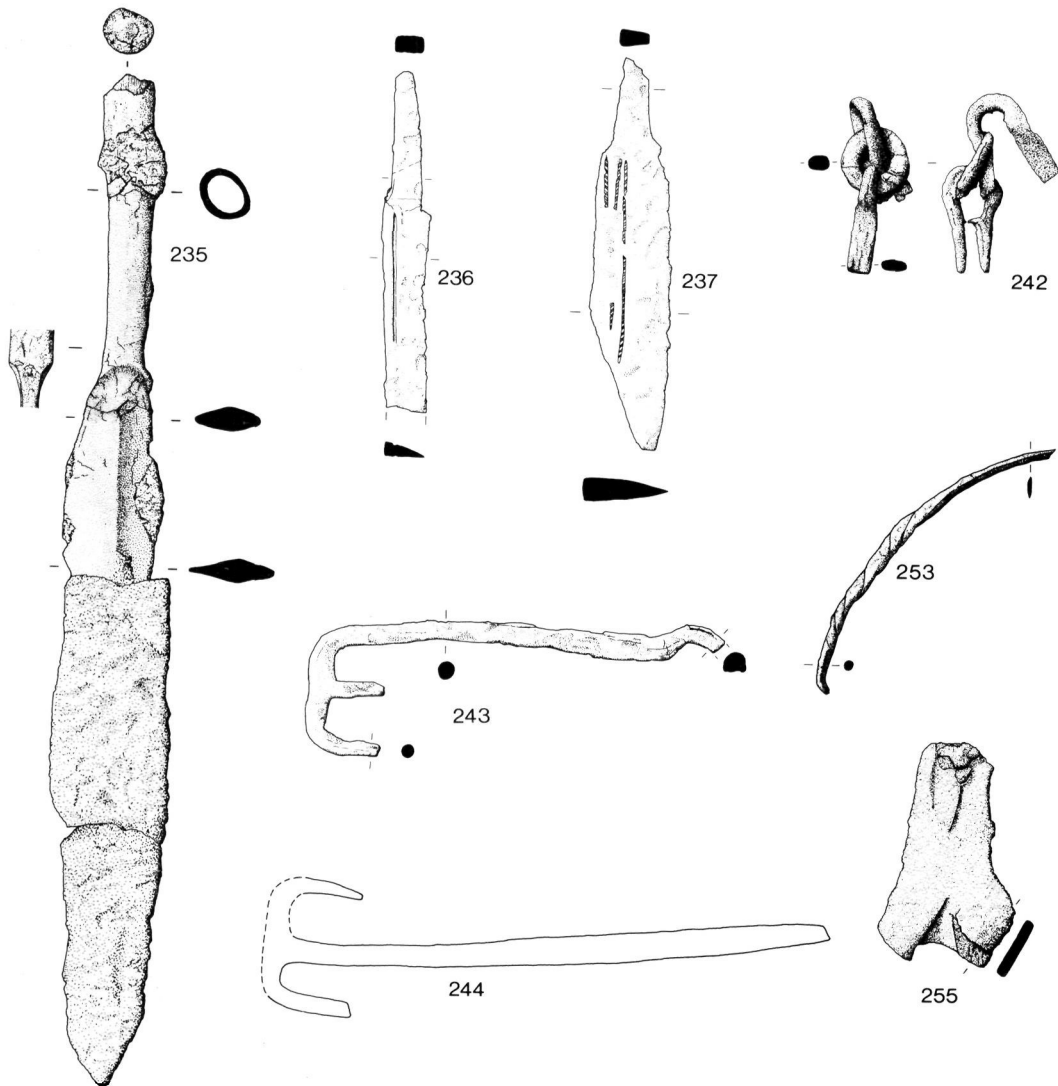


FIG 42 The Peabody site: the ironwork: No. 235 (1/4); others (1/2)

socket type, cannot yet be determined as conservation work is still in progress. Some traces of mineralised wood are preserved in the socket, but no shaft survived in the ground.

Spearheads from the London area were first classified by Wheeler (1935, 162–172), and pagan Saxon examples were again studied as part of a national review by Swanton (1973). Dating is a problem, however, since most derive from graves, or are unassociated land or river finds, and the chronology of the different Middle Saxon types is as yet uncertain. As pointed out by Swanton, spearheads are the most common iron object found

in pagan Saxon cemeteries (Swanton 1973, 2); the spear was regarded as symbolising the status of a free man in Germanic society, and was thus taken to the grave with him. Whether this tradition persisted into the Middle Saxon period is unknown. For all these reasons the Peabody find is of considerable interest and importance, being from a single grave, of apparently 8th-century date, in a settlement context.

This spear appears to conform to the pattern noted by Wheeler in later Saxon spears, in that it has a longer blade and socket than the earlier types (the proportions here are approximately 2.5:1) and

a more marked transition from the socket to the blade, in the style termed by Wheeler 'beaked'. There is no trace of any reinforcement of this junction. The closest published parallel is the Museum of London's collection is from the Thames at Fulham (Wheeler, 1935, 173, pl XII; acc. A24367), although that blade is rather longer and narrower (*c.* 520mm by 4mm). This is described by Wheeler as 'large, clumsy and formless, showing the later Saxon craftsmanship at its worst'.

According to Swanton's classification, the Peabody spear in its present state could fall into Group E4 or Group G2, although it resembles some blades illustrated in Group E3 (Swanton 1973, 83–101). Group E4 differs from Group G in that the sides of the blade clearly taper to the point, whereas those in Group G are parallel. Group E4 appears to be a late 6th- and 7th-century type, with concentrations in Kent and north Surrey; the length of the blades ranges between 300 and 500mm. Group G comprises a series of sword-like blades. Type G1 ranges in length from 220 to 300mm, type G2 from 350 to 600mm. The dating appears to correspond with that of Group E4, although possibly beginning slightly earlier; the geographical distribution however is more limited, with most examples from Kent, and few from the London area. On balance it would seem most likely that the Peabody spear belongs to Group E4, but poor preservation may make this impossible to ascertain.

Knives

236. Fig 42 (PEA87, SF 380, layer [209])
Straight-back knife with tang, point missing. Surviving length *c.* 90mm (tang 35mm), width of blade *c.* 11mm. The grooves along the back are thought to be a later Saxon trait (Cunliffe, 1976, 200).
237. Fig 42 (PEA87, SF 260, 'dark earth' [213])
Angled-back knife with tang, decorated with three inlaid strips on one side only. These comprise two types of copper alloy, one with a high tin content and a whiter colour, twisted to give a striped pattern. Surviving length *c.* 105mm (blade *c.* 83mm); Maximum blade width 21mm. Decorated knife blades are quite rare, but in some cases the absence of decoration may be apparent—caused by poor preservation—rather than real; where the inlay on this example is missing, the impressions are so slight that they would have gone unnoticed had no inlay survived at all.
238. *Not illustrated* (PEA87, SF 478, context [167])
Angled-back knife blade with tang, surviving length *c.* 97mm, maximum width 22mm.
239. *Not illustrated* (PEA87, SF 466, dark earth [213])
Fragment from the tip of a small knife blade, surviving length 37mm, maximum width *c.* 8mm.
240. *Not illustrated* (NGA87, SF 14, pit [226], fill [244])
Knife blade or ?strike-a-light with triangular cross-section, ?thinner than usual; surviving length *c.* 65mm.

241. *Not illustrated* (NGA87, SF 44, pit [226], fill [244])
Knife blade with tang, the point missing; surviving length 95mm, width across the blade *c.* 15mm.

Strap connector

242. Fig 42 (PEA87, SF 560, pit [143], fill [146])
Two looped strap ends (length *c.* 27mm), each with two flat plates and a rounded end, linked by a ring *c.* 17mm in diameter and *c.* 4mm thick. The plates of the larger surviving strap end are *c.* 17mm × 7mm, with the remains of two rivets *in situ*; the second strap end was of the same size originally but is broken, with no surviving rivets. This object has elements in common with two finds from West Stow: a strap connector comprising two strap-ends joined by a 'D'-shaped link, and a pair of interlinked strap ends (West, 1985, fig 60, no. 5; fig 129, no. 2). Another similar fitting, with a single larger rivet and attached to a possible ring fragment, was found at Cowdery's Down (Crowther, 1983, 251, fig 72, no. 42).

Keys/Girdle hangers

243. Fig 42 (PEA87, SF 571a, layer [209])
Near-complete key of Roman type with two wards, shank with square section and remains of a suspension loop. Bent; total length 110mm. Similar smaller keys (80mm) were found at West Stow (West 1985, fig 100, no. 4; fig 111, no. 1).
244. Fig 42 (drawn from X-ray) (PEA87, SF 393, layer [208])
Girdle hanger or key with two wards. The shank is ?square-sectioned. Three joining fragments, total length 150mm; width across the lower end 38mm. One other loose fragment. Keys such as this were found at West Stow (West, 1985, Fig. 240, Nos. 1, 2).
245. *Not illustrated* (PEA87, SF 533, layer [22])
Key fragment with tapering shaft and one of two wards surviving. Surviving length *c.* 65mm, width of shaft *c.* 11mm, tapering to *c.* 9mm.
246. *Not illustrated* (PEA87, SF 484, pit [149])
Possible ward fragment, comprising a rod bent to form a sub-angular hook, tapering in diameter from 8mm to 6mm.

Key/fitting

247. *Not illustrated* (PEA87, SF 359, layer [182])
Flat strip *c.* 20mm wide and *c.* 5mm thick, bent over on itself for *c.* 30mm to form a hook, the distance between the two inner surfaces being 20mm. Possibly a door fitting, part of a tool or part of a handle. It resembles a complete handle with a sub-rectangular/square section found at Portchester Castle (Cunliffe, 1976, 200, fig 132, no. 16). At Shepperton Green, however it was suggested that two complete objects of similar type, with a loop at one end and a double hook at the other, may have been keys (Clark, 1979, 118, fig 13, nos 8, 9).

?Woolcomb teeth

248. *Not illustrated* (PEA87, SF 271, pit [74], fill [80])
Rod *c.* 4mm in diameter, surviving length 52mm.
It is rather thin for a nail, but is very similar in dimensions to the teeth of the nearly complete woolcomb found on the Maiden Lane site (Blackmore, 1988b).
249. *Not illustrated* (PEA87, SF 238, pit [143], fill [147])
Rod, surviving length 37mm, split and distorted, maximum width 8m.
250. *Not illustrated* (PEA87, SF 86, dark earth [213])
Rod, length 38.5, diameter 405mm.
251. *Not illustrated* (PEA87, SF 315, ditch [178], Layer [185])
Rod, diameter *c.* 3mm, surviving length 42mm.

Spade shoe

252. *Not illustrated* (NGA87, SF 8, pit [226], fill [247])
Two fragments from a shoe for a square-ended spade *c.* 140–150mm across and *c.* 20mm thick.
One side, part of the other, and half the lower edge survive; the inside length of the complete side is *c.* 62mm. The shoe would have fitted over the cutting edge of the wooden spade to protect it. A good late Roman example of similar dimensions (210 × 150mm) is from a 4th-century grave at Krefeld-Gellep (Pirling 1986, fig 91), and among Saxon examples a tip for a broad round-ended spade may be noted from *Hamwic* (Addyman and Hill 1969, fig 24 no. 13).

?Handles

253. Fig 42 (PEA87, SF 571b, layer [209])
Slightly curved twisted iron rod tapering to a simple hook at one end; the other, slightly asymmetrical, broken end is hammered flat. Surviving length *c.* 85mm. The closest parallel is a handle with twisted section and a hook at each end from Portchester Castle (Cunliffe, 1976, 200, fig 132, no. 17), identified as a bucket or pail fitting. The flattened section on the find from the Peabody site, however, appears rather flimsy for this. Other parallels, from West Stow, are a twisted rod which appeared to have a flattened strip terminating in a simple hook at each end (West, 1985, fig 241, no. 10, no function suggested) and a partly twisted strip with a hook at one end (*ibid* fig 241, no. 10). Also from West Stow is a key with a twisted handle, but which has a square-sectioned shank (West, 1985, fig 216, no. 9); again, the flattened section of this find appears rather thin for a key.
254. *Not illustrated* (PEA87, SF 396, pit [205], fill [208])
Length of ?twisted iron rod in very poor condition *c.* 7mm in diameter, surviving length 70mm; possibly as No. 253 above.

?Bucket fitting

255. Fig 42 (PEA87, SF 232, pit [143], fill [146])
Part of a ?composite object comprising two splayed

strips *c.* 10mm wide and 3mm thick, possibly with a ?plate of copper alloy at the joined end, and traces of organic material, perhaps leather, on the reverse. In form this resembles the terminal of some girdle-hangers (*eg* West, 1985, fig 240, no. 1). A more likely function is as a decorative fitting for a chest, door or bucket (*ibid* fig 267, no. 1; fig 268, nos 1–3), although there is no trace of any rivet holes.

?Shoe plate fitting

256. *Not illustrated* (PEA87, SF 247, layer [131])
Three joining fragments from a plate *c.* 10mm wide and *c.* 2mm thick, shaped to form an arc *c.* 60mm across. X-ray indicates that the plate was pierced by paired rivets spaced at intervals of up to 10mm, although these do not show on the conserved object. This would appear to be part of a sole plate, although it may be part of a decorative fitting. Being well stratified this must be of Roman or Saxon date, but no direct parallels are known.

Other fittings

257. *Not illustrated* (PEA87, SF 241, pit [143], fill [146])
Two joining fragments forming an 'L' shaped object. The longer side (surviving length 50mm) has an oval cross-section like a nail, the shorter side has an irregular profile with a rectangular section *c.* 15 × 10mm. This may be part of a bracket from a chest or a structure; possible parallels include a number of coffin fittings from the cemetery site at Finglesham (Chadwick 1958, fig 15, no. 15).
258. *Not illustrated* (PEA87, SF 372, layer [198])
Flatish strip *c.* 5mm long, 5mm wide and *c.* 2mm thick. Possibly part of a blade.
259. *Not illustrated* (PEA87, SF 348, layer [69])
Fragment of flat plate with partly rounded edge, and a ?rivet or boss protruding from one side. Approximately 5mm thick, dimensions 60mm by 42mm. This may be associated with Nos. 260 and 261.
260. *Not illustrated* (PEA87, SF 446, layer [167])
Flat plate with ?partly rounded edge, *c.* 4mm thick.
261. *Not illustrated* (PEA87, SF 64, pit [117])
Plate; small quadrant-shaped fragment approximately 1mm thick with curving outer edge, the sides measuring 20mm and 25mm.
262. *Not illustrated* (PEA87, SF573, cesspit [91], fill [106])
Strip *c.* 60mm long.
263. *Not illustrated* (NGA87, SF 21, pit [222], layer [225])
Two plates(?), one 40 × 18mm, the other 30 × 17–20mm, each *c.* 2mm thick; the corrosion products appear to contain traces of organic material.
264. *Not illustrated* (NGA87, SFs 13, 18, pit [44], layer [241])
Four fragments of iron plate *c.* 3mm thick, one with wood/charcoal adhering and traces of other organic matter (?leather).
265. *Not illustrated* (NGA87, pit [226], fill [247])

Strip with two possible sub-rectangular perforations; surviving dimensions 34 × 4mm.

Washers, staples and nails

266. *Not illustrated* (PEA87, SF 415, layer [69])
Badly corroded rove?. Two joining fragments with roughly diamond-shaped outline.
267. *Not illustrated* (PEA87, SF 195, dark earth [213])
Rove or washer; diamond-shaped (55 × 35mm, c. 9mm thick) with central perforation c. 12mm across. Possibly from a boat, but also found on doors. Probably Saxon; a boat nail with a similar diamond-shaped washer was found in the 9th-century ditch on the Maiden Lane site (Blackmore, 1988b). See also Wheeler (1935, Pl.XVII).
268. *Not illustrated* (PEA87, SF 515, pit [205], fill [208])
Staple, comprising a strip c. 50mm long, c. 13mm wide, bent to form a squared face c. 25mm across with a pointed tip on the return; the other end was originally the same but has been distorted.
269. *Not illustrated* (PEA87, SF 407, layer [213])
Staple? Tapering strip c. 15 × 5mm, bent to form a squared face c. 30mm across, with a pointed tip (c. 12mm) on the return. The broken side is c. 23mm long. Probably as No. 268 and possibly related to No. 270.
270. *Not illustrated* (PEA87, SFs 431, 403, 429, 'dark earth' [213])
Staple? Curved strip c. 35mm long, with rectangular section c. 15mm × 5mm, possibly related to No. 269 above. A few loose fragments of iron may also come from this object.
271. *Not illustrated* (NGA87, SF 46, pit [226], fill [247])
Staple; external width 50mm, internal width 45mm; the inner edge of the prongs is c. 13mm.
272. *Not illustrated* (PEA87, SF 338, pit [205], fill [210])
Three fragments, found together, including a rod bent over on itself to form a single loop or spring, a nail fragment and a flat strip with shaped ends (55mm × 10mm), probably part of a fitting.
273. *Not illustrated* (PEA87, SF 525, layer [129])
Tip of a nail or staple (possibly as No. 274); length c. 25mm.
274. *Not illustrated* (PEA87, SF 506, layer [129])
Two joining fragments from a bent nail or staple (length c. 35mm), possibly as No. 273.
275. *Not illustrated* (PEA87, SF 574, pit [71])
One small nail 28mm long; one nail shank or spike 60mm long.
276. *Not illustrated* (PEA87, SF 30, dark earth [213])
?Nail or anvil with square-sectioned shank surviving to 65mm, and large round head 45 × 55mm. The fact that the head is very much off-centre suggests that this may have been a small anvil (J. Clark pers comm), but it may be a boat nail or similar structural fitting.
277. *Not illustrated* (PEA87, SF 468, dark earth [213])
Complete nail in good condition, length 73mm, diameter of head 27mm. Possibly medieval or later.
278. *Not illustrated* (NGA87, SF 16, pit [226], fill [247])
Two shafts, one 86mm long, diameter 50mm, the

other 94mm long, diameter 10mm; possibly tongs or folding scales, or just two spikes corroded together.

279. *Not illustrated* (NGA87, SF30, pit [226], fill [241])
Three joining fragments from a ?spike, surviving length 255mm; the rectangular cross-section is c. 13 × 10mm. One end is squared, the other appears to be pointed.

Miscellaneous

280. *Not illustrated* (PEA87, SF 207, upper fill of ditch [178])
Annular buckle c. 39mm in diameter, with cross bar and tongue *in situ*. Probably medieval.

Ironwork from the National Gallery extension

Although slag was present in several contexts (see below), very little iron was found, and this is either in poor condition or of post-medieval date. The most important find for dating purposes is a horseshoe, No. 281 (SF 12), which was found in fill [357] of pit [346]. This has oval holes and a wavy outer edge, and is typical of the later 12th-early 13th century; this agrees with the pottery and fits very well with the archaeomagnetic date for the hearths in pit [346] (see p. 170).

Metalworking slags and residues

By J. G. McDONNELL

Introduction

Material described as 'slags' is commonly recovered from excavations of settlement and industrial sites (of Iron Age or later date). In general slags can be divided into two broad groups. First, the diagnostic slags which can be attributed to a particular industrial process (*eg* ironworking). The second group, the non-diagnostic slags, cannot be attributed to a particular process, either because they may be generated by non-industrial processes (*eg* fuel ash slag), or because they could have been generated by a number of different processes but show no diagnostic characteristic that can identify the process (*eg* hearth or furnace lining). In many cases the non-diagnostic residues may be ascribed to a particular process through archaeological association. A discussion of slag types can be found in the literature (McDonnell, 1983; McDonnell, 1988).

The full details of the metalworking slags and residues from the Peabody site and the

National Gallery extension, including the weights of each slag type per context, are available in the respective site archive reports.

The Peabody site

There was a very small quantity (0.04kg) of possible smelting slag from the 'dark earth', but it was too insignificant to be evidence for iron smelting on the site or in the vicinity. There was a large quantity of smithing debris comprising 60.6kg of smithing slag lumps (SSL) and 4.2kg of hearth bottoms (HB). In general the smithing slag had a solid texture, with little excess silica available to give a cindery appearance.

There were eleven contexts containing more than 1kg of slag, of which only one exceeded 5kg; this was layer [210], the uppermost fill of pit [205], which contained 17.99kg of smithing slag and 1.24kg of hearth bottoms. Despite this large concentration of slag there was very little hearth lining present (0.06kg in total), of which the largest amount (0.03kg), was in layer [210]. The lack of this residue again argues for the smithing activity to have been carried out elsewhere, but given the quantity in layer [210] it must have been reasonably close, possibly within a hundred metres or so.

A small amount of cinder (0.03 kg) was recovered, which probably derived from the smithing activity, but is too small to be significant.

The phase distribution (Table 9) indicates that there was significant smithing activity during the Saxon period. The slags are also present in the 'dark earth' as disturbed material. The quantity of slags in later

deposits suggests that they derive from the disturbance of earlier material.

The main concentrations of slag occurred in Area B (Saxon phase, 15.5kg (SSL and HB)), and Area D. Spheroidal hammer scale, which is expelled during welding, was recovered from an environmental sample of the 'dark earth'.

Conclusion

There was sufficient smithing waste concentrated in the Saxon deposits and 'dark earth' in Areas B, C, and D to indicate smithing activity close to the site, but the recovery of only a small amount of hammer scale from one context in this area indicated that the smithing did not take place on the site.

The National Gallery extension

The diagnostic slags recovered from the National Gallery comprised hearth bottoms and smithing slag lumps, both derived from the iron smithing process. There was no evidence for iron smelting. The non-diagnostic slags comprised hearth lining and natural ferruginous concretion.

A total of 14.84kg of smithing slag lumps and 1.49kg of hearth bottoms from thirty-nine contexts was examined. Only three contexts contained more than 1kg of slag: an undated layer of cobbles [250] which was partly made of slag, and layers [362] and [363] in a 12th-century pit [346] (of which layer [363] contained 4.3kg). This distribution, of generally small amounts of slag in many contexts, is typical of a background distribution, *ie* the slag being accidentally

TABLE 9. Phase distribution of the Peabody site slag (weight in grammes)

	SSL	HB	SMELT	CIN	HL
Saxon strata	36024	2787		20	45
'Dark earth'	18182	420	45		17
Medieval strata	4814	692			
Post-Medieval	555	302			
Unascribed	1043			10	
Total	60618	4201	45	30	62

deposited with other general debris. The material in pit [346] may represent the deliberate dumping of blacksmithing waste. However, the very small amount of hearth lining recovered (0.14kg from four contexts, of which 0.12kg occurred in a Middle Saxon layer [275] in quarry pit [274]) is not associated with the smithing waste, and therefore may derive from a process other than ironworking.

The phase distribution of the slag, summarised in Table 10, shows that the majority of smithing slag was found in the early medieval contexts (10th–12th centuries), and that a small quantity was recovered from the Middle Saxon deposits. It cannot be ascertained whether the material from the 10th- to 12th-century contexts is residual or represents a contemporary deposit of slag.

Conclusion

The evidence is not strong enough to indicate Saxon smithing on the site. If the 10th–12th century material is redeposited Saxon slag, then the deposits would represent a small, but significant dump of smithing waste. If

TABLE 10. Phase distribution of National Gallery slag

	SSL	HB	HL
<i>Middle Saxon</i>			
Quarry pit [256] (lower fills)	1815	510	
Quarry pit [274] (lower fills)	1640		125
Sub-total	3455	510	125
<i>10–12th Centuries</i>			
Quarry pit [256] (upper fills)	430		
Quarry pit [274] (upper fills)	1263		
Pit [346]	7320	280	
Sub-total	9013	280	
<i>13th Century and later (including unstratified)</i>			
Sub-total	2375	700	17
Total	14843	1490	142

the medieval material was derived from contemporary activity then both deposits would be considered background levels. The estimation of what constitutes background levels will depend on evidence from other London sites of similar date.

A key mould

by LYN BLACKMORE

The 'grey earth' immediately beneath the dark earth in the north side of Area B produced one of the most interesting finds from the site: part of a mould for casting keys (No. 282, Fig 43).

The surviving fragment measures 79 × 60mm, and is *c.* 11mm thick; it appears to be made of a very fine micaceous brickearth. One outer edge survives; this is battered, but appears to be gently rounded, with no obvious lip or projection. The uneven convex upper surface is roughly wiped, but the slightly concave inner surface is carefully smoothed. Two main impressions are visible, apparently linked by a channel. On the left is a key with a slightly asymmetrical ring handle and a solid stem. The lower part of the impression is missing, but at right angles to this shaft is another impression with a squared end, probably the bit. This form is very similar to that of two iron keys found at *Hamwic* (Addyman and Hill, 1969, fig 24, nos. 14, 15). On the right is a second object, probably also a 'key' (length *c.* 50mm), with a solid handle and stem; the mould at the upper end of the handle is damaged, and it is not clear if this had a suspension loop. The handle form of this piece is similar to a class of late Middle Saxon strap end (*eg* Addyman and Hill, 1969, 70, fig 27, nos 3, 4). Their size suggests they were designed for small boxes.

At first sight some of these impressions appear so shallow as to be useless, and it was thought that the piece may have been a reject, since it did not respond noticeably to tests for metal residues at the Ancient Monuments Laboratory. However, this is the upper mould fragment, and the impressions in the lower half would certainly have been deeper; moreover, closer inspection shows

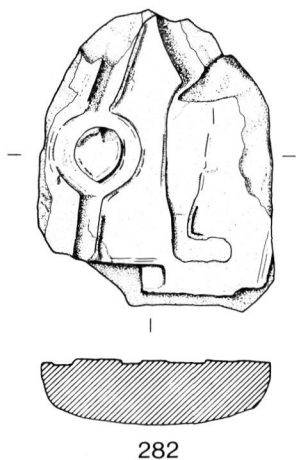


FIG 43 The Peabody site: a key mould (1/2)

that the edges do survive in places, and that there is a very faint trace of copper alloy impression against the upper edge of the bit of the first key. It seems likely, therefore, that the definition of the impressions has become less distinct through use and/or damage when the mould was opened.

This object is of considerable interest and rarity, as most Anglo-Saxon moulds are for brooches, pins and other personal items (see Craddock, 1990, 170–211). The number of key fragments from the site, and the variety in their shape, is in itself of interest since only one key was found at Jubilee Hall (Blackmore, 1988b, fig 35, no. 1), while none have been positively identified on any other sites in the area. The fact that copper alloy keys were being cast in the settlement is valuable evidence for a specific craft, but unlike *Hamwic*, where bronze-working is well attested (Addyman and Hill, 1969, 63, 66–71), there is a current lack in London of associated artefacts such as crucible fragments and other tools to suggest that this was carried out on an industrial scale. The Peabody site mould may thus reflect no more than the visit of an itinerant bronze smith.

The flint from the National Gallery extension

by N. MERRIMAN

Eight struck flints were recovered during the

excavations; all were residual. They can be divided into five unretouched flakes and three retouched tools, none of which are chronologically diagnostic. The tools consist of a serrated blade (Fig 44, No. 283), a knife-chisel (Fig. 44, No. 284) and a triangular knife with retouch along two sides (Fig 44, No. 285). These residual finds indicate the possibility of recovering *in situ* prehistoric material in the area.

The stone

by DAVID WILLIAMS

Introduction

Fragments of worked imported stone were found on all three sites, most of which derive from querns or hones. The National Gallery extension site also produced a number of unworked stone fragments. The petrological identifications were carried out on a site-by-site basis; the full reports are available in the site archives. Abbreviated geological descriptions are incorporated at the relevant points below.

The majority of quernstone fragments are of a dark grey, fairly coarse vesicular lava, containing conspicuous dark phenocrysts of pyroxene. Samples from Jubilee Hall and Maiden Lane were thin-sectioned and examined under the petrological microscope (Williams, 1988). 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, a region well-known in both Roman and Saxon times for supplying millstones and quernstones (Parkhouse, 1976; Kars, 1980; Peacock, 1980). While the possibility remains that these may be re-used Roman querns, the general lack of other Roman material on these sites, and the fact that such querns have been found on many sites in the Covent Garden area (Blackmore

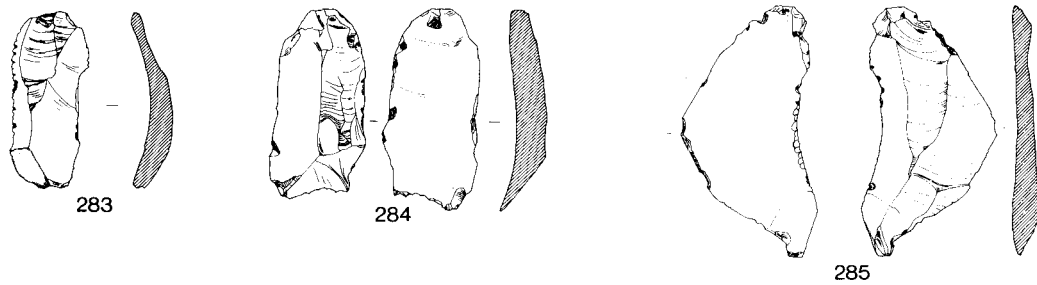


FIG 44 The National Gallery extension: the flints (1/2)

and Williams, 1988) makes it more likely that they are of Saxon date. It would seem that London was a major recipient of these stones, although it is not known whether these were for onward transmission to the surrounding region (Tomalin, 1977). A large dump of Mayen quernstones has been found on a Late Saxon site in the City (Sitecode TEX88; Dr R. Tomber pers comm). Many of these seem to have been transported to London in a rough state, to be finished locally (see Fenwick 1978 on the blank quernstones recovered from the Graveney boat). This was also 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 a number of quern types was represented (Parkhouse, 1976). The fragments from these London sites are all too small to allow reconstruction of any kind, but a few general observations are noted below.

Very little other stone was found on any of the sites; such pieces are noted at the relevant points below. The hones are all fragmented, but none appears to have been particularly distinctive in form.

The Peabody site

In all 24 fragments of lava quernstone were recovered, with a total weight of 4.33kg. One join within a feature was found, but no joins between contexts. The size and weight of the fragments varies considerably, the lightest

fragment being 40g, the heaviest 642g. Where both flat surfaces are present (seven fragments, including three with part of the central hole), the thickness of the quern can vary by several millimetres, but six are between 25–35mm thick; the seventh (which has part of the central hole) is 45mm thick. Two other fragments are over 45mm thick, and one is over 80mm thick, although this fragment has no flat faces and may be waste. One piece ('dark earth' [213], SF.183) possibly has an outer edge, suggesting a diameter of 260–280mm.

The lava quern fragments were scattered across the entire site. The majority (11 fragments) were found in the 'dark earth' or post-dark earth deposits. Seven fragments were recovered from Saxon cut features: well [19] (two joining fragments), cesspit [91] (two non-joining), pit [135] (one fragment) and pit [205] (two non-joining fragments). The remainder were found in gravel or clay spreads.

Other stone querns include a fragment of grey micaceous sandstone of unknown provenance (SF 550, layer [129]), and one possible quern fragment of ragstone from the Lower Greensand of Kent (SF 531, layer [39]).

Fragments of two hones were found, both of light grey Kentish ragstone. One has a rectangular section, 52mm long, with both ends broken (SF 104, layer [167]); the other has an oval section, 82mm long, rounded at one end, broken at the other (SF 278, pit [74], fill [80]).

Other fragments include: two irregular pieces of oolitic limestone (Jurassic), one (SF

463) from layer [69], the other (SF 300) from feature [77], and a very small fragment of shelly limestone, origin unknown (SF 202A, 'dark earth' [213]). One large fragment (SF 535, well [19], fill [20]) and four small irregular pieces of fairly coarse dark grey glauconitic limestone, are possibly from the Hythe Beds of Kent (SF 558, cesspit [91], fill [102], and SF 332, fill [108]; SF 306, pit [205], fill [210], and SF 381, fill [209]). An irregular piece of ?New Red Sandstone, possibly an erratic (SF 251, 'dark earth' [213]) and a small irregular piece of reddish-brown quartz sandstone (SF 202b, 'dark earth' [213]), and a lump of chalk (SF 408, layer [69]) were also found.

The National Gallery basement

The stone from this site is limited to four fragments of lava quernstone, with a total weight of 1.17kg. Of these three were stratified in pit [226] (SF 4, layer [242]; SF 5, layer [243], SF 24 layer [247]); and one was found in the modern pit [248] which cut pit [226]. All have two flat faces and range between 25–32mm thick. One fragment from pit [248] has part of a turning hole, and so must come from an upper quern.

The National Gallery extension

Twenty-one fragments and a number of smaller chips of lava quern were recovered, with a total weight of c. 2.5kg. Most fragments were stratified in Saxon features. One fragment was found in the lower fill of quarry [256] (layer [262]), one in the lower fill of quarry [274]. The largest group was in the rubble layer [272] in quarry [256], which contained 13 fragments. One fragment and numerous chips were found in the upper fills of quarry [256] (layers [302], [299]). Residual fragments were found in ditch [335] (layer [343]), and layer [363]. No joining fragments were found, either between or within contexts.

The fragments range greatly in size and shape. The fragments with two flat faces range from 22–25mm to 90–100mm thick. One piece from layer [272] contains a turning hole and so must come from an upper stone. Another displays part of a ridge and is probably a section of a lower stone from a

pot quern. In addition to the above, one unstratified ?quernstone fragment (SF 51) of a light grey sandstone of unknown provenance was found.

One possible hone of a grey micaceous sandstone of unknown provenance was found in a post-medieval feature (not published, SF 54).

The worked bone

by LYN BLACKMORE

Combs

286. Fig 45 (PEA87, SFs 318, 590, pit [162], fill [166])
Double-sided composite comb, made from antler; surviving length 118mm, width 45mm. The teeth are fairly equally spaced, with twelve teeth up to 20mm in length; the rivets are spaced at intervals of 15–20mm, with a gap of 25mm between those at the centre of the connecting plate, which is undecorated.
287. Fig 45 (NGA87, SF 17, pit [226], fill [241])
Two joining fragments from a double-sided composite comb, with three closely spaced iron rivets through the rounded connecting plate, which may be of bone or antler. The teeth, which are made of antler, are fairly evenly sized: 13mm long on one side, 15mm long on the other. All the teeth display latitudinal grooves acquired during use.
288. Fig 45 (NGA87, SF 36, pit [222], fill [225])
Fragment of connecting plate with part of a rivet hole, made of antler, decorated with longitudinally and latitudinally grouped incised lines; surviving length 33 × 12.5mm.
289. Fig 45 (PEA87, SF 6, post-medieval feature, not published)
Double-sided comb made from a single piece of ivory, width c. 67mm, surviving length c. 210mm. The nature of the comb and late context in which it was found suggest that it is probably of post-medieval date (16th- or 17th-century).
290. *Not illustrated* (PEA87, SF 586, 'dark earth' [213])
Fragment of connecting plate made from antler, with grouped incised lines and part of a rivet hole; the fragment has snapped both longitudinally and latitudinally, and measures only 11 × 6mm.
291. *Not illustrated* (PEA87, SF 588, 'dark earth' [213])
Fragment of a double-sided tooth-plate with part of a rivet hole, made of antler; the teeth have snapped off, and only the central part survives (10mm across, 6mm wide).
292. *Not illustrated* (PEA87, SF 589, cesspit [91], fill [108])
Tooth-plate fragment made of antler; the teeth are broken and only the central part survives (12mm across, 13mm wide).
293. *Not illustrated* (NGA87, SF 35, pit [226], fill [243])
Two unfinished fragments of connecting plate, made of antler.

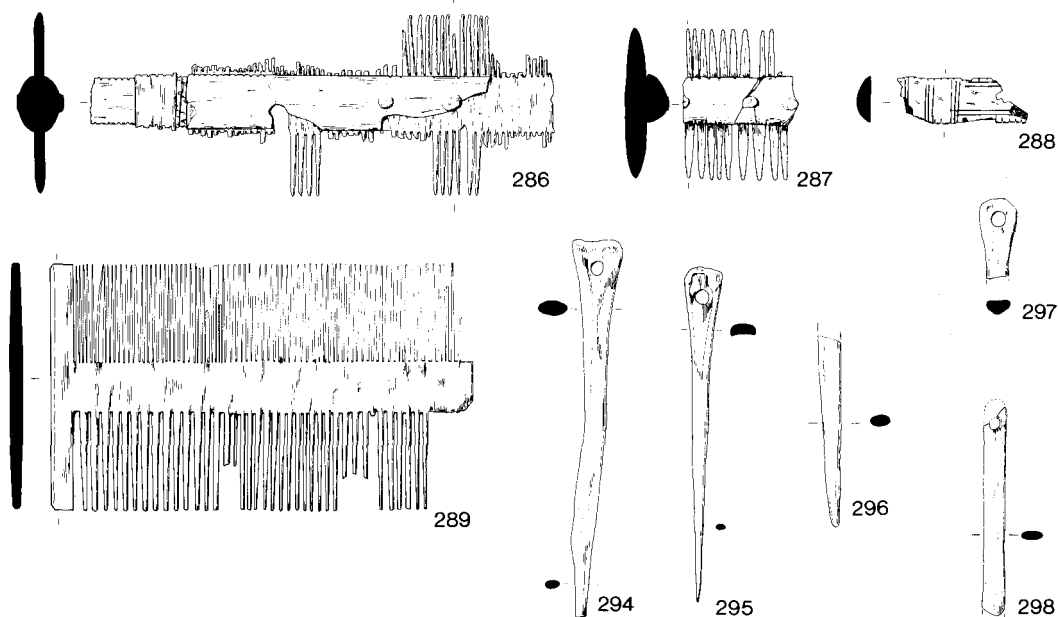


FIG 45 The Peabody site and the National Gallery basement: the worked bone (1/4)

Pins and needles

294. Fig 45 (PEA87, SF 561, pit [177])
Complete bone needle made from a juvenile pig fibula, roughly shaped and split at the pointed end; surviving length 100mm.
295. Fig 45 (NGA87, SF 32, pit [226], fill [247])
Complete bone needle with sharply pointed end, made from a sheep-sized animal long bone shaft, length 88mm. The surfaces are slightly polished.
296. Fig 45 (NGA87, SF 28, pit [226], fill [241])
Point and shaft of a ?needle or awl with oval cross-section, made from part of a large animal long bone shaft; surviving length 50mm. The edges near the pointed end are polished through use.
297. Fig 45 (NGA87, SF 37, pit [226], fill [247])
The perforated head of a bone pin or needle made from a pig fibula, the edges of which are polished through use; surviving length 20mm.
298. Fig 45 (PEA87, SF 591, pit [205], fill [209])
Part of the perforated head and shaft of a bone pin made from a sheep-sized animal long bone shaft; surviving length 55mm.

Waste

299. *Not illustrated* (PEA87, SF 594, unpublished context)
One fragment of the base or crown of an antler with the tines and beam sawn off.
300. *Not illustrated* (PEA87, SF 592, pit [158])
One fragment of antler beam with medulla and cortex, the top and bottom of which have been sawn off.
301. *Not illustrated* (PEA87, SF 243, pit [143], fill [145])

The tip of a large red deer antler tine.

302. *Not illustrated* (PEA87, SF 587, pit [114])

The end of a split antler plate.

303. *Not illustrated* (PEA87, SF 593, pit [66]; SF 24, 'dark earth' [213])

Two shavings of antler beam cortex.

304. *Not illustrated* (NGA87, SF 22, pit [222], fill [225], two frags; SF 15, SF 42, pit [226], fills [244] and [247])

Four small antler offcuts.

THE ENVIRONMENTAL ARCHAEOLOGY

(edited by J. RACKHAM)

Introduction

The three excavations were subjected to varying levels of environmental sampling and recovery. The Peabody Site (PEA87) and National Gallery basement (NGA87) (Fig 2) were extensively sampled: 122 bulk samples were collected from pits, cesspits, wells, floors and 'dark earth' deposits at PEA87, and a dozen samples, ranging in volume from 6 to 29 litres, were taken from the three pits excavated at NGA87. At the National Gallery extension (NAG87) the Middle Saxon gravel pits were extensive but less securely dated. Only ten samples have been studied: two

derive from a single Middle Saxon quarry pit, and the remainder are of 12th-century date and include three samples from a pit containing fires, hearths and their associated rake-out area. These latter were rich in carbonised cereal grains. Animal bone was collected during the excavations by hand; no sieving programme was established for their recovery.

The character of these sites, lying on a gravel terrace, suggested at the outset that 'environmental' studies were likely to be largely unproductive, and so the sampling and analyses were directed specifically towards the recovery of economic data. The study has been restricted to the analysis of the animal bone and shell collected by hand, the bone and shell from the soil samples, the carbonised plant material from the samples and, where preservation warrants, the mineralised and waterlogged plant remains.

Sampling and recovery

The sampling procedure in general followed that recommended in the Museum of London's Environmental Sampling Handbook. Samples, ideally of 30 litres (or more), are taken from all well-dated, stratified contexts, particularly pit fills, occupation and floor layers, well fills, ditch and drain fills, and dump or midden deposits. On the Peabody site a number of samples were collected from the 'dark earth', and from negative features in the deposits below that had become filled with 'dark earth'; this sampling was fairly extensive. At the National Gallery basement, where excavation revealed only three pits, a number of layers within the pits were sampled. At the National Gallery extension the archaeology comprised mainly sterile quarry fills. Only 10 samples produced a float for study.

The processing procedure was to float the whole sample, except where previously sub-sampled, in a 'Siraf' tank (Jones, 1983) over a 1mm nylon mesh, with the float being caught on a 250 micron sieve. The float was sorted under a low power microscope for identifiable plant remains, and the residue for identifiable plant and animal material. The sorted remains were identified by

comparison with botanical reference material held by the Museum of London and zoological reference material in the Osteology Room of the Zoology Department of the Natural History Museum. Floats of 100ml or less were fully sorted and analysed. Larger floats were divided in a soil sample divider, and two sub-samples from each were usually looked at to ensure that the subdivision did not give biased results; the size of the sub-sample chosen was between 50 and 75ml. In one case the two sub-samples were made up of two fractions which had been labelled slightly differently, and these have been kept separate.

Unfortunately, many of the samples from the Peabody site were wet-sieved on a 2mm mesh and no float retained. These were therefore only suitable for the study of the animal remains in the residues. The 33 remaining samples were processed in the recommended manner and included eight samples in which mineralised or waterlogged material was found preserved. Three of the latter, which contained waterlogged plant remains, were sub-sampled and a sample of 500g or 250g of unwashed sediment was processed in the laboratory over a 250 micron sieve. These sub-samples were used for the analysis of the waterlogged component of the plant remains. Two samples which were found to contain mineralised remains in the residue were reprocessed using a sub-sample of 1000g, also on a 250 micron sieve to ensure recovery of small mineralised material that might otherwise have been lost through the 1mm residue sieve. No organic preservation was found at the National Gallery extension but a number of the floated samples from the National Gallery basement included plant material preserved by waterlogging and mineralisation. Only the floated samples were analysed from the basement site, and no special processing was used for the samples containing preserved organic remains. The residues from the samples collected at the extension site were discarded without study, and so no discussion of the animal bone from the samples on this site will be presented.

The botanical results are set out in Tables 11-17, the taxonomic order being that of the

Flora of the British Isles (Clapham *et al* 1962), except that the cereals are listed first.

The animal bone data was recorded using a system for direct data capture onto computer developed at the Museum of London. The data analysis was carried out in a relational database (INFORMIX), and metrical analysis and graphical output carried out in the SYSTAT software package. The data from the Peabody site was compared with that from a number of other studies, including Dorestad in the Netherlands (Prummel, 1983); *Haithabu*, Feddersen Wierde and Elisenhof in Germany (Reichstein & Tiessen, 1974); Saxon Portchester (Grant, 1976); Coppergate and Fishergate in York (O'Connor 1989; 1991); *Hamwic* in Southampton (Bourdillon & Coy, 1980); and sites previously studied in London. The latter comprise the Treasury (Chaplin, 1971); Maiden Lane and Jubilee Hall (West, 1988a and b); Althorpe Grove (Locker, 1975); and Barking Abbey, Harmondsworth Manor, York Buildings and Westminster Abbey (West, in press).

These three sites form part of a detailed study of Saxon environmental material from London to be published elsewhere as a comparative analysis (Rackham, in press).

Plant remains

The Peabody site

by DOMINIQUE DE MOULINS

The results of the identification of the plant remains are set out in Tables 11 to 14. These are arranged by context types: Table 11 shows remains from the 'dark earth' layers, Tables 12 and 13 those from the cesspits, pits and wells, and Table 14 those from occupation layers, a hearth and a beamslot. The tables show the quantities of soil used and the size of the floats where recorded.

Description

The plant remains were preserved in three ways: through charring, through mineralisation, and anaerobically (probably as a result of waterlogging).

Charred remains were present in 32 of the

33 samples analysed, although in very small quantities. Those from well [26] came from the residue of the sample, as it was wet-sieved through a 2mm mesh sieve so that there was no float available for study. The only sample without charred material was [94], the primary fill of cesspit [91].

Of the cereal grains and fragments identifiable to particular species, barley, *Hordeum sativum*, was ubiquitous and most abundant. The barley in pit [62] was abundant enough to show a proportion of twisted and straight grains indicative of the likely presence of six-row barley. In this species the lateral grains of a spikelet are twisted, and although twisting is sometimes caused by charring, it is thought in this particular case that six-row barley is present. Seventy two percent of the samples produced barley grains, as against 54% which produced wheat.

Wheat was present in the samples from the 'dark earth' and in a few of the samples from the pits. Most was not well enough preserved to assign to species, and no chaff fragments were present to help with the identification. Some grains, however, could be assigned to the free-threshing *Triticum aestivo-compactum* sort, and it is thought that in fact only this species may be present. Rye, *Secale cereale*, was present in three samples. Oats, *Avena* sp., were likewise identified in three samples; two of these occurrences were mineralised remains in the fills of cesspit [91], of either the wild or cultivated type.

The other charred plant remains included mainly Gramineae seeds: brome grass, *Bromus* sp., fescue or rye grass, *Lolium* or *Festuca* sp.. Charred fragments of hazel nuts, *Corylus avellana*, were also recovered in the 'dark earth' and the occupation layers.

Mineralised seeds, grains and other plant fragments were found in the samples from cesspit [91], occupation layer [69] and layer [125]. The identification of such material is sometimes difficult as the characteristic features of the seeds are lost during the mineralisation process. Whole grains of wheat and barley were recovered, mainly from layer [95] of cesspit [91], and rye was identified in the layer above. Other plant parts had also been mineralised: one pea with a fairly well-

preserved hilum, and several apple or pear pips. A few seeds, such as knotgrass, black bindweed and elder, reflect a disturbed environment, although elder's presence in the cesspit samples suggests that it was eaten or otherwise utilised.

The most striking feature of the assemblage of mineralised seeds is the presence of many fragments of straw, grain and seeds of Gramineae. The straw cannot be assigned to either cultivated cereal or other Gramineae. Although some of the fragments are parts of large culms or stems; the grains or seeds are too badly preserved and fragmented to establish whether they are cultivated cereals. The presence of whole grains of cereals with whole seeds of *Bromus* sp. suggests, however, that this was a mixture of straw from cereal and hay products. The concentration was very high in cesspit [91], especially in context [95]; indeed, the sieving of those two samples yielded mainly these mineralised fragments. The samples from the layer above context [95], context [99], also contained mineralised fragments although not quite so many. The occupation layer [69] also contained small amounts of mineralised Gramineae.

Three samples were recognised as containing waterlogged material, and a 500g or 250g sub-sample analysed. All were from layers in cesspits [91] and [86] (Table 12). (A fourth sample, from layer [69], included waterlogged material in the float; this included only the resilient seeds of elder, and individual seeds of blackberry, pear/apple and rush species.) The macrobotanical remains from the cesspits were not particularly abundant in terms of either diversity of species or numbers of each species. The two most abundant seeds were blackberry, *Rubus fruticosus* agg., and elder, *Sambucus nigra*. Both are resistant to decay and, although the two species readily colonise disturbed ground, their fruits are edible, so that their arrival in cesspit contexts is likely to be in excreta.

In cesspit [91], the sample from the layer nearest to the bottom, [94], included most of the waterlogged seeds, but no mineralised remains. The two samples from the next layer, [95], contained both mineralised and waterlogged plant remains, while those from

layer [99] above that did not contain any waterlogged remains. The sample from occupation layer [69] contained a few items, both mineralised and waterlogged.

Discussion

Although charred material occurred in almost all the samples, the number of identifiable seeds was extremely small. The average number of cereal grains recovered per litre of soil was only 0.3, with 70% of the samples yielding this amount or less (Fig 46). The highest concentration occurred in pit [62], where a sample of 15 litres yielded eighteen grains of barley and two of oats.

The distribution of the concentration across the 33 samples (Fig 46) clearly indicates that all, except perhaps one or two, contain a background of dispersed charred material that can no longer be related to the specific circumstances in which the charring took place. As such, the relative frequency of occurrence of each species is probably random across all the samples, and a reasonable reflection of their relative importance or use on the site (Table 17). It is interesting to note that no chaff remains were recognised: chaff is less likely to survive charring and dispersal, but nevertheless this suggests that the grain derives from accidents with, or losses from, cleaned cereals. Analysis of the pottery has shown considerable mixing of the early and later Saxon fabrics throughout the site's deposits, and as charred plant remains are likely to have been subjected to the same mixing processes, it is not possible to interpret this material further. In contrast, the five samples that produced waterlogged or mineralised material show concentrations, or a character, that indicate *in situ* deposits, although preservation may have favoured the more robust seeds.

Layer [87], the lowest of cesspit [86], contained some remains preserved by waterlogging. These were few and included only elder, goosefoot, wild celery and hemp nettle. The large cesspit [91] adjacent to [86] included material in most of the samples from the bottom four layers. Only two, [94] and [95], were processed for organic remains. The bottom fill [94] was dominated by seeds of

Key to the habitat codes used in tables 11-16.
 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)

TABLE 11 Plant remains from PEA87: charred plant remains from the dark and grey earth layers

Species	Common Name	Habitat	Dark Earth						Grey Earth						Pit		
			New context	213	213	213	213	213	213	213	213	213	213	213		213	
<i>Cereals</i>																	
Triticum aestivum/compactum	club wheat	FI					1										
Triticum sp.	wheat	FI	2														
cf. Triticum sp.	wheat	FI		3													
Secale cereale	rye	FI		3													
Hordeum sativum	barley	FI	1														
cf. Hordeum sativum	barley	FI			1	1	1						4	1			
Cerealia	ind. cereal	FI					2	2	2				2	2	2	2	1
<i>Other plants</i>																	
Vicia/Lathyrus/Pisum sp.	vetch/tare/vetchling/pea	ABCDEFI					1										
Corylus avellana L.	hazel	CF															
Lolium/Festuca	rye-grass/fescue	BCD															
cf. Lolium/Festuca	rye-grass/fescue	BCD															
Bromus sp.	brome	ABD															
cf. Bromus sp.	brome	ABD															
Gramineae indet.	- culm node	ABCDEHIF															1

New contexts = renumbered contexts used in publication. Old contexts = original site contexts.

TABLE 12. Plant remains from PEA87: pits, cesspits and wells

Species	Common Name	Habitat	Pits		Cesspits	Pits		Cut	Wells
			143	114		74	91		
<i>Charred cereals:</i>									
Triticum aestivo/compactum	club wheat		1	3	1				
Triticum sp.	wheat		1						
Hordeum sativum	barley		5	3	2				
cf. Hordeum sativum	barley								
Avena sp.	oat			1					
cf. Avena sp.	oat								
Cerealia	ind. cereal		1	3	2				
<i>Other plants:</i>									
Prunus sp.	-								
Rosaceae indet.	thorn								
Fallopia convolvulus (L.) A. Love	black bindweed								
Sambucus nigra L.	elder								
Lolium/Festuca	rye-grass/fescue								
Bromus sp.	bromc								
Gramineae indet.	-								
<i>Waterlogged</i>									
Papaver somniferum L.	opium poppy								
Chenopodium/Atriplex sp.	goosefoots/oraches								
Chenopodiaceae indet.	-								
Rubus fruticosus agg.	blackberry								
Apium graveolens/modiflorum	wild celery/fool's watercress								
Ficus carica L.	fig								
Galeopsis sp.	hemp-nettle								
Labiateae indet.	-								
Sambucus nigra L.	elder								
Sambucus nigra/ebulus	elder/danewort								
Alisma sp.	water-plantain								

* = flint not collected, sorted from residue
 # = not recorded, flint sent to lab already sorted.

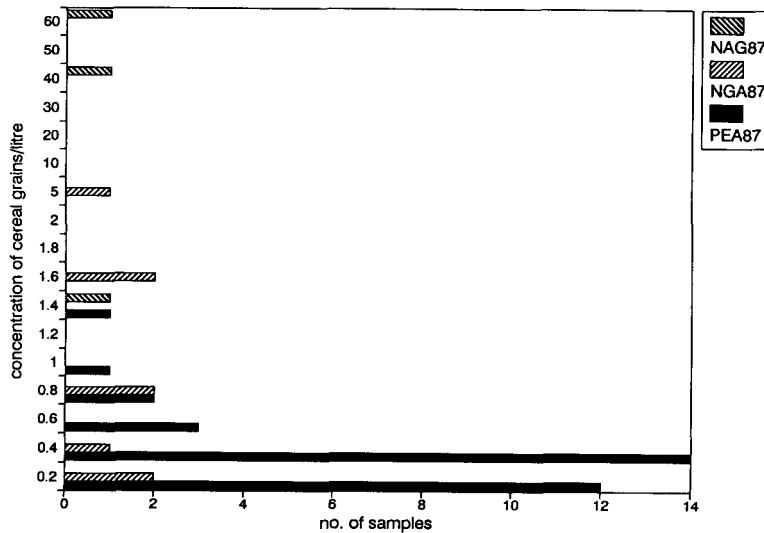


FIG 46 The Peabody site and National Gallery: histogram showing the frequency of samples with different concentrations of carbonised cereal grains per litre of sediment

blackberry and elder, both robust species used for food, but otherwise had a very low diversity and abundance. The sample is probably heavily biased by preservation. The layer above it, [95], contained an even more limited range of seeds preserved by water-logging: only elder, blackberry and fig, all possible food species. Layers [95] and [99] yielded a great number of mineralised seeds, fragments of cereal grains and other Gramineae seeds. Besides containing a number of food species such as wheat, barley, rye, pea, pear/apple and elder, both layers contained numerous fragments of straw or hay, and grass or cereal seeds were most abundant of all. The survival of this material in a mineralised state is characteristic of organic material deposited in cesspits (Green, 1979), and the absence of surviving water-logged remains is probably due to repeated drying out of the cess material. It is unknown whether the hay and/or straw represents animal fodder, litter or household flooring/bedding. Some of the food seeds must derive from faecal material, but the uncarbonised cereals are likely to represent accidental loss of cereal grains during food preparation. Their number is insufficient to suggest any specific accident.

The only other context to produce mineralised and waterlogged remains was a large spread of material equated with a dump or occupation layer, [69]. Little survived but the mineralised remains again included a number of Gramineae seeds and hay or straw. The very few waterlogged remains included blackberry, pear/apple, elder and rush, the first three being robust as well as probable food species. Whether the mineralisation took place *in situ* or indicates redeposition is not clear; if the former, it would suggest fairly high concentrations of dung or urine. The absence of mineralised or waterlogged remains in two other samples from [69] indicates that this was not a general characteristic of the layer but was either localised or redeposited from elsewhere, for example as the cleanings from an old cesspit prior to re-use.

Summary

The plant remains from the Peabody site were generally poor, although this was partly because many contexts were not floated. Only four contexts produced *in situ* botanical material, and this only where preservation was due to mineralisation or waterlogging.

TABLE 13. Plant remains from PEA87: mineralised material from cess pit 91 and pit 62

Species	Common Name	Habitat	Cess pit		Pit	
			New feature	Old feature	91	62
					205	
			New context	99	95	62
			Old context	289	291	465
			soil (1)	41	15	15
<i>Cereals:</i>						
Triticum aestivum type	bread/club wheat	FI			2	
Triticum sp.	wheat	FI			6	
Secale cereale	rye	FI	1			
cf. Secale cereale	rye	FI			1	
Hordeum sativum	barley	FI			4	
Hordeum/Secale/Triticum sp.	barley/rye/wheat	FI			1	
Cerealia	ind. cereal	FI			5	
Cerealia	cf. ind. cereal	FI	5			
<i>Other plants:</i>						
Ranunculus acris/repens/bulbosus	buttercups	ABCDEG			1	
Brassica/Sinapis sp.	—	ABGHI	1			
Cruciferae	—	ABCDEGFI			3	
cf. Agrostemma githago	corn cockle	A	1			
Chenopodium sp.	goosefoot etc.	ABFH			5	
Vicia sp.	vetch	CD			1	
Pisum sativum L.	pea	I	1			
Prunus sp.	—	CFGJ			2	
Pyrus/Malus sp.	pear/apple	CFI	9	16	2	
cf. Polygonum aviculare	knotgrass	ABG	1			
Fallopia cf. convolvulus	black bindweed	ABF			1	
Prunella vulgaris L.	self-heal	BCDG			5	
Labiatae indet.	—	ABCDEFI	1			
Sambucus nigra L.	elder	BCFGH	6			
Carduus/Cirsium sp.	thistles	ABDEG	1			
Compositae indet.	—	—			1	
Carex sp.	sedge	CDEH			2	
Lolium/Festuca	rye-grass/fescue	BCD			2	
Bromus sp.	brome	ABD			1	
Avena/Bromus sp.	oat/brome grass	ABCDFI	3			
Gramineae indet.	—	ABCDEHIF	+++	++++		
Gramineae indet.	straw-hay	ABCDEHIF	+++	++++		
Gramineae indet.	culm node	ABCDEHIF	2		4	
Indeterminate	—	—			2	

Low levels of carbonised cereals illustrate the exploitation of wheat, barley and rye, presumably deriving from waste burnt in domestic fires. One cesspit, [91], contained an unusual amount of mineralised grains and seeds. The conditions under which they are thought to have mineralised would indicate that soiled straw, possibly from animal litter, had been dumped in the cesspit. A similar explanation can be advanced for the straw in layer [69], although these remains could have been redeposited.

National Gallery basement by ANNE DAVIS

Soil samples were taken from all three of the truncated Middle Saxon pits. None of the pits could be fully excavated, so samples represent only the later fills or backfills, and not primary usage. The largest pit [226] had three well-defined layers sampled, ([228], [239] and [241]), and several more samples were taken from a number of layers excavated as only two contexts ([247] and [246]) owing

to lack of time. In addition, two samples from pit [214] (contexts [218] and [215]) and one from pit [222] (context [225]) were examined. Sample volumes ranged from six to 29 litres.

All three pits contained large quantities of domestic refuse and are assumed to have been used for rubbish disposal, at least in the later part of their lives. The plants identified are summarised in Table 15; the complete dataset is published in Davis (in prep.). None of the samples was particularly rich, although in general the concentration of carbonised remains was much greater than that at the Peabody site (Fig 46). Some of the samples contained a low-density, probably well-mixed assemblage similar to the charred material from PEA87, but one or two layers in the pits contained material that may have derived from specific events.

Description

Charred plant remains were common in pit [226]; concentrations were much lower in the other two pits, although the few contexts sampled in pits [214] and [222] were not necessarily representative of the whole of each feature.

Grains of bread/club wheat (*T. aestivum/aestivo-compactum*) and barley (*H. sativum*) were found in virtually every sample (Table 15). Some of the barley grains were twisted, showing that the 6-row variety was present. The ratio between wheat and barley varied, apparently randomly, between contexts, and their total numbers were about equal. Rye (*S. cereale*) also occurred in most samples but in much smaller numbers. Oat grains (*Avena* sp.) were very rare, and are likely to represent wild oat species, accidentally harvested with other cereals. Only three fragments of cereal chaff were identified, two rachis fragments of barley and one of wheat.

Charred weed seeds were fairly numerous, and greatly outnumbered cereal grains in many samples, particularly those from the higher fills of pit [226]. Many of these were the usual species encountered in Middle Saxon contexts elsewhere in London, and most are likely to have grown in arable fields with the wheat and barley.

Numerous small leguminous seeds, probably clover (*Trifolium* sp.), occurred in [241], and the upper fills of pit [226] contained many small seeds which could also have been clover, distorted by burning. Grass seeds (Gramineae indet.) were common too, and these may all indicate the presence of hay.

A few traces of food other than cereals were found, presumably charred after being thrown on the fire as rubbish. Fragments of hazel nut shells (*C. avellana*) are found on most Saxon sites and were obviously widely eaten. Single examples of blackberry or raspberry pips, plum stones (*Prunus domestica*), possible peas (*Pisum/Vicia/Lathyrus* sp.) and elder were also found.

Waterlogged seeds were quite common in some samples, although the recovery only of floating material means that the assemblages are probably incomplete. Their main value is to reveal more non-cereal components of the Saxon diet, and these too are similar to those from other contemporary London sites. Fig (*Ficus carica*), wild strawberry (*Fragaria vesca*) and blackberry/raspberry were all common, and grape (*Vitis vinifera*) was found occasionally.

Mineralised seeds occurred mainly in the sample from context [241] (pit [226]). Mineralisation often occurs in the presence of faecal remains and it is quite likely that the National Gallery pits received these along with other refuse, although none of the mineralised material itself is obviously faecal in origin. Mineralised seeds are not frequent, however, and there is no evidence that this was a major use of the pits.

Discussion

Bread/club wheat and barley were certainly used by the people using the National Gallery basement waste pits, and also possibly rye. Wheat and barley are the most commonly found cereals on all Middle Saxon sites in London, although differential preservation and selective sampling make it impossible to be sure whether they were in fact the most important cereals economically. Table 17 shows that both species occur with greater frequency than other cereals in samples.

TABLE 14. Plant remains from PEA87: floor surfaces, hearth and beam slot

Species	Common Name	Habitat	occup. layers				burnt	beam
			New context	69	69	197	area	slot
			Old context	317	317	359	125	14
			sample	69	75	78	543	626
			soil (l)	15	17	11	10	5
			flot (ml)	15	3	3	10	9
Charred cereals:								
Triticum sp.	wheat	FI	3	1	1			
Hordeum sativum	barley	FI		2		1	2	
cf. Hordeum sativum	barley	FI	1	1	1			
Avena sp.	oat	AI		1				
Cerealia	ind. cereal	FI	3		1	2	1	
Other plants:								
Rubus fruticosus/jidaeus	blackberry/raspberry	CFGH		1				
Corylus avellana L.	hazel	CF		1				
Hordeum sp.	barley	BDFI						1
cf. Bromus sp.	brome	ABD	1					
Gramineae indet.	—	ABCDEHIF		++				1
Mineralised								
cf. Hordeum sativum	barley	FI		1				
cf. Brassica/Sinapis sp.		ABEGHI				1		
Gramineae indet.		ABCDE		++				
Gramineae indet.	straw/hay	ABCDEHIF		+				
Waterlogged								
Rubus fruticosus agg.	blackberry	CFGH		1				
Pyrus/Malus sp.	pear/apple	CFI		1				
Sambucus nigra L.	elder	BCFGH		15				
Carex sp.	sedge	CDEH		1				

When cereal remains are mixed in refuse contexts such as these, probably deriving from numerous cooking accidents, floor sweepings and perhaps fuel, it is impossible to say which may have been cultivated separately or as mixed crops, and which may have been present only as contaminant weeds of other crops; although analysis of frequency combined with total abundance of grain may help solve these questions in time.

The high number of weed seeds, mostly very small, contrasts with the very small amount of chaff. They may indicate semi-clean cereal products which have yet to undergo fine sieving, although fragments of rachis and perhaps awns would normally be more common in these. Alternatively, some of the weed seeds may have come from another source, such as hay, and have become mixed with the cereal assemblages either

during burning of rubbish or once inside the pit.

Evidence for the consumption of several types of fruit and nut is identical to that on other mid-Saxon sites in the London area (Davis, in prep.).

National Gallery extension by DOMINIQUE DE MOULINS

The site of the National Gallery extension included some features dated to the mid-Saxon period and others dated to the early 12th century. The early period was mainly represented by gravel quarries, which were cut by 12th-century pits and a ditch. Environmental samples were taken from both sets of features: the lower fills, [278] and [280], of the mid-Saxon quarry [274]; and pit [330], layer [333] and pit [346] dated to

TABLE 15. Plant remains from NGA87: charred, mineralised and waterlogged remains

Species	Common name	Habitat	Charred	Mineralised	Waterlogged
<i>Cereals:</i>					
<i>Triticum aestivum</i> L. s.l.	bread/club wheat	FI	x		
<i>Triticum aestivum</i> L. s.l.	bread wheat, tail grain	FI	x		
<i>Triticum</i> sp.	wheat	FI	x		
<i>Triticum</i> sp.	wheat, tail grain	FI	x		
cf. <i>Triticum</i> sp.	wheat	FI	x		
cf. <i>Triticum</i> sp.	wheat rachis	FI	x		
<i>Secale cereale</i>	rye	FI	x		
cf. <i>Secale cereale</i>	rye	FI	x		
<i>Triticum/Secale</i> sp.	wheat/rye	FI	x		
<i>Hordeum sativum</i>	barley	FI	x		
<i>Hordeum sativum</i>	barley rachis	FI	x		
cf. <i>Hordeum sativum</i>	barley	FI	x		
<i>Hordeum/Triticum</i> sp.	barley or wheat	FI	x		
<i>Avena</i> sp.	oat	AI	x		
cf. <i>Avena</i> sp.	oat	AI	x		
Cerealialia	indet. cereal	FI	x		
<i>Other seeds:</i>					
<i>Ranunculus acris/repens/bulbosus</i>	buttercups	ABCDEG	x		x
<i>Ranunculus sceleratus</i> L.	celery-leaved crowfoot	E			x
<i>Ranunculus</i> sp.	–	ABCDEG	x		
<i>Papaver somniferum</i> L.	opium poppy	BGHI			x
<i>Chelidonium majus</i>	greater celandine	BC			x
cf. <i>Capsella bursa-pastoris</i>	shepherd's purse	AB	x		
Cruciferae	–	ABCDEGFI	x		
<i>Reseda luteola</i> L.	weld-dyer's rocket	ABHI	x		x
<i>Stellaria media</i> (L.) Vill.	chickweed	AB	x		x
<i>Stellaria</i> cf. <i>media</i>	chickweed	AB	x		
<i>Stellaria</i> cf. <i>graminea</i>	lesser stitchwort	CD	x		
<i>Scleranthus annuus</i> L.	annual knawel	AB	x		
Caryophyllaceae indet.	–	–	x		
Caryophyllaceae/Chenopodiaceae	–	–	x		
<i>Montia fontana</i> ssp. <i>chondrosperma</i> L.	blinks	AE	x		
<i>Chenopodium</i> cf. <i>bonus-henricus</i>	all-good	BCDF	x		
<i>Chenopodium album</i> L.	fat hen	ABFH	x		x
<i>Chenopodium</i> cf. <i>album</i>	fat hen	ABFH	x		x
<i>Chenopodium murale</i> L.	nettle-leaved goosefoot	BD	x		
<i>Chenopodium</i> cf. <i>murale</i>	nettle-leaved goosefoot	BD	x		
<i>Chenopodium</i> cf. <i>rubrum</i>	red goosefoot	AB			x
<i>Chenopodium</i> cf. <i>rubrum/glaucum</i>	red/glaucous goosefoot	AB	x		x
<i>Chenopodium</i> spp.	goosefoot etc.	ABFH	x	x	
<i>Atriplex</i> spp.	oraches	ABFGH	x		x
cf. <i>Atriplex</i> sp.	orache	ABFGH	x		
<i>Chenopodium/Atriplex</i> spp.	goosefoots/oraches	ABFGH	x		
Chenopodiaceae indet.	–	–	x	x	
cf. Chenopodiaceae indet.	–	–	x		
cf. <i>Malva</i> sp.	mallow	BCDF	x		
<i>Linum catharticum</i> L.	purging flax	D			x
<i>Vitis vinifera</i> L.	vine	I			x
cf. <i>Vitis vinifera</i>	vine	I			x
cf. <i>Trifolium</i> spp.	clover	BDI	x		
<i>Medicago/Trifolium</i> spp.	medick/clover	ABDI	x		
cf. <i>Vicia faba</i>	celtic bean/horsebean	I	x		
<i>Vicia/Lathyrus</i> sp.	vetch/tare/vetchling	CD	x		
cf. <i>Vicia/Lathyrus</i> sp.	vetch/tare/vetchling	CD	x		
Leguminosae indet.	–	–	x		
cf. Leguminosae	–	–	x		

TABLE 15. (continued)

Species	Common name	Habitat	Charred	Mineralised	Waterlogged
<i>Rubus fruticosus</i> /idaeus	blackberry/raspberry	CFGH	x		x
<i>Aphanes arvensis</i> agg.	parsley piert	ABD	x		x
<i>Prunus domestica</i> L.	plum/bullace	CI	x		
Rosaceae indet.	—	—			x
cf. <i>Daucus carota</i>	wild carrot	ACDGI	x		
cf. Umbelliferae	—	—		x	
<i>Polygonum aviculare</i> L.	knotgrass	ABG	x		
<i>Polygonum cf. aviculare</i>	knotgrass	ABG	x		x
<i>Polygonum cf. persicaria</i>	persicaria	ABEH	x		
<i>Polygonum cf. lapathifolium</i>	pale persicaria	ABE	x		
<i>Rumex acetosella</i> L.	sheep's sorrel	AD	x		x
<i>Rumex cf. acetosella</i>	sheep's sorrel	AD	x		
<i>Rumex</i> spp.	docks	ABCDEFGFI	x	x	x
cf. <i>Rumex</i> spp.	docks	ABCDEFGFI	x	x	
<i>Urtica urens</i> L.	small nettle	AB		x	x
<i>Urtica dioica</i> L.	stinging nettle	BCDEFGH		x	x
<i>Corylus avellana</i> L.	hazel	CF	x		
<i>Ficus carica</i> L.	fig	I			x
<i>Solanum nigrum</i> L.	black nightshade	BF			x
<i>Lycopus europaeus</i> L.	gipsy-wort	EH			x
<i>Prunella vulgaris</i> L.	self-heal	BCDG			x
cf. <i>Glechoma hederacea</i>	ground-ivy	BCDE			x
Labiatae indet.	—	ABCEFI		x	x
<i>Galium</i> sp.	bedstraw	ABCDE	x		
<i>Sambucus nigra</i> L.	elder	BCFGH	x		x
<i>Anthemis cotula</i> L.	stinking mayweed	ABGH	x		
<i>Chamaemelum nobile</i> (L.) All.	chamomile	BDFG	x		
Compositae indet.	—	—	x		
cf. Compositae indet.	—	—		x	
cf. <i>Triglochin palustris</i>	marsh arrow-grass	E			x
<i>Juncus</i> sp.	rush	DE	x		x
cf. <i>Typha</i> sp.	bullrush/reedmace	E			x
<i>Eleocharis palustris/uniglumis</i>	spike-rush	E	x		x
cf. <i>Eleocharis</i> sp.	spike-rush	E	x		
<i>Carex</i> spp.	sedges	CDEH	x		x
Cyperaceae indet.	—	ABCDEFI	x		
cf. Cyperaceae indet.	—	ABCDEFI	x		
<i>Bromus</i> spp.	bromes	ABD	x		
cf. <i>Bromus</i> sp.	brome	ABD	x		
<i>Avena/Bromus</i> spp.	oat/brome grasses	ABCDFI	x		
Gramineae indet.	—	ABCDEHIF	x	x	x
Indeterminate	—	—	x	x	

the 12th century. Pit [346] was very large and contained two hearths and layers of rake-out from a hearth (see Fig 27 above).

Description

All the plant remains recovered were preserved by charring.

Saxon gravel quarry. The number of remains was fairly small and indicates similar levels of concentration to those described as 'background' at the Peabody site Fig 46.

What few remains have been identified (Table 16) are similar to those from PEA87 and NGA87.

12th-century features. In contrast to all the samples from PEA87 and NGA87, those from the 12th-century pit, [346], have very high concentrations of carbonised material. Figures of 37 and 53 cereal grains per litre of sediment are far above the general levels of less than one or two grains per litre typical of the other sites. These deposits, clearly

TABLE 17. Number of samples in which edible plant species were found at the three sites

	PEA87	Saxon NGA87	NAG87	NAG87 (12th century)
Wheat sp.	18	10	2	11
Barley sp.	22	11	1	10
Rye	3	8	1	7
Oats	3	7		7
Cereals, indet.	30	11	2	11
Hazel	3	5	1	2
Elder	5*	4	1	
Blackberry	3*	6*		
Wild strawberry		5*		
Pea	1*			1
Lentil				2
Celtic/horsebean		1		
Fig	1*	5*		
Grape		2*		
Pear/apple	1*			
Plum/bullace		1		
No. of samples with				
Charred	32	12	2	11
Mineralised	6	4		
Waterlogged	4	9		
Total no. of samples	33	12	2	11

*species only identified from waterlogged or mineralised remains

represent specific events or activities that produce charred cereals.

Cereals: five of the samples from pit [346] yielded large flots, and three of them were subsampled (Table 16). Three samples came from the rake-out layers [352], [357] and [362], and two from layers in the hearth area, [352] and [356]. Cereals were abundant in all these samples and most were wheat grains. Some could be ascribed to a bread/club wheat type, *T. aestivo-compactum*, but most were indeterminate. Some chaff, including several types of rachis, was present. The absence of any other chaff indicates that the cereals were free-threshing, which is to be expected in the medieval period. The wheat rachises were characteristic of bread/club wheat, *T. aestivo-compactum*, to judge by criteria defined by Gordon Hillman (pers comm). The few rachises could only account for a small proportion of the grain recovered.

Barley, *H. sativum*, was recovered from all samples. It was proportionately less frequent than wheat in the three contexts [352], [357] and [362] from the rake-out area, but predominated over wheat in the two contexts

from the hearth area, [356] and [352]. The grains were very badly preserved. Barley grains tend to be easily distorted by burning and become vesicular; the grains from all the samples had lost most of their characteristics. Only the barest of morphological traits were left, such as the flatness of the grains and their generally sharp outline.

Small amounts of oat grains, *Avena* sp., were present in some of the samples and could be identified because of the hair remaining on the grain surface. Many other grains were similar to these but did not retain any hair, and could not be so securely identified. No floret of oat was found; when they are well preserved these can help identify the species. The grains were large, which could indicate a cultivated variety. Cultivated oat is a common find in medieval assemblages.

Fairly well preserved grains of rye, *S. cereale*, were recovered. They were identified from their pointed, low ridged back, blunt squared-off apex and sometimes lopsided shape. No rye was present in the hearth area [352] but it was found in all the other contexts from the early 12th century.

Comparatively large quantities of grain have been entered in the category 'Cerealia indet.'. They represent small fragments of cereal grains which could not be identified any further. The number shown in Table 16 has been estimated by comparing the weight with a known quantity of whole charred wheat grains from one of the other contexts on the site.

Chaff: a few rachis fragments and internodes of all the main species of cereals were recovered. Some were very characteristic of *T. aestivo-compactum*, *S. cereale* or *H. sativum*, but others could not be determined so definitely and were placed in the combined categories.

Other plants: the most common type of plants recovered apart from the cereals were legumes of the *Vicia* sp. (vetchling) type, followed by large legumes. One of the latter still had the small hilum characteristic of the pea, *Pisum sativum*, but most had lost their hilum. It is likely, therefore, that most of the larger legumes were peas, much reduced in size by charring, but they could also belong to the larger species of *Vicia* sp.. Some of the smaller vetchling with fairly long hila were reminiscent of *V. hirsuta* or *V. cracca*.

Many of the weed seeds are typical of a segetal environment, that is, associated with cultivated fields: *Anthemis cotula*, stinking mayweed, *Chrysanthemum segetum*, corn marigold, *Centaurea* spp., knapweed or cornflower, *Galium aparine*, cleavers, and Gramineae such as *Bromus* sp. or *Lolium* or *Festuca* sp., rye grass or fescue. Other plants represented are more ruderal and adventitious but can also grow in the type of disturbed ground provided by fields, or at a field edge, such as *Chenopodium* spp., fat hen or goosefoot, and *Rumex* spp., dock. Weed seeds were fairly abundant and diverse in the layer over the hearth, [356], and in one of the sub-samples of the rake-out [352]. The legumes seem to be more abundant in the rake-out area than in the hearth pit layers.

Discussion

The material from the Saxon quarry produced little worthy of comment. In contrast, the material from the 12th century is

overwhelmingly made up of the cereal grains of wheat and barley, and includes rye. The ratios of grain to weed seeds range from 9:1 or 7:1, in pit [346], to 2:1 in the poorer samples from the gravel quarries and other features.

Pit [346] included two components: the hearth area or burnt deposits at the northern end (the smaller area of the two), and the raking-pit with layers of carbonised material at the southern end (see Fig 27). Layers were continuous through both areas, but the grain assemblages from the two areas are quite different, reflecting a number of different origins for the material. In layer [356], associated with hearth [354], and layer [352], where associated with hearth [350], barley was the most abundant cereal grain. In the layers in the broader rake-out area to the south, [352], [357] and [362], wheat grains were much more abundant than all other cereal types. Layer [352] and its correlate in the northern part of the pit appear to be the richest samples from the feature, although the size of the other samples unfortunately was not recorded.

Of the cereals represented, wheat is usually milled for flour to make bread or types of pancake, while barley and oats are often used whole or broken up in soups. The features showed clear signs of scorching, and the bulk of the material has not been redeposited. Charred layers extended over quite a large area and it is possible that other activities, besides food preparation, took place here. The burnt layers [350] and [354] may have been from an oven or hearth used to dry out grain prior to use, but the pit as a whole seems too large to have been used exclusively for this purpose. There must have been thousands of cereal grains in [352], if the density in the sample was typical, reflecting repeated use of the fire for baking or, more probably, parching cereals and drying legumes, if not for industrial processes also.

The 12th-century material differs from the Saxon material in several ways: it is much more abundant and varied, and includes fairly large concentrations of grains. It is also thought to have been the result of *in situ* activities. The material includes rye and

several kinds of Leguminosae which were not present in the Saxon samples from this site. Rye is present however in most of the other Middle Saxon samples from London (Davis in press), though the larger Leguminosae are not. This apart, the Saxon material is similar to that from the other sites, though in even smaller quantities: it includes very little chaff and a restricted number of weed seed species. By contrast, the plant remains from 12th-century London sites have not often been analysed. The abundance and the diversity of the material, including cereals such as rye, and large Leguminosae (probably pea), corresponds, however, with results from the 12th-century Gatehouse Nurseries site in West Drayton (Middlesex), where the clay cowling from a bread oven was recovered from a pit.

Animal remains

Introduction

by JAMES RACKHAM

The animal remains were recovered by two methods. The first component is from the residues of the soil samples that were floated or wet-sieved; these were sorted for identifiable remains, and the resulting mammal, bird, fish, mollusc and other remains were identified to species. The second group comprises the animal bones and shells hand-collected on site during excavation.

These two groups have been treated somewhat differently. The hand-collected material was recorded in detail; species, bone, part, sex, age, pathological and other information was noted and subsequently analysed. The bones and shells from the soil samples, on the other hand, were assigned to species in each context or sample but not quantified (except fish) or described in further detail. The results are relevant particularly in respect to the smaller bones that hand recovery failed to gather and, secondly, as a quantification method indicating frequency: that is, the number or percentage of samples in which a particular species was identified. This measure of ubiquity is independent of the number of bones or fragments of each species and is perhaps the best measure of

the frequency with which a particular food species was exploited, regardless of its economic value or importance. For example, eel bones were recovered from more samples/contexts at the Peabody site than cattle bones, suggesting that although cattle was clearly the more important food species (see below), beef may have been eaten less frequently than eel.

One of the most important contributions of the sample material was in the recovery of fish bones. Only five were recovered from all three sites by hand excavation, but the samples from the Peabody site and National Gallery basement yielded over 1,200 from 21 species, giving an important insight into diet, fishing practice and local economy. Unfortunately the residues from the National Gallery extension were not retained, and so no fish bones at all have been preserved from either the Saxon or 12th-century deposits on this site.

Material from the samples

All the species identified are listed in Table 18, which records the total number of samples in which each species was identified. Ninety-two of the original 122 soil samples from the Peabody site were sorted for animal remains, and nine from the National Gallery basement. Context [247] on the latter site was a multiple context, and four samples were taken separately since pressure of time resulted in the removal of the deposits rapidly without detailed recording of individual layers and lenses.

Fish bones

by ALISON LOCKER

The Peabody site

A total of 981 fish bones were identified from 67 of the samples of Middle Saxon date. Two contexts that were not sieved, [210] and [165], produced two bones of conger eel and one of sturgeon, the only large fish bones recovered.

The species identified are listed in Table 18. This shows the total number of samples from which each species was identified. Eel is clearly the most frequent species and also

forms 67% of the total number of fish bones recovered from the site. These are largely vertebrae, although a few skull fragments are present, whose measurement suggests total lengths of 280–400mm (after Libois *et al* 1987), which is within the size range for males—which grow up to 500mm (Wheeler, 1978, 62)—or small females. One particularly large vertebra was present whose size suggested it was from a female. Eels could be caught in the Thames on their seaward migration, and were also common in the Saxon deposits at Jubilee Hall and Maiden Lane nearby (Locker, 1988).

The next most frequent species that could have been caught in the Thames is the twaite shad. This is a relative of the herring and migrates into the tidal reaches of rivers for breeding. It used to be seasonally common as far up the Thames as Putney Bridge (Wheeler, 1979, 66), and regulations controlling fishing in the 17th and 18th centuries suggest that this used to be an important food fish, although it is not particularly good to eat (*ibid*).

The most prized fish caught in the river would have been sturgeon, represented by part of a body scute. This used to be regarded as a royal fish, and is now no longer found in the Thames. The recovery of a single bone during excavation, and its absence from the samples, suggests that it was a rare item on the menu.

Six vertebrae of smelt are evidence of a small species whose annual migration up the Thames to spawn gave rise to an important seasonal fishery in winter and early spring, when large numbers of fish could be netted. Its relative absence, both in terms of frequency and gross numbers, suggests that this seasonal fishery had not yet been established in Saxon times.

All the species discussed above are migratory, and as part of their life cycle enter rivers; their occurrence and exploitation is therefore seasonal, although catches could have been salted or smoked. The following species, on the other hand, occur exclusively in freshwater. A number of Cyprinidae bones were recognised, many of which were vertebrae and could not be identified beyond family level. Other skeletal elements permit-

ted the identification of bream, chub, roach and possibly barbel (from a serrated fin ray). Some of these were very small immature specimens that would have had little food value. Pike was identified from four small vertebrae and does not appear to have been an important food fish.

As at Maiden Lane and Jubilee Hall (Locker, 1988), the most frequently occurring marine species are herring, seasonally netted in great numbers in the North Sea, and flatfish, in particular plaice and flounder, which could have been caught along the shoreline and entering the estuary. The other marine species, conger eel, cod, whiting, hake, gurnard, red sea bream and brill, could all have been caught in the North Sea and along its shoreline, but their numbers are low and they appear to have been of little significance.

The interesting feature of the assemblage as a whole is that it indicates an exploitation of the migratory and freshwater species that could have been caught locally in the Thames, with marine species in a relatively minor role. Marine species, other than herring, constitute less than 17% of the fish bones identified (Table 18). The same trend was also seen in contemporary deposits at the adjacent sites of Jubilee Hall and Maiden Lane (Locker, *op cit*).

National Gallery basement

A small collection of fish bones was identified from the three Middle Saxon pits. Most were from the samples, but two were hand-picked on site. The species identified are listed in Table 18; 93% of the bones came from pit [226]. The most frequently identified species are eel, herring and twaite shad, as at PEA87. Eel finds include both vertebrae and skull fragments. The total lengths of five individuals were estimated using the method of Libois *et al* (1987, 6); these were 170, 280, 280, 290 and 350–380mm, indicating small fish well within the 500mm range for males. The larger females can grow up to 1000mm in length (Wheeler, 1978, 62). Herring was represented by vertebral centra except for one maxillary fragment. Twaite shad was

almost as common as eel in pit [226]. Formerly much more common than today in the tidal reaches of the Thames during spawning in May, its frequency here and at PEA87 suggests that it was a more popular food in Saxon times, as in later periods, when its popularity is documented (Wheeler, 1979, 66). At least three incomplete individuals are present in context [241] and comparative measurements of the dentary lengths suggest that these were approximately 250–260mm in length, around half the maximum size.

Turning to freshwater fish, a single fragment of salmonid vertebra could not be specifically identified. Among the cyprinids roach is the most common species. Two dace pharyngeals were from fish of approximately 160 and 200mm total length, within the average size range for this species. Chub was tentatively identified from a single tail vertebra. This abundance of freshwater cyprinids duplicates the findings at the Peabody site and other Saxon sites in London (Locker *op cit*).

All the species so far described, except herring, could have been caught in the River Thames adjacent to the settlement in nets or on lines. The remaining species are all marine and apart from herring are proportionately even less numerous than at the Peabody site. They could all have been caught close inshore or in the Thames estuary. Herring form large shoals which were netted seasonally. The brill, represented by a single hyomandibular estimated to be from a specimen *c.* 400mm long, approaches the average size for this species and would probably have been caught on a line. These are bottom dwellers and are found in depths of 9–73m (Wheeler, 1978, 343). Plaice (and/or flounder) could have been caught along the shoreline. The tentative identifications of bass and corkwing wrasse are of small immature specimens which would have been caught close inshore. The former, especially when young, can frequently be found in estuaries.

These results confirm a general picture for the Middle Saxon period, both at this site and others in the *Lundenwic* settlement, that the fish consumed were largely the result of local fishing in the Thames, with some

exploitation of inshore marine waters, but no deep sea fishing of any sort.

Other vertebrates

by JAMES RACKHAM

The soil samples yielded a range of other vertebrates that are rarely if ever recovered by hand excavation. The most frequent of these were frogs and rodents (Table 18). These, along with the rarer shrews and snakes, reflect the small animals that were living wild around the settlement. The absence of all but frog and rat from the National Gallery basement may be due to the fewer samples processed, or may reflect an aspect of the site in Saxon times. The occurrence of bank vole, field vole, common shrew and snake at the Peabody site suggests at least some ground vegetation cover at some periods of occupation. The majority of the rodent remains, however, are likely to be house mice, and this species, along with rat, is typical of human occupation sites.

The occurrence of rat at both the Peabody site and the National Gallery basement is interesting. These are the earliest post-Roman occurrences of rat in Britain. Because it was absent from Middle Saxon deposits at Fishergate, O'Connor (1991) has suggested a Late Saxon reintroduction into York. Its occurrence here in London may be significant as an indicator of early European contact—the bringing of shipboard rats to the Middle Saxon settlement—or might equally be evidence of a small population that never died out. Since we have no sites that can be dated between the 4th century and the late 7th, we have no data to confirm this. It is possible, though unlikely, that this material could be intrusive. The few passerine bones in the samples have not been identified to species, but are likely to be natural casualties.

Material hand-collected (PEA87)

by BARBARA WEST

A total of 12,795 animal bones (287.7kg) from non-sieved deposits were analysed, of which 10,189 (279.3kg) were identified. Only material from primary, well-dated deposits

TABLE 18. (a) Animal bones: species identified from the soil samples and the frequency of their occurrence. (Note: no sample residues were retained from NAG87.) (b) Fish bones: the number of bones of each species identified from the soil samples, expressed as a percentage of the total

	PEA87	NGA87	PEA87	NGA87	
Total number of samples	92	9	Roach	16	2
Mesh sizes	2 mm	1 mm	cf Barbel	2	
Human			cf Bass		1
Cattle	55	8	cf Corkwing wrasse		1
Sheep/goat	69	7	Whiting	3	
Sheep		2	Cod	1	
Goat			Hake	2	
Pig	71	8	Gurnard	1	
Dog	1		Red Sea Bream	1	
Cat	12		Plaice	8	7
Roe deer		1	Plaice/flounder	25	3
Rabbit/hare	2		Brill	1	1
Rodent	30	2	Flatfish indet	6	1
Murid	6		<hr/>		
House mouse	6		%		
Rat	1	1	of total number of		
Field vole	4		fish bones		
Bank vole	1		PEA87 NAG87		
Vole sp.	2		<hr/>		
Common shrew	1		Eel	67.0	27.9
Snake sp.	3		Herring	8.5	17.7
Frog	54	5	Twaite Shad	4.5	24.0
Chicken	28	5	Salmonid		0.4
Goose	13	2	Pike	0.4	
Duck	1		Smelt	0.6	
Passerine sp.	2	1	Cyprinid indet.	5.9	11.4
Bird indet	47	2	Bream	1.3	
Oyster	35	1	Dace		0.8
Mussel	1		Chub	0.8	0.4
Cockle	1		Roach	2.4	5.1
Eel	61	7	cf Barbel	0.2	
Herring	35	4	cf Bass		0.8
Twaite Shad	25	3	cf Corkwing wrasse		0.4
Salmonid		1	Whiting	0.3	
Pike	3		Cod	0.1	
Smelt	5		Hake	0.1	
Cyprinid indet.	14	6	Gurnard	0.2	
Bream	7		Red Sea Bream	0.1	
Dace		1	Plaice	1.6	5.9
Chub	6	1	Plaice/flounder	4.0	3.5
			Brill	0.4	0.1
			Flatfish indet	0.9	1.1

was included in the analysis. No distinctive patterns emerged from comparisons of assemblages from different features. The overriding impression is of remarkable consistency in relative proportions of species in the majority of contexts. Even the few worked antler fragments were well distributed across the site.

The preservation of bone was generally very good. Only a small percentage (0.3%)

showed signs of weathering, and among these were various instances of differential weathering, in which one part of the bone had been exposed while another part was completely protected. An even smaller proportion (0.1%) had been heavily corroded by some chemical agent such as cess. Evidence of burning was found on only 0.3%, while 1% had been gnawed by dogs (none by rodents).

TABLE 19. Animal bones: species, fragments and weights from hand-collected material

Species	No. of fragments	Weight in grams
Horse	10	522.8
Cattle	2292	146820.5
Pig	1466	32010.0
Sheep/goat	1118	18678.7
Goat	2	84.6
Cattle-size	3306	69342.0
Sheep-size	1766	9881.4
Dog	4	357.0
Cat	21	77.7
Red deer	20	890.6
Roe deer	1	25.1
Chicken	58	133.2
Goose, domestic	71	343.5
Goose species	4	33.9
Goose size	5	31.2
Mallard	1	2.5
Red kite	2	4.8
Indeterminate bird	42	30.3
Sturgeon	1	not recorded
Conger eel	1	not recorded
Oyster (valves)	276	not recorded
Total identified	10189	279269.8
Total unidentified	2606	8447.7
Total	12795	287717.5

Species abundance

Species representation was calculated by numbers of fragments, by weight and by frequency in the samples (Tables 18 and 19). These methods address slightly different questions, and weight is considered to be the most appropriate indicator of economic importance. All the species identified are listed in Table 19. The proportions of the three main domesticates relative to each other (Table 20) are very similar to those from other Middle Saxon sites on the Strand (West, in press). A high proportion of cattle by weight reflects the greater economic importance of this species in the diet, followed by pig and then sheep. On the other hand, as was noted above with the occurrence of eel, both pig and sheep/goat occur in a greater number of samples.

An examination of the relative proportions by weight of wild and domestic species utilised as food (including birds, but not

TABLE 20. Animal bones: relative proportions of the three main domesticates

	Cattle	Pigs	Sheep
Fragments	47%	30%	23%
Weight	74%	16%	10%
Frequency in samples	60%	77%	75%

horses, cats or dogs) shows a pattern similar to that at Maiden Lane, the National Gallery basement and Jubilee Hall (West, in press): 99.5% domestic and 0.5% wild. Most of the 'wild' component at the Peabody site consists of worked red deer antler fragments, indicative of craft manufacture rather than hunting for venison, and when this fact is taken into account, the proportion of wild species in the 'food' supply drops to 0.1%.

Looking at the birds in greater detail, the proportions by weight of domestic and wild birds are 99% and 1% respectively, while the proportions of chickens, geese and ducks (both wild and domestic) are: 26% chickens, 73% geese, 1% ducks. These patterns are all similar to those at other *Lundenwic* sites (West *op cit*).

Skeletal elements & meat quality

It can be seen from the distribution of skeletal elements for the three main domesticates (Tables 21 and 22) that most of the carcass is represented; there is no pronounced evidence for the disposal of certain parts off-site. Using the methods of Uerpmann (1973) and Maltby (1979), groups of carcass components were used to assess the relative quality of the beef, pork and mutton consumed. As can be seen from Table 21, an analysis by weight, there are consistently high proportions of the best quality meat (represented by the scapula, humerus, innominate, femur and vertebrae), as well as of the

TABLE 21. Relative quality of meat yield by bone weight

	Cattle	Pigs	Sheep
High quality meat	41%	50%	33%
Lesser quality meat	37%	43%	52%
Poorest quality meat	22%	7%	15%

TABLE 22. Skeletal elements: major domestic mammals, (a) by numbers of fragments, (b) by weight in gm
(a)

Bone	Cattle	Cattle-size	Sheep/Goat	Sheep-size	Pig
horn core	24		33		
skull + horn core	29		18		
skull	27	375	22	82	91
premaxilla	24	4	5		13
maxilla	67	1	25	1	55
mandible	175	64	119	33	124
dec.mand.tooth	4		5		1
dec.max.tooth	4				
maxillary tooth	51		23		9
mandibular tooth	60		37		33
tooth indet.	4	2	3	2	15
hyoid	1	14		4	
atlas	51	1	14	2	26
axis	26	6	19		11
cervical vert.	101	23	49	3	39
thoracic vert.	170	116	37	43	84
lumbar vert.	74	78	49	28	89
sacrum	6	62	3	22	3
caudal vert.		27			
vertebra	1	404	1	117	3
sternum		18		8	
rib		1296		1029	
scapula	66	135	52	71	76
humerus	107	17	75	8	90
radius	108	1	83	5	42
radius + ulna	1	1			
ulna	71	2	29		57
carpal	33				
carpal/tarsal	1	1		1	3
metacarpal	104		74	1	114
innominate	113	95	73	41	90
femur	117	18	52	9	97
patella	17				2
tibia	103	8	90	21	81
fibula					12
lat.maleolus	2				
astragalus	45		6		11
calcaneus	57		24		19
tarsal	25		2		1
metatarsal	102		74		113
metapodial	48	2	5	1	15
phalanx	1	1	1	2	
phalanx 1	140		16	2	39
phalanx 2	58				6
phalanx 3	73				2
sesamoid	1	1		1	
long bone fragment		528		229	
unidentified		5			
Total	2292	3306	1118	1766	1466

lesser quality cuts (represented by the tibia, radius, ulna, skull, maxilla, mandible and loose teeth), but low proportions of the

poorest quality meat (represented by the metapodials, carpals, tarsals and phalanges). This interpretation is supported by figures

TABLE 22. (continued)
(b)

Bone	Cattle	Cattle-size	Sheep/Goat	Sheep-size	Pig
horn core	1251		766		
skull + horn core	4564		749		
skull	1476	7260	466	531	2042
premaxilla	420	18	17		102
maxilla	5439	5	474	5	1488
mandible	15782	1736	2821	300	3936
dec.mand.tooth	32		4		1
dec.max.tooth	24				
maxillary tooth	1117		135		61
mandibular tooth	725		156		118
tooth indet.	13	3	10	1	40
hyoid	4	75		2	
atlas	3128	14	324	12	492
axis	1478	88	432		156
cervical vert.	5755	727	637	40	394
thoracic vert.	8556	2978	257	236	1111
lumbar vert.	3935	1366	410	182	1445
sacrum	671	2589	47	197	66
caudal vert.		253			
vertebra	61	6737	3	356	25
sternum		238		29	
rib		21944		4960	
scapula	5438	4623	679	504	2071
humerus	13191	458	1321	76	3923
radius	8782	30	1669	36	1053
radius + ulna	168	31			
ulna	3630	38	165		1308
carpal	409				
carpal/tarsal	6	3		3	13
metacarpal	9427		1326	11	857
innominate	6891	4109	1157	512	3050
femur	10923	583	871	88	3309
patella	579				13
tibia	10590	432	2273	292	3436
fibula					36
lat.malleolus	18				
astragalus	2124		29		116
calcaneous	4042		168		244
tarsal	733		7		4
metatarsal	9110		1217		875
metapodial	970	62	33	3	35
phalanx	10	6	0	3	
phalanx 1	3304		52	1	168
phalanx 2	838				18
phalanx 3	1377				5
sesamoid	8	5		1	
long bone frag.		12825		1499	
unidentified		107			
Total	146820	69342	18679	9881	32010

for the minimum number of individual bone elements, as determined from the most frequent diagnostic zone (Rackham, 1986a). Mandible, scapula and innominates are the

most frequent, with long bones, neck vertebrae and metapodials the next most frequent. Skulls and phalanges are the most under-represented elements.

The pattern closely resembles that at Maiden Lane, suggesting a very similar selection of beef, pork and mutton.

Age ranges

Age ranges were estimated using epiphyseal fusion, dental eruption (Silver, 1969; Habermehl, 1961) and dental attrition (Grant, 1982; Payne, 1973). All of the first mandibular molars of the cattle were sectioned and polished using a diamond saw and Mettler polisher, in order to count the cementum lines for a minimum age estimate (Rackham, 1986b). The preservation of dental cementum was sufficiently good to yield minimum counts for seven cattle (Table 23). Notice that the corresponding attrition stages for the animal with 18 cementum bands (P4 : 12, M1 : 16) are similar to those for other cattle with far fewer observed bands. This suggests either that many of these cattle were quite old, and that the extra cementum lines have broken off, or that the first molar remains in wear stage 16 for many years.

Figs 47, 50 and 52 are isometric graphs of tooth eruption and wear, improvements on the presentation devised by West (1984) in order to illustrate more clearly the patterns of individual animals (dark bands) in relation to the age ranges (shaded areas). For example, Fig 47 shows that all but two cattle were over 2–2.5 years old, with a large group over 5 years old. Since this diagram plots only the molar teeth and cannot also include fragmented juvenile jaws with deciduous teeth, a complementary histogram illustrates the frequency of the eruption and wear stages for the lower deciduous and permanent

premolar 4 (Fig 48). This shows two peaks for cattle slaughter. The upper peak, representing animals over 2.5–3 years old, correlates with the older age group in Fig 47, while the lower peak represents a large group of cattle younger than 2.5–3 years, which does not appear at all in Fig 47.

The epiphyseal fusion data for cattle (Fig 49) confirms the high juvenile slaughter rate, suggesting that as many as 50% of the sample were killed before 2–2.5 years. This pattern closely resembles that at Maiden Lane and Barking Abbey, with many calves being slaughtered but some old cattle surviving (West, in press). There was a very high percentage of calves' bones (18%), but relatively few of neonates (1.7%).

Turning to the pattern for pigs, the tooth wear graph (Fig 50) shows only one animal *c.* six months old; the rest form two groups, one slaughtered at *c.* 1.5 years, the other at 2–3 years. Analysis of epiphyseal fusion, (Fig 51), however, shows that fairly large numbers of young piglets less than a year old were eaten. As on all comparable Saxon sites, the majority of the Peabody site pigs were killed between the ages of 2 and 3 years, and very few survived beyond 3–3.5 years. Neonates accounted for only 0.7% of the pig bones, a proportion similar to that from other sites in London.

For the sheep, there is a good correlation between the results from epiphyseal fusion (Fig 54) and the two complementary methods illustrating mandibular tooth eruption and wear (Figs 52 and 53). Fig 52 shows a concentration of mandibles at 2–3 years and 3–4 years, with none of the sheep surviving beyond 4–6 years. Fig 53 shows that 34% of

TABLE 23. Cattle cementum lines and tooth wear (* = Present)

Context	No. visible cementum lines	Tooth Wear Stages (after Grant, 1982)					
		P2	P3	P4	M1	M2	M3
25	9	*	*	11	16	15	15
25	6	*	*	8	15	14	11
69	5				17	15	15
80	11		*	12	17	16	
180	18			12	16		
208	6	*	*	11	16		

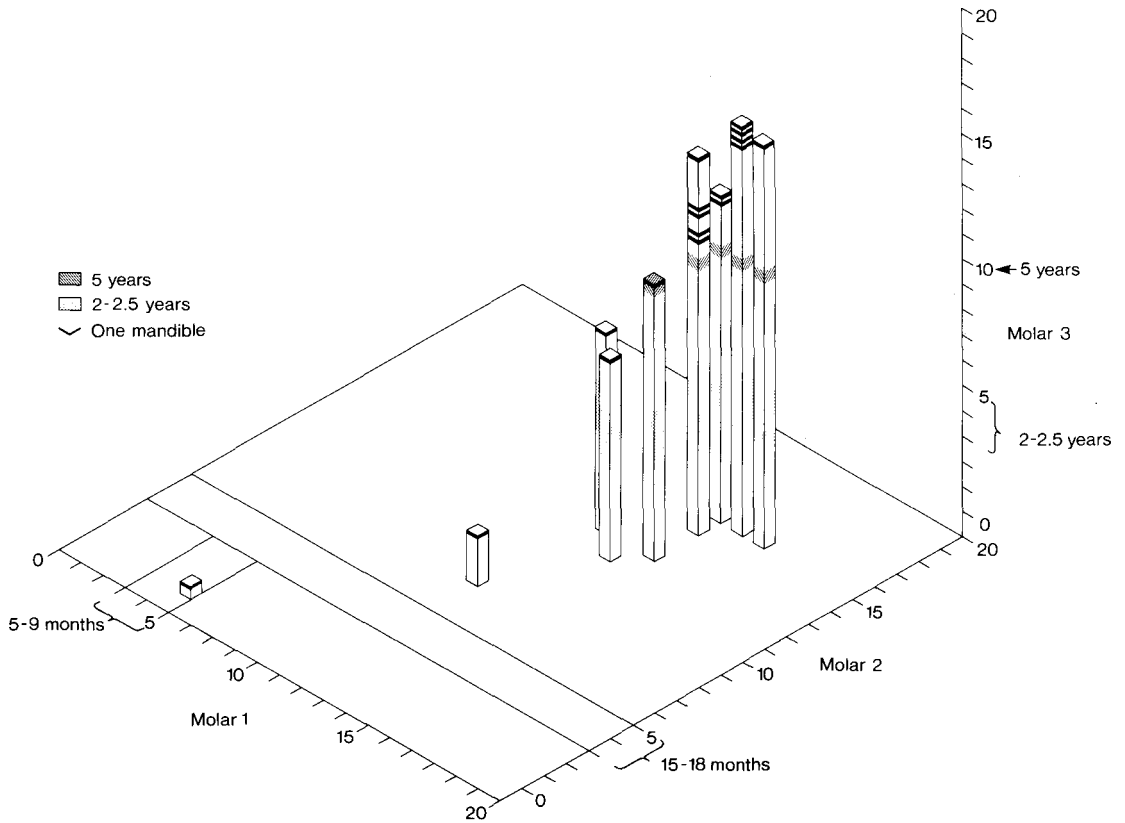


FIG 47 The Peabody site: three-dimensional figure illustrating the wear on each of the cheek teeth (Molar 1, Molar 2, and Molar 3) of the mandible of a number of cattle individuals

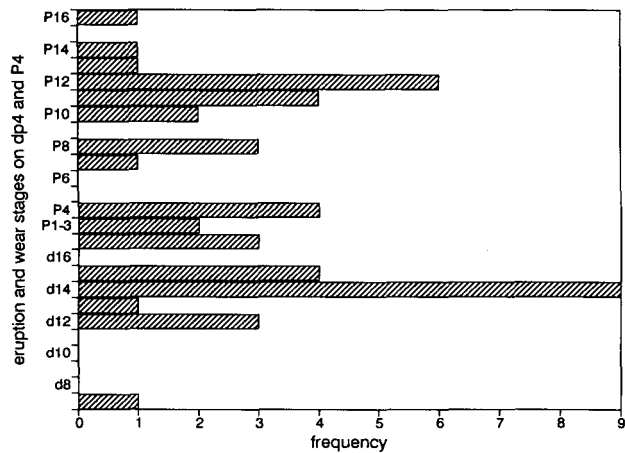


FIG 48 The Peabody site: the frequency of cattle mandibles at different stages of wear and eruption on the deciduous premolar 4 and the permanent premolar 4 (after Grant 1982)

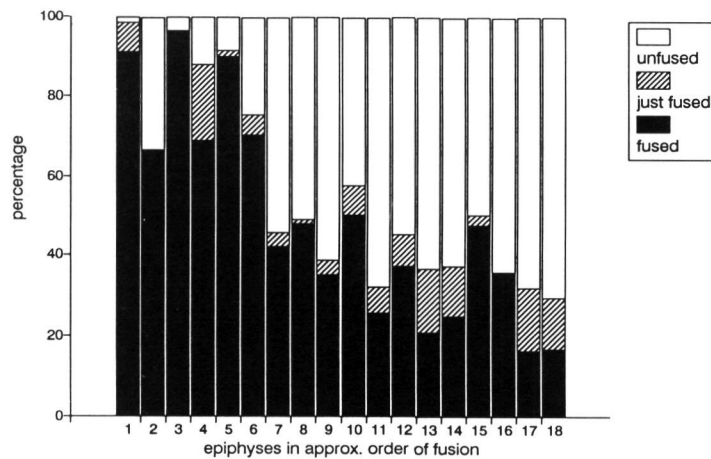


FIG 49 The Peabody site: histogram of the percentage of the fused, just fused and unfused cattle epiphyses, with the epiphyses arranged in the approximate order of fusion in life. *Key to epiphyses*: 1. Scapula tuberosity; 2 Acetabular symphysis; 3 Proximal radius; 4 Distal humerus; 5 Proximal 2nd Phalanx; 6 Proximal 1st Phalanx; 7 Distal tibia; 8 Distal metacarpus; 9 Distal metatarsus; 10 Proximal calcaneum; 11 Proximal femur; 12 Distal radius; 13 Proximal humerus; 14 Proximal tibia; 15 Distal femur; 16 Proximal and distal ulna; 17 Anterior vertebral centra; 18 Posterior vertebral centra

the surviving fragments with a premolar 4 have this tooth unerupted. Many animals were slaughtered at a time corresponding to wear stage 10 on the deciduous premolar 4, when the permanent molar 3 was still unerupted. Payne (1973) gives an age of 6–12 months for this stage of development. The next substantial slaughter took place when wear stages 11–13 had been reached on the permanent premolar 4. This corresponds with a wear pattern of 7–9 on the molar 3, suggesting an age of 3–4 years (Payne *op cit*). The epiphysial data, while demonstrating that few young lambs were slaughtered, shows that perhaps 30% were killed in their first year, (matching the deciduous premolar 4 peak in the dental data), and that there was another major slaughter before the complete fusion of the late fusing appendicular epiphyses (corresponding with molar 3 stages 7–9). Although only 1.4% of the sheep bones represent neonates, this is much higher than at Maiden Lane (0.6%) or the National Gallery basement (0.3%).

Since husbandry practices cannot be deduced from age estimates alone, but must be considered with sex ratios, measurements

and pathological changes, further discussion is reserved for a later section.

Withers heights and sexual dimorphism

All the measurements for all species were taken according to the recommendations of von den Driesch (1976). Using the recommendations of von den Driesch and Boessneck (1974), Teichert's factors were used to calculate withers heights for sheep and pigs, while Matolcsi (1970) was used for cattle. For cattle metapodials, the means of all the factors given by Fock (1966), Matolcsi (1970) and Zalkin (1960) were used: 6.15 for metacarpals of unknown sex, 5.45 for metatarsals of unknown sex. When subsequent analysis of data from all Saxon London sites allowed individual metacarpals to be separated according to sex, the withers heights were re-calculated, using 6.01 for females and 6.27 for males and castrates.

Cattle: the withers heights (Table 24) followed the general pattern of the other Saxon London sites: similar in size to those from contemporary levels at *Hamwic* (Bourdillon & Coy, 1980) and *Dorestad*, (Prummel,

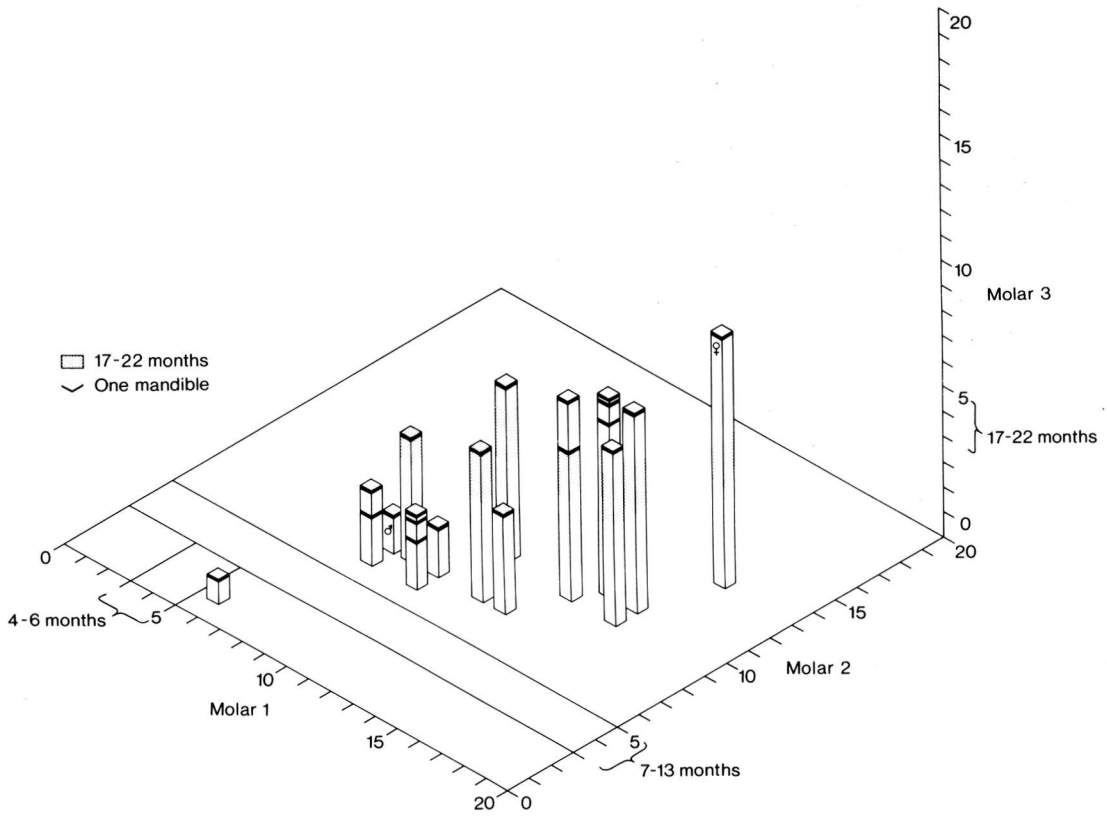


FIG 50 The Peabody site: three-dimensional diagram illustrating the wear on each of the cheek teeth (Molar 1, Molar 2 and Molar 3) of the mandible of a number of pig individuals

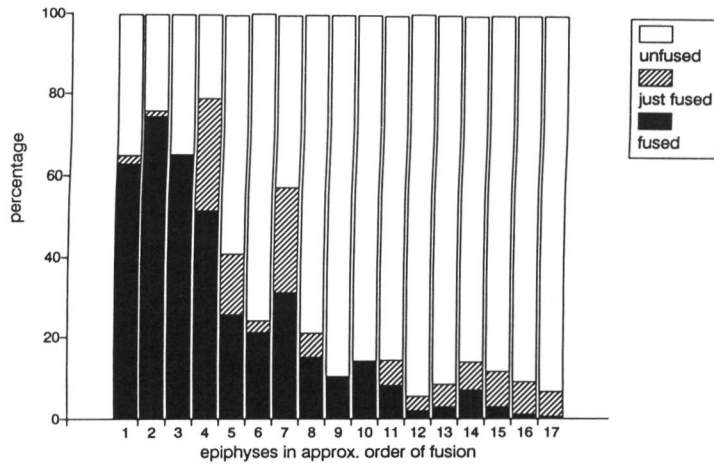


FIG 51 The Peabody site: histogram of the percentage of fused, just fused and unfused pig epiphyses, with the epiphyses arranged in the approximate order of fusion in life. *Key to epiphyses:* 1 Acetabular symphysis; 2 Scapula tuberosity; 3 Proximal radius; 4 Distal humerus; 5 Proximal 1st Phalanx; 6 Distal metacarp; 7 Distal tibia; 8 Distal metatarsi; 9 Proximal calcaneum; 10 Distal fibula; 11 Proximal and distal ulna; 12 Proximal tibia; 13 Proximal humerus; 14 Distal radius; 15 Proximal and distal femur; 16 Anterior vertebral centra; 17 Posterior vertebral centra

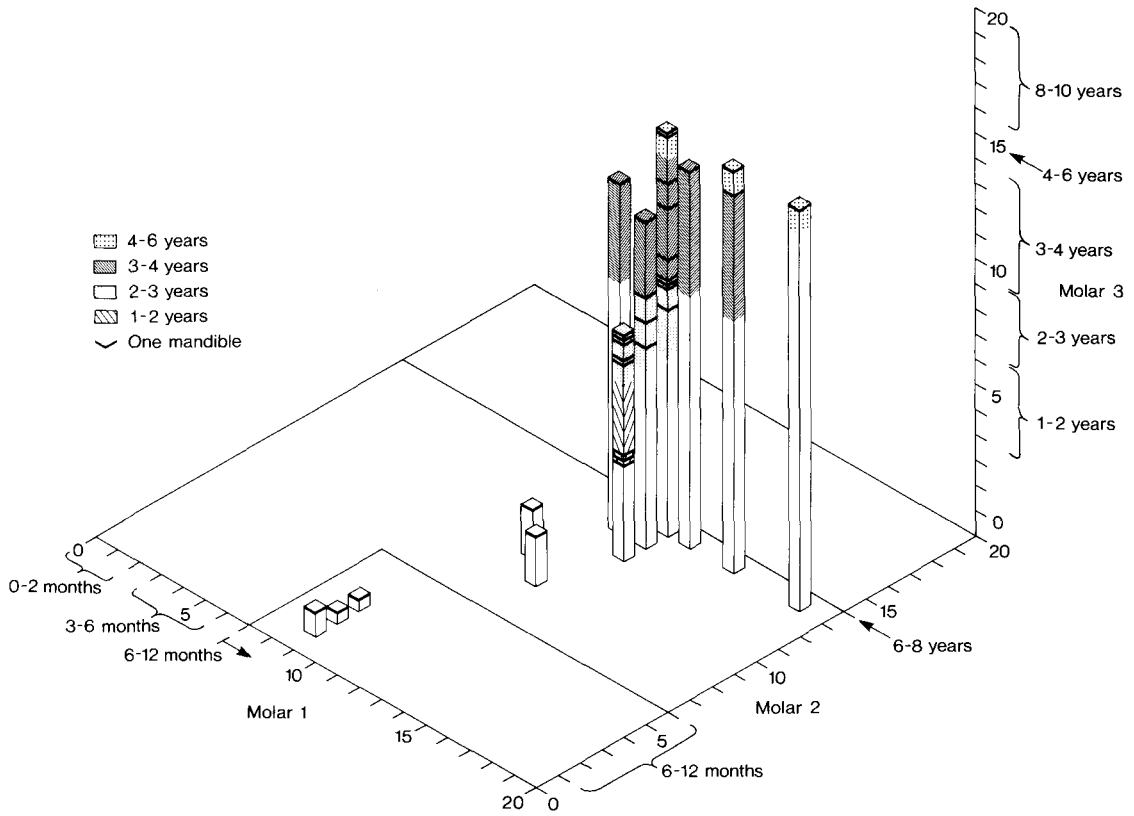


FIG 52 The Peabody site: three-dimensional diagram illustrating the wear on each of the cheek teeth (Molar 1, Molar 2 and Molar 3) of the mandible of a number of sheep individuals (wear stage after Payne 1973)

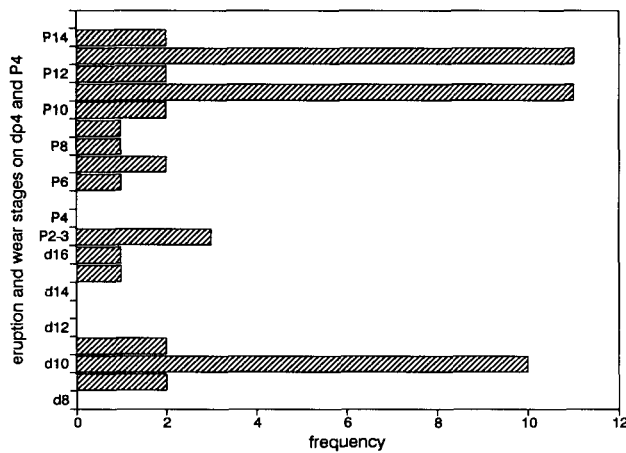


FIG 53 The Peabody site: the frequency of sheep mandibles at different stages of wear and eruption on the deciduous premolar 4 and the permanent premolar 4

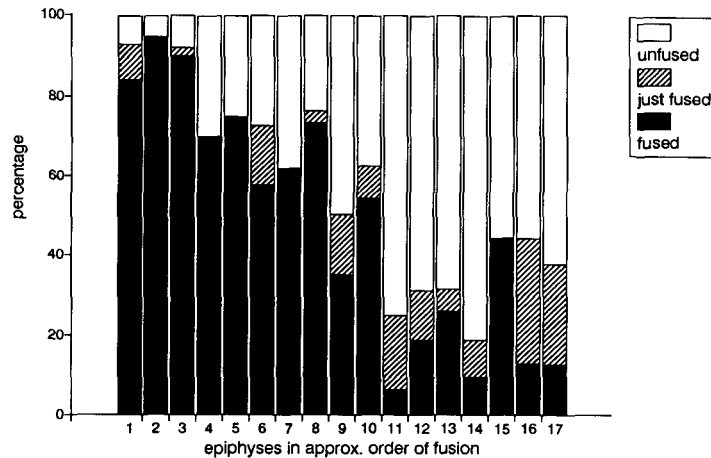


FIG 54 The Peabody site: histogram of the percentage of fused, just fused and unfused sheep epiphyses, with the epiphyses arranged in the approximate order of fusion in life. *Key to epiphyses:* 1 Distal humerus; 2 Proximal radius; 3 Scapula tuberosity; 4 Acetabular symphysis; 5 Proximal 1st Phalanx; 6 Distal tibia; 7 Distal metacarpus; 8 Distal metatarsus; 9 Proximal femur; 10 Proximal calcaneum; 11 Distal femur; 12 Proximal tibia; 13 Distal radius; 14 Proximal humerus; 15 Proximal and distal ulna; 16 Anterior vertebral centra; 17 Posterior vertebral centra

TABLE 24. Cattle withers heights (mm): means and ranges

	No.	Mean	Range
Metacarpal	22	1164	1019-1330
Metatarsal	18	1197	1131-1334
Overall	40	1179	1019-1334
Sexed Metacarpals:			
Males	3	1186	1164-1214
Females	9	1127	1088-1194
Castrates	3	1299	1240-1370

1983), while distinctly larger than those from both Coppergate and Fishergate in York (O'Connor, 1989; in press), and *Haitshabu* and *Elisenhof* in Germany (Reichstein and Tiessen, 1974). Prummel (1983) demonstrated that the average withers height can indicate different types of cattle husbandry. The high average heights from the Peabody site (1179mm), Maiden Lane (1179mm), National Gallery basement (1164mm) and Barking Abbey (1183mm) suggest that many bull-calves were not killed but castrated and kept to adulthood (since castration results in longer-limbed animals).

Measurements were also used to determine sexual dimorphism in the metacarpals, these are generally accepted as the best indicator

amongst the limb bones (Fock 1966; Higham 1968; Grigson, 1982). Individual bones were tagged with a number before being plotted in various ways against data from the other Saxon London sites, and were remarkably consistent in falling into the same groups on each graph. Fig 55, for example, shows three distinct groups for the Peabody site cattle which are interpreted as males, castrates and females.

The visual criteria proposed by Lemppenau (1964) were used to determine sex in the innominates, and the results are given in Table 25, along with the results for the metacarpals. Measurements of the length and breadth of the pubic bone (West, 1990) were compared with those of Chillingham cattle of known sex in the collections of the Natural History Museum (Fig 56); from this there

TABLE 25. Cattle sex ratios for metacarpals and innominates

	Male	Female	Castrate
Metacarpals	23.5% (4)	53% (9)	23.5% (4)
Innominates	73% (19)	19% (5)	8% (2)

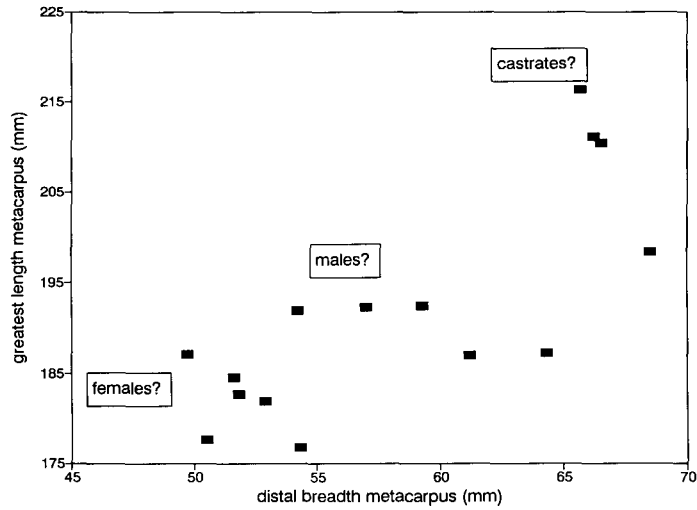


FIG 55 The Peabody site: scatterplot of the greatest length against maximum distal breadth of cattle metacarpals. Suggested females, males and castrates are indicated

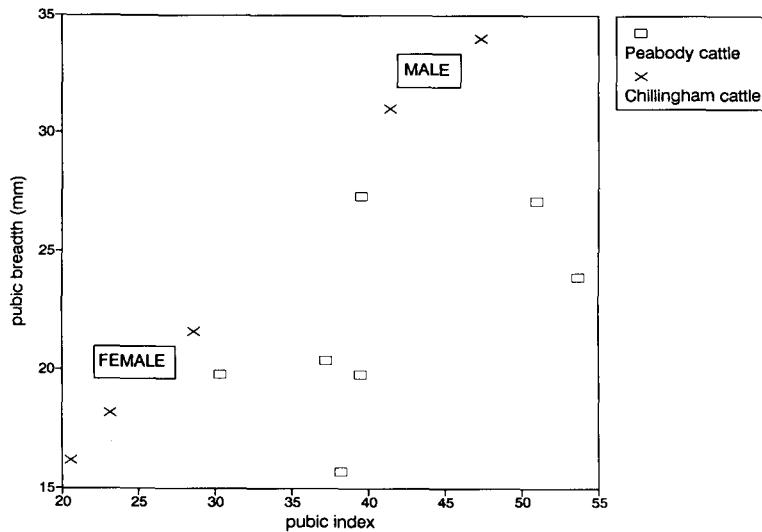


FIG 56 The Peabody site: scatterplot of the pubic breadth against pubic index of cattle pelvises. Known sex reference material is also plotted

appear to be three males, one female and three possible castrates.

One example of the tiny small-horned Celtic type of cattle was found: a metacarpal yielding a withers height of only 1019mm. This may be residual, although only small quantities of Roman and prehistoric artefacts were found. Other evidence for cattle of this type from Saxon London sites includes one

horn core and one metatarsal from Westminster Abbey (WST86) (yielding a withers height of only 955mm), one horn core from Barking Abbey, and a small and extremely slender metacarpal from the National Gallery basement. None were found at Saxon Dorestad (Prummel, 1983), Anglo-Scandinavian York (O'Connor, 1989) or, surprisingly, even at Iron Age Danebury

(Grant, 1984); however, several examples were recovered from Iron Age Stanwick (Rackham, in prep) and Roman deposits in York (O'Connor, 1988).

The sex ratio data from Saxon London sites as a whole is interesting in that it shows evidence for castrates only at the Peabody site, Maiden Lane, the National Gallery basement and Barking Abbey. The highest proportions of females are at Westminster Abbey and Jubilee Hall, which matches the low average withers heights for these two sites, and so confirms the conclusions of Prummel (1983) discussed previously. The Peabody site is interesting, however, in having far more males than any of the other London sites.

Pigs: the most reliable method for determining sex in pig bones is the morphology of the canine teeth. Thus it is rather surprising that very few animal bone reports contain any reference to the sex ratios of pigs, with the result that few comparisons can be made. However, the proportions of male to female pigs at the Peabody site, 71% (34) males to 29% (14) females, is similar to that at Maiden Lane (65% males to 35% females) (West a and b, 1988), and simply indicates that the males were killed early while some females were kept to adulthood for breeding.

TABLE 26. Pig withers heights (mm)

	No.	Mean	Range
Humerus	1	740	
Radius	4	757	709–796
Ulna	1	806	
Femur	1	762	
(Tibia)	1	520	'dwarf'
Calcaneus	1	694	
Overall	8	753	709–806
	(9)	728	520–806 with 'dwarf'

The withers heights calculated for Saxon pigs in London (Table 26) are well within the range for domestic rather than wild pigs (Willburger 1983), and are roughly similar to those from Dorestad, *Hamwic*, *Haithabu* and York. However, a number of the radii with only the proximal end fused, and the distal epiphysis missing, approach or exceed in

TABLE 27. Sheep withers heights (mm)

	No.	Mean	Range
Humerus	1	555	
Radius	10	599	548–655
Tibia	3	558	545–567
Metacarpal	17	617	509–677
Metatarsal	18	608	524–675
Overall	49	603	509–677

length some of the intact adult bones represented in Table 26. This suggests that the adult bones are all from females, and that the real range of withers heights was much greater than might otherwise be supposed; these juveniles—presumably males—will have been significantly taller at the shoulder than the adult females. At the other end of the scale, one adult tibia yielded a withers height of only 520mm—almost a 'dwarf' pig.

Sheep: the withers heights for sheep (Table 27) follow the general pattern of those from the other Saxon London sites: very much smaller than those from Dorestad, *Hamwic*, *Haithabu* and *Elisenhof* but larger than those from York. Sex in the sheep innominates was determined using the visual criteria of Armitage (1977) and revealed males 50% (7), castrates 21% (3) and females 29% (4). Although the rather small sample makes interpretation difficult, clearly twice as many males as females were killed, a pattern similar to that yielded by the other Saxon London sites. Various attempts have been made to analyse measurements of sheep bones so as to determine sexual dimorphism, but these have all been inconclusive (for an attempt to analyse Saxon London material, see West in press); accordingly, no further such analysis will be attempted here.

Butchery

The butchery marks, although carefully recorded, are discussed only briefly here. The majority were chop marks (including those on two goat horn cores), although a very few knife marks were found and the vertebrae of all three major domesticates had been split

transversely and/or down the sagittal plane. This indicates that the carcasses were split in two, similar to the pattern on other sites. One pig tibia had been knifed no fewer than 22 times. The percentages of bones bearing butchery marks (Table 28) bears little relation to the amount of butchering activity, since most of the splitting, spiral fractures and other fragmentation was also the result of butchery.

Antler, horn and bone-working activities were indicated by the saw marks on all the red deer antlers, two cattle horn cores and two cattle metacarpals, as well as a 5mm hole which had been punched through the proximal end of a sheep metacarpal. The horn cores had also been removed from three sheep skulls.

Non-metrical variation

Non-metrical variation in specific bones was recorded as part of a larger study to detect genetic changes in the population, such as potential introductions of new breeding stock. The types of variation found in the Peabody site material have been recorded and are available in the archive.

Pathology

Although the incidence of pathology at the Peabody site (Table 29) was higher than that found at *Hamwic*, it tied in well with the evidence from the other Saxon London sites. The percentage for the cattle was relatively high, similar to that at Maiden Lane, while the percentage for pigs most resembled the lower figures for Barking Abbey and

TABLE 29. Incidence of pathology at PEA87 and *Hamwic*

	Cattle	Pigs	Sheep
Peabody site	0.9% (21/2292)	0.2% (3/1466)	0.4% (5/1120)
<i>Hamwic</i>	0.5% (11/23896)	0.06% (4/6953)	0.1% (15/14606)

Westminster Abbey. The sheep percentages were similar to those at National Gallery basement and Jubilee Hall.

Cattle: Like those at Maiden Lane and the National Gallery basement, the majority of cattle pathologies at the Peabody site were arthritic changes probably associated with traction. These included a femur with a small area of eburnation on the posterior side of the articular surface of the femoral head, and one scapula with a superior extension of the glenoid cavity surface. One metatarsal and one metacarpal bore considerable deposition around the edges of the proximal articulation, three metacarpals bore evidence of degenerating joint cartilage in the large pits of resorption in the medial proximal articular surfaces, and one metacarpal had an ossified tendon below the proximal articular surface.

Five first phalanges, two second phalanges and one third phalanx had also been affected, including varying degrees of deposition, resorption, eburnation, grooving and extensions of the articular surfaces. The third phalanx bore very deep vertical grooves and ridges along the outer edge of the hoof, as well as deposition on the posterior side, which

TABLE 28. Butchery marks

	No. bones with butchery marks	% species fragments	Bones with knife marks
Cattle	346	15%	femur, innominate, radius, cervical and lumbar vert.
Pigs	87	6%	astragalus, humerus, tibia, innominate
Sheep	104	9%	humerus, innominate, radius
Cattle-size	206	6%	ribs
Sheep-size	105	6%	ribs

may have resulted from infection following an injury.

Although four mandibles also bore evidence of arthritic changes in the hinge joint, in the form of resorption pits in the articular surfaces, these were probably associated with age rather than traction. One other mandible bore a dental irregularity in which the third cusp of the third molar had been worn away by the opposing maxillary molar. One pathology which may have been congenital was a thoracic vertebra with very large indentations in the spine, which was also bent in a curve to the animal's right side.

Amongst the cattle-sized bones were five healed rib fractures, two of which were very odd semicircular holes with smooth healed edges, as if the animal had bumped into a protruding nail or other sharp object. One caudal vertebra also bore this odd injury, which looked as if a sharp object had been driven into the centrum and later the wound had begun to heal. These may, however, be congenital defects, along with the large deep holes in the spines of two thoracic vertebrae.

Pigs: only three pig bones were pathological, none of which appeared to be arthritic in nature. One third metacarpal bore deposition and resorption just below the anterior edge of the proximal articulation, which was probably the result of injury. There were two maxillae in which the considerable resorption around the alveoli indicated periodontal disease, and in one, the fourth premolar had tilted to grow into the side of the first molar.

Sheep: amongst the sheep were three instances of arthritic changes in the 'elbow joint': an ossified tendon on the lateral side of the distal humerus, a medial extension of the proximal articular surface in one radius, and an ossified tendon in a proximal ulna. This condition, which occurs frequently in archaeological material, is probably the result of sprain or dislocation (Baker and Brothwell, 1980). O'Connor (1984) suggests that penning and herding of sheep through enclosures may predispose them to such injuries. The only other pathologies were dental: one mandible with slight overcrowding of the teeth, and

another in which the anterior cusp of M1 was 5mm higher than the posterior cusp, indicating a complementary pathology on the opposing maxillary tooth.

Other mammals

Other domestic species occurring on the site in very small numbers were goat (two horn cores only), horse, dog and cat (see Table 19). Little data could be gathered on withers height, age or sex from the few bones available. Two juvenile horses were represented from the same context [69]: one aged *c.* 1.5 years by epiphysial fusion and the other aged *c.* 4.5 years by dental eruption. Three other horse bones from the site represented adults.

Dogs were represented by one juvenile and three adults. One adult femur yielded an estimated shoulder height of 607mm, which is at the upper end of the range for Anglo-Saxon dogs (Harcourt, 1974).

Fully 40% of the cat bones were juveniles, a much higher proportion than at Maiden Lane. One adult femur had been completely fractured at the midshaft, and the badly overlapping ends had knitted together with no sign of infection. Since this animal's upper hind leg had broken in the middle, some sort of direct blow to the body is indicated rather than a fall: for example, a deliberate human kick, or an accidental collision with a passing cart. Although the fracture had healed well, the animal's leg would have been greatly foreshortened, resulting in a bad limp.

Red deer were represented entirely by chopped and sawn antler fragments, well-distributed across the site, two of which were cast antler bases collected from the forest. This indicates that these antlers were purchased separately as part of the horn and antler-working trade. The soil samples also produced a few fragments of antler shaving. The only evidence for the consumption of venison was a single adult roe deer mandible.

Birds

The bird species are listed according to skeletal element by fragment numbers in Table 30. The occurrence of red kite at the

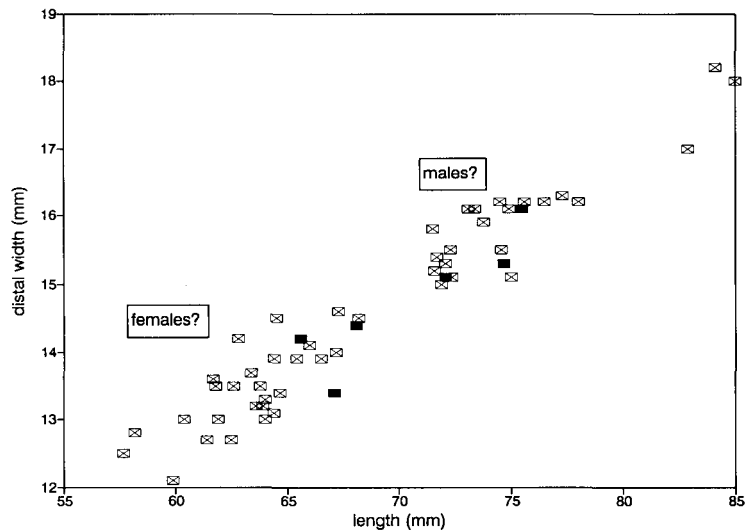


FIG 57 The Peabody site: scatterplot of the length against distal breadth of chicken humeri from Saxon London. The solid black symbols indicate specimens from the Peabody site

Peabody site is interesting, since red kite has been found on only two other sites in London: from medieval deposits at Baynard's Castle (Bramwell, 1975) and Saxon deposits at Pudding Lane (West, unpublished). As discussed in an earlier section, the relative proportions of domestic to wild birds, as well as those of chickens to geese and ducks, were all similar to those at Maiden Lane, the National Gallery basement and Jubilee Hall. No interesting patterns were found in comparisons of skeletal elements among the Peabody site birds.

All the birds were fully adult, except for two juvenile chickens. Evidence for dog gnawing occurred on the bones of two chickens, one goose, and the red kite humerus. Evidence for butchery consisted of knife marks on the bones of five geese, and chop marks on two geese and one chicken bone. Only two pathological bird bones were found, both of which may be the result of trauma: a chicken femur with a small lump of deposition just below the femoral head, and a goose tibia with deposition and a large deep pit of resorption above the medial distal articulation.

Both chickens and geese were very similar in size to those from the other Saxon London sites (West, in press), and to *Hamwic*

(Bourdillon and Coy, 1980) as well as to contemporary European sites listed by Thesing (1977).

For the chickens, sex was determined using the presence or absence of the metatarsal spur, a late stage of spur development called the socket primordium (see West, 1982; 1985b), and the mineralised deposit known as medullary bone indicating egg-laying females (see Driver, 1982). The sex ratio for the chickens (25% male, 75% female) suggests that more females than males were eaten, which matches the pattern at the sites of Barking Abbey and Westminster Abbey (West, in press), while the opposite occurred on the other London sites. The presence of medullary bone indicates that at least one hen had been 'in lay' (providing eggs) when slaughtered.

In the study of Saxon London sites (West, in press), graphs were constructed using various limb bone measurements of geese and chickens in order to determine sexual dimorphism. The complete lack of dimorphism in the geese, which was also evident in material from the large rural Saxon site at Wicken Bonhunt (Stevens, in prep), and the small sample of various measurements of geese limb bones from PEA87, discouraged any attempt at similar graphs for this site.

TABLE 30. Bird species and elements by fragment numbers

	Chicken	Duck	Goose	Red Kite	Goose species	Goose size	Indet. bird
Skull							
Mandible			3				
Scapula	2		5				1
Clavicula							
Coracoid	11		6				
Sternum			2		1		2
Humerus	5		7	1	2	3	
Radius	3		2				1
Ulna	4	1	4				1
Metacarpal	4		6	1			
Innominate							
Lumbosacrale	1		3				5
Femur	7		12			1	
Tibiotarsus	13		12		1	1	2
Fibula							
Metatarsal	8		9				
Phalanx							9
Vertebra							7
Rib							3
Long bone frag.							7
Unidentified							4
Total	58	1	71	2	4	5	42

When the chicken measurements were added to those from the other London sites, they fell quite nicely into distinct groups of males and females (see, Fig 57).

Discussion

The relative proportions of the three main domesticates at the Peabody site were very similar to the pattern from Maiden Lane, Jubilee Hall and Late Saxon Westminster Abbey: high proportions of cattle, and greater proportions of pig than sheep. The significance of the predominance of pigs over sheep has been discussed at length elsewhere (West, 1985a; West, 1988a, b; in press) and will not be reiterated here. Suffice it to say that the pattern at the Peabody site appears to reflect the relative wealth and social status of the Saxon inhabitants, in common with all the major Saxon London sites except the National Gallery basement and National Gallery extension (see below).

Patterns of husbandry and consumption practices were drawn from the evidence for age estimates, meat quality, sex ratios, measurements and pathological changes. The

Peabody site cattle were similar in size to those of the other Saxon London sites, *Hamwic* and *Dorestad*, but distinctly larger than those from York, *Haihabu* and *Elisenhof*. However, there was one example of the tiny 'Celtic' type of cattle: a metacarpal yielding a withers height of only 1019mm, which could have been residual although little Roman material was found on the site.

The age ranges most closely resembled those at Maiden Lane and Barking Abbey, with many calves eaten as well as some old cattle surviving. The high percentage of calves' bones (18%) points to a higher level of prosperity as reflected by the consumption of veal (discussed by Reichstein and Tiessen, 1974). This is supported by the high proportions of the better quality meat elements, closely similar to those at Maiden Lane.

Unlike the other large Saxon London sites, more males than females were slaughtered which suggests the importance of dairy products (*ie.*, many females being kept for milk while males were killed for beef). The high average withers heights (1179mm),

however, suggests that most of the bull-calves were not killed, but castrated and kept to adulthood. As at Maiden Lane and the National Gallery basement, the use of cattle for traction is supported by the high proportion of pathological arthritic changes in the regions of shoulder, hip, 'ankles' and feet.

The Peabody site pigs were similar in size to those from the other Saxon London sites; however, there were a few intriguing examples of 'dwarf' pigs, one adult tibia yielding a withers height of only 520mm. The pigs were mostly eaten at 2-3 years old, with very few surviving beyond 3-3.5 years. More piglets less than a year old were eaten at the Peabody site than at Maiden Lane, Barking Abbey or Westminster Abbey, but less than at the National Gallery basement and Jubilee Hall. Many more males than females were killed, as at Maiden Lane, which simply indicates that some sows were kept for breeding. The bone elements indicated that the Peabody site Saxons were eating an abundance of high quality pork.

The sheep were also similar to those from the other Saxon London sites, in being rather diminutive: although somewhat larger than the very small sheep from York, they were considerably smaller than those from *Hamwic*, *Dorestad*, *Haithabu* and *Elisenhof*. Interestingly enough, the pattern for age ranges most closely resembles that of Westminster Abbey: a significant number of lambs were eaten, and very few old sheep were kept for wool. The slaughter patterns cluster at 6-12 months, 2-3 years and particularly 3-4 years old. None survived beyond 4-6 years.

Twice as many males and castrates were killed than females. Considered with the age ratios, this implies that good quality mutton from younger sheep was of primary importance to the inhabitants, while milk and wool from the females, and the large quantities of wool produced by the castrates, was of little concern, since none of the sheep were kept beyond the ages of 4-6 years.

Like their fellow Saxon Londoners, the Peabody site Saxons appear from the faunal evidence to have been fairly prosperous.

Although good quality beef was of primary importance in their diet, they also preferred pork to mutton, and goose to chicken, unlike many of their contemporaries in Britain and Europe. Although other animal products were of secondary concern, more dairy cows were apparently kept for milk, butter and cheese than at Maiden Lane.

A very small amount of meat from other animals such as goats and ducks was consumed, and the only evidence for the hunting of wild animals and birds was a single roe deer mandible and two bones of red kite (which was probably a scavenger). The small quantities of red deer antler indicate that the Peabody site Saxons were also engaged in the antler-working trade but only on a small scale.

The general patterns on this site are strikingly similar to those of the other Saxon Strand sites, with the notable exceptions of the National Gallery basement (this volume) and National Gallery extension (this volume). Rackham's (in press) synthesis of all the environmental evidence from Saxon London confirms the apparent role of the Strand inhabitants as consumers in a market economy, rather than traders in an emporium (Hodges 1982) provisioned by a controlled supply through food rents to a local prince.

National Gallery basement by BARBARA WEST

A total of 5512 animal bones (59.2kg) from the middle Saxon pits were analysed, of which 3836 (55.5kg) were identified (see Table 31). The material has been discussed elsewhere (West, in press) and only a brief summary is presented here.

The most significant and intriguing result was that many of the patterns at NGA87 were in sharp contrast to those from the other Saxon Strand sites, and more closely resembled those from the Treasury. Proportions of wild species were smallest at the Strand sites, intermediate at NGA87 and the Treasury, and greatest at the abbeys of Barking and Westminster. Like the Treasury, NGA87 had fewer cattle and more sheep, and sheep outnumbered the pigs. There were

TABLE 31. Species, fragments and weights

	No. of fragments	Weight in gms
Cattle	475	18961.5
Pig	470	7721.3
Sheep/goat	661	8420.0
Cattle size	956	15434.2
Sheep size	1180	4565.9
Red deer	1	37.0
Roe deer	2	68.1
Deer species	1	16.1
Chicken	45	86.9
Goose, domestic	30	148.9
Goose size	12	40.2
Duck species	2	2.5
Indet. bird	11	8.3
Total identified	3836	55510.9
Total unidentified	1676	3684.6
Total	5512	59195.5

higher proportions of animals less than a year old amongst the cattle, pigs and sheep than any other site, including Barking and Westminster abbeys, and the highest proportion of newborn calves (7.1%).

Fewer old cattle survived than on the other Strand sites, and many were slaughtered at 3–4 years, before full maturity. Among the cattle were also the highest proportions of castrates and lowest proportions of males of all the other *Lundenwic* sites. Only Barking Abbey had more castrates and fewer males.

NGA87 had the highest percentage of female pigs and sheep of all the sites, including the abbeys. The sheep were also

TABLE 32. Species fragments and weights

	No. of fragments	Weight in gms
Horse	3	130.8
Cattle	310	12684.3
Pig	39	665.8
Sheep/goat	91	970.4
Sheep	21	563.7
Goat	1	12.1
Cattle size	370	3446.0
Sheep size	59	174.2
Red deer	2	20.9
Dog	4	169.9
Cat	5	14.4
Goose, domestic	1	5.3
Unidentified	375	583.2

larger than those from the other sites, and many more old sheep were kept for wool.

These patterns suggest that NGA87 and the Treasury were at a kind of intermediate stage between the consumers on the Strand on the one hand, participating in a market economy independent of the system proposed by Hodges (1982) of provisioning by a local elite from food rents; and on the other, the pastoral idyll at Barking Abbey. The Saxons at NGA87 and the Treasury were, it would seem, semi-rural, and it is interesting to postulate, from the faunal evidence, that the site lay outside the boundaries of the main settlement.

National Gallery extension

by JAMES RACKHAM

Only the middle Saxon contexts at this site were analysed. These derived from two quarry pits, [256] and [274] and amounted to only 1281 fragments of bone. The species identified are listed in Table 32.

This assemblage contrasts with the others reported above, and with other Saxon sites in London (West, in press). It is dominated by cattle (Table 33) in a way not seen on these other sites, and pig remains are less frequent than on all the other Saxon sites except Althorpe Grove, Battersea (Locker, 1975).

The sample is unfortunately small and little data is available for detailed analysis. Among the cattle bones the mandible is, as usual, the most common skeletal element. The distal humerus, metacarpal, innominate, tibia and calcaneum are the next most frequent bones, and horn cores were also more frequent than is usual on sites of this period in London. The other species while

TABLE 33. Percentage of fragments of cattle, pig and sheep at PEA87, NGA87, NAG87

	PEA87	NGA87	NAG87
Cattle	47	30	67
Pig	30	29	8
Sheep and goat	23	41	25
No. =	4878	1606	462

apparently represented by most parts of the skeleton occur in such low frequencies that no patterns can be seen in the data.

The cattle appear to have been killed at ages similar to those at the Peabody site. The little data illustrates four animals slaughtered when the deciduous premolar 4 was at wear stage 14 or 15 (Grant, 1982) and 6 when the permanent PM4 was at stage 10 or 11, four other jaws had permanent PM4 at less advanced or older wear stages. The limited epiphysial fusion data is consistent with this pattern.

There is little conclusion to be drawn from this material although the pattern of species abundance is clearly quite distinct from that typical of the Strand sites, and interestingly, also from the nearby excavations at the National Gallery basement. Many of these variations may be attributable to time but unfortunately there is no refinement as yet of the dating framework for these sites. The similarity to the small sample from Althorpe Grove (Locker, 1975) may reflect a pattern typical of a small rural site since this area is thought to be beyond the western edge of the main Saxon settlement but without more tightly defined dating changes due to contemporary economic pressures may go unrecognised.

Concluding synthesis

by JAMES RACKHAM

Two sites, Maiden Lane and Jubilee Hall, have been reported previously from Middle Saxon London (Davis and de Moulins, 1988; Locker, 1988; West, 1988a and b). Both lay in the region of the Strand settlement (Cowie and Whytehead, 1989). Of the three sites reported here the Peabody site also lies within the limits of the Strand settlement as presently recognised but both the National Gallery basement and National Gallery extension are believed to lie outside or on the western limits of this settlement focus.

It is clear from both the botanical and zoological evidence that the Peabody site contains plant and animal assemblages very similar to those already studied from Maiden

Lane and Jubilee Hall (Cowie & Whytehead, *op cit*). While the Peabody site plant assemblages were sadly poor, they indicate wheat and barley cultivation, with some rye. These cereals appear to have been cleaned and ready for use although preservation and dispersal may have produced a survival bias against chaff and cereal weed seeds. Only in the waterlogged and mineralised samples did other evidence appear. Two samples particularly, from cesspits, produced abundant remains of grass seeds, and hay or straw fragments. While clearly out of context, this material would seem to indicate the use of hay/straw as flooring, bedding or perhaps fodder rather than a by-product of local cereal processing. The other plant food species are the same as those recovered from Maiden Lane and Jubilee Hall, although, peas in one sample is an addition to the species list.

The animal bones from the Peabody site reinforce the general similarity with Maiden Lane and Jubilee Hall. Cattle are the most important meat source, but pork is significantly more important than mutton. Goose and chicken are the only other domestic animals that make any contribution to the diet. As at Maiden Lane and Jubilee Hall the fish remains from the samples are dominated by eel and freshwater and migratory species. Herring is the only abundant marine fish, a few bones of flatfish occur but almost no gadid (cod) family. Apart from some changes in the relative abundance of individual species this assemblage is typical of the Middle Saxon assemblages so far studied from London (Locker, 1988).

In the Saxon deposits from the National Gallery basement and National Gallery extension, the plant remains and fish bones (NGA87 only) follow the pattern which appears to be typical of this period, mirroring the remains from the Peabody site, although the seeds from the National Gallery basement have a much higher proportion of weed seeds than other sites in general. These samples derive from only two pits and it would perhaps be a mistake to characterise the whole site on this data since a few samples

on the Strand sites produced similar assemblages. This similarity ends when the domestic animals are considered. In marked contrast to the Strand settlements the National Gallery basement assemblage is dominated by sheep or goat bones; while at the National Gallery extension cattle bones are much more abundant, relatively, than on the Strand sites with pig bones much less frequent. The absence of a good chronology within the Middle Saxon period means that changes that might take place with time are not recognised. We must at present assume these sites are contemporary and that the differences reflect economic variations. If these two sites lie outside the main settlement area at this period then these differences may reflect this. Possibly they are small farmsteads on the edge of the 'town' or they could represent peripheral 'squatter' occupation on the outskirts of an expanding settlement. There is little to help in interpreting their character. The National Gallery basement has a high percentage of neonatal cattle suggesting that they must have been breeding and it also appears to have a higher proportion of young calves. This 'looks' like a farm assemblage with newborn deaths and culling of young calves, possibly in association with milking. It certainly contrasts with the apparently fairly regimented slaughter of cattle at the Peabody site, at ages of approximately 2–2.5 years and over 5–6 years. The limited data on slaughter at the National Gallery extension is similar to those at the Peabody site. If the National Gallery basement was a farm site, one might expect more of a focus on cattle and sheep, pig being perhaps less in demand since it is a suitable candidate for backyard farming in the settlement. The National Gallery extension is not really possible to characterise on such a small sample. The assemblage is similar to a collection from Althorpe Grove (Locker, 1975), clearly a rural settlement.

If differences in food economy can be used to delimit such an edge, the environmental evidence would seem to suggest the archaeological conclusion that the Strand settlement boundary lay between the Peabody site and the National Gallery basement.

THE ARCHAEOMAGNETIC DATING (NAG87)

by PAUL LINFORD

The upper of two clay hearths in pit [346] was sampled for archaeomagnetic dating by A. David of the Ancient Monuments Laboratory, and D. Shiel, then at the Laboratory. D. Shiel also made the initial laboratory measurements. The archive report on the dating is available in the A.M.L. report series (Linford, 1990).

The nine samples recovered were partially demagnetised in an alternating magnetic field with a peak value of 4mT, to remove a small viscous component detected in the remanent magnetisation during the preliminary measurements. The resulting mean thermoremanent direction was:

Dec = $16.841 \pm 2.421^\circ$ E;

Inc = $63.976 \pm 1.062^\circ$;

alpha-95 = 2.027°

The alpha-95 statistic indicates that this mean is of acceptable precision, thus it was compared with the archaeomagnetic dating calibration curve of Clark *et al* (1988) to obtain a date range of:

1120–1155 cal AD; at the 68% confidence level.

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